SYDNEY RADIO CONTROL SOCIETY - incorporated
CLUB NEWSLETTER

Quarterly General Meeting

To be Held at the field

Saturday

10th June 2006 at 11AM

Agenda:

- ***Apologies***
- ***Previous Minutes***
- ***Matters arising***
- ***Treasures Report***
- ***Secretaries Report***
- ***Fee's***
- ***Other Business***

Club will provide a Sausage Sizzle BYO drinks afterwards for lunch

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CLUB NEWSLETTER

THE 2005 – 2006 COMMITTEE WWW.srcsclub.com

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ASTRO HOG DAY

The Trophy Beckons, SRCS is holding the ASTRO-HOG DAY, to be held at the field at the on Sunday 18th June 2006.

Bring along your best HOG and join in a bit fun with all the other Hogs and wallow in the glory.

Sausage Sizzle and drinks available

These items can be purchased from the Club Treasurer: -

Club metal badges	$5 ea.
Club cloth badges	$5 ea.
SRCS stickers	50c ea.
Club Tee shirt	$25 ea.
Club Caps	$15 ea.

At the moment the Club has plenty of stock of caps and shirts available, so why not lash out any invest in a new Club Shirt and cap. ***Don't forget that the Club Badges issued to this years to financial members must be worn at all times.*** A perfect place to wear it is on your new cap.
These items are available from **Ewald Klinkenburg or another committee member** at the field. Sizes for the shirts are large and XLS in blue or grey.

PRESIDENT'S LETTER

Holding the Quarterly General Meetings at the field on Saturdays seems to be a success and the next one, as covered elsewhere in the Newsletter, is being held on June 10th. You may have noticed that the Club's contest calendar has been very much curtailed this year, due to the poor support that many of the events have attracted. The Committee believes that we understand the reasons for this but are very keen on continuing to provide enjoyment for the membership and also promoting the development of skills. We will be putting forward our ideas for discussion at this meeting. Even if you do not normally fly on Saturdays do try to be there so you can contribute to this and help the club continue to be strong and successful. The meeting will also set the fees for the next year and you can pay on the day to ensure that you can continue with uninterrupted flying.

One event that is already in the calendar is our annual Astro Hog Day on 18th June. If you have an Astro Hog, or a derivative, do come along and enjoy flying a relaxing aircraft in the company of many others. Make a pig of yourself and wallow in all the other awful puns that muddy the sty on the day. If you haven't got one, come and enjoy it anyway; you might decide that you can build one for next year.

In my view the club does not have large numbers of petty rules, and we are fairly relaxed about many that we do have by not taking an authoritarian approach to enforcing them. However we do have to very safety conscience to protect ourselves and our visitors from the things that can go wrong at the field. It has been pointed out that one of the rules is not being followed very conscientiously at the moment. Frequency Keys are supposed to be marked with the owners name and frequency before being placed either on the transmitter or in the Frequency Control Board. There are good reasons for this. We have all, well I certainly have, put our key in the wrong slot at least once. If it has the correct frequency on it then it is likely it will be noticed before the person on the next channel switches on with your actual frequency. This will save your model. By having the name on it also means that if a key is left in the board when you go home then it is easily traced and if there is any other issue such as a key in on your channel for over twenty minutes then it is easy to ask the polite question. After trying to find who to ask for over ten minutes the question may not be as polite. After this Newsletter is published the rule will be more rigorously enforced. We are also supposed to wear our club membership badge whist down at the field. Not only does this confirm that you are a financial member and entitled to fly, it also helps us all, and particularly new members, to know who they are talking to, and promotes the social discussion and exchange of views that we all find so rewarding. There was also some broken glass left under the main awning recently. It should have been picked up immediately - we would all feel very bad if a young child was badly cut because of it.

As you know we now have the Phil Hibble shelter in full use. As a result no engine or aircraft are allowed under the shade cloth awning. This is to avoid the area where we eat and relax from having oil and other nasty residues contaminating it. The new shelter is available for this and provides sun, and in that case rain protection as well. The tables are used for other purposes such as meetings and a Bar BQ serving area, (with suitable protection), but they can still be used for supporting models at a comfortable working height for repairs and adjustments. However they are not to be used as a test stand for the running in or setting up of engines. That should be done at ground level and away from other people if extended running is involved.

I hope to see you all at the QGM and happy and safe flying.

Mike Close
President

APRIL 2006 QUARTERLY GENERAL MEETING

MINUTES
The Quarterly General meeting was held at the SRCS Field on Saturday 1st April 2006.

Mike Close opened the meeting at 11.40 a.m. Minutes were recorded by Paul Toyne

PRESENT	M. Close	R. Zyp	B. Polizzi
	N. Bantin	P. Toyne	C. Bruce
	E. Klinkenberg	R. Evans	P. Chapman
	D. Slevin	G. Fong	D. Ransom
	R. Cipriotto	J. Howard	P. Norris
	S. Liseo	L. James	R. Broadbelt

APOLOGIES M.Holloway C. Bacon

MINUTES OF THE PREVIOUS QUARTERLY GENERAL MEETING 03-12-05

The minutes of the previous QGM held at the SRCS Field on Saturday 3rd December 2005 were accepted as a true and accurate record with no changes. *Motion proposed by P. Chapman and seconded by C. Bruce*

MATTERS ARISING

- Christmas party was well attended at venue of good quality.
- Phil Hibble passed away on 21-12-2005 prior to receiving a thank you note from SRCS for his generous donation for our shelter. The shelter however bears his name.

SECRETARIES REPORT
Incoming:
Nothing to report
Outgoing:
Email to MASNSW advising dates for SRCS Events schedule.

TREASURERS / REGISTRARS REPORT

- See separate report

OTHER BUSINESS

- M. Close outlined that 2.4 Ghz has been approved by MAAA for use with aircraft. These units scan for 2 available frequencies that are not in use. No keyboard is required except for a generic board showing anyone using this type of equipment at the field. Due to the possible interference restraints caused by the shorter aerial on both the transmitter and receiver the technology is for electric aircraft only.
- C. Bruce notified the meeting that Mrs. Hibble has offered to donate a perpetual trophy to SRCS in memory of Phil. Committee to consider the most appropriate event.

Meeting Closed at 12.00noon.

TREASURERS REPORT –BALANCE SHEET March 06

	This Year	Last Year	$ Difference
Assets			
Current Assets			
Cash On Hand			
Westpac - chq a/c	$3,505.45	$5,255.21	-$1,749.76
Petty Cash	$10.00	$10.00	$0.00
Total Cash On Hand	$3,515.45	$5,265.21	-$1,749.76
Investments			
Westpac term deposit	$16,553.03	$15,764.79	$788.24
ANZ term deposit	$31,275.85	$29,198.29	$2,077.56
Total Investments	$47,828.88	$44,963.08	$2,865.80
Total Current Assets	$51,344.33	$50,228.29	$1,116.04
Other Assets			
Deposits Paid	$50.00	$50.00	$0.00
Total Other Assets	$50.00	$50.00	$0.00
Buildings			
Furniture & Fixtures			
Equipment at Cost	$18,900.23	$16,568.73	$2,331.50
Less Acumen Dep	-$10,766.28	-$8,545.64	-$2,220.64
Total Furniture & Fixtures	$8,133.95	$8,023.09	$110.86
Total Assets	$59,528.28	$58,301.38	$1,226.90
Liabilities			
Current Liabilities			
suspense a/c	$84.00	$0.00	$84.00
Total Current Liabilities	$84.00	$0.00	$84.00
Long-Term Liabilities			
Total Liabilities	$84.00	$0.00	$84.00
Net Assets	$59,444.28	$58,301.38	$1,142.90
Equity			
Retained Earnings	$56,441.70	$54,183.06	$2,258.64
Current Year Surplus/Deficit	$3,002.58	$4,118.32	-$1,115.74
Total Equity	$59,444.28	$58,301.38	$1,142.90

PROFIT AND LOSS STATEMENT July 05 to March 06

	This Year	Last Year
Income		
Club Badges	$9.00	$0.00
Club Clothing	$15.00	$227.50
Donations	$5.00	$0.00
Gate Keyes	$255.00	$830.00
Interest	$1,773.87	$357.74
Joining Fees	$570.00	$1,300.00
Member Fees	$18,258.00	$20,273.50
Scale Day	$780.90	$10.90
Total Income	**$21,666.77**	**$22,999.64**
Expenses		
Badges	$0.00	$105.60
Bank Charges	$51.10	$38.35
Competition Prizes	$67.50	$158.86
Consumer Affairs	$78.00	$56.00
Equipment Hire	$110.00	$0.00
Equipment	$0.00	$32.36
Field Maintenance	$431.72	$373.22
Gifts	$37.99	$0.00
Hall hire	$55.00	$260.00
Key refund	$30.00	$10.00
Locksmith	$1,547.43	$1,371.70
Website	$390.50	$478.50
MAS fees	$13,521.50	$15,268.50
Postage & shipping	$174.00	$100.58
Scale Rally	$429.73	$0.00
News letter	$639.07	$594.65
Stationary	$32.65	$0.00
Toilet Services	$187.00	$33.00
Refund of membership	$881.00	$0.00
Total Expenses	**$18,664.19**	**$18,881.32**
Net Surplus / (Deficit)	**$3,002.58**	**$4,118.32**

Membership	
Associate	7
Junior	1
Life	4
Pensioner	8
Senior	94
Spouse	1
total	**115**

SEEING DOUBLE - Matt Holloway

A few weeks ago the Saturday crowd thought they were seeing double. After one of those heavy Friday nights you could excuse the gang for taking a double take. We had the fortune to have two B-25 Mitchell bombers at the field. Over the past few months we have been admiring Robert Zyp's scratch built B-25 twin engine WWII bomber "Heavenly Body" The master craftsman has done it again with yet another incredible work of art, every weekend when it graces the field you see more detail. Take a look when it's at the field the detail is amazing. You cannot help but get enthused to tackle a twin. Well that's what happened to me, not having the talent that Zypy has, I opted for the ARF version of the WWII bomber and named her "Problem Child" from the same "Crusaders" squadron. On April 18 1942 the two bombers from the Crusaders squadron took part in the Doolittle raid of which sixteen bombers flew from the aircraft carrier USS Hornet in the first strike against the Japanese home islands in response to the Pearl Harbour attack.

Well Robert and I thought that since both planes have proved to be great flyers why not take both of them up at the same time. Well Murphy's law proved to be alive and well on Saturday. Both planes were fuelled, prepped, range checks complete, mission briefing ended with a mix of nerves and anticipation…… gentlemen to your planes for engine start and the first sortie for the day. The weather was perfect and both of us were eager to try our hand at some formation fly bys down the strip. The gang under the shelter saw we were getting ready and started to grow, waiting patiently to see the twins take to the air. Don't you just hate it when all eyes are on you? Well as I said Murphy was alive and well, I got both engines started and tuned up with out any dramas. Who said twins were hard? Robert unfortunately had a starboard engine that just wouldn't fire. Well no shortage of advice for Robert on what could be wrong with the engine. The crowd formed around Heavenly Body quickly.

At one point Robert could be found relaxing having a coffee while his mechanics worked feverishly on Heavenly Body's engine. Now that is what makes SRCS so great, everyone so willing to help out. After about ¾ hr of tracing the problem, checking and rechecking finally it was found to be a blown plug. Bugger! Engine fixed we tried again, this time Robert started with no problems. Problem Child on the other hand found its starboard engine wouldn't start. Guess what? Plug blown. Bugger, Bugger! While I worked on replacing the plug Heavenly Body took to the air on a solo mission. On Heavenly Body's

successful return, the report was, sky clear, excellent visibility and no bogies in range, Robert refueled waiting for his wingman to join him. This time the sound of two twins taxing was music to the ears. The sight and sound of Heavenly Body and Problem Child in circuit doing low passes down the strip as though on a low level bombing run was just great. It seemed to the pilots that their sortie had come to an end all too quickly.

Time to return to base. Problem Child with hunting engines joined the circuit first, gear down….. I said gear down, Oh great….., Tower we have a problem, my nose gear is hung up, prepare for an emergency landing. Cycling the gear switch hoping that the nose gear would drop. Bugger, here we come, trying to hold the nose up as long as possible Problem Child lands and skews right towards the longish grass edge of the strip, nose down and skids right into a large WET cow pat. Bugger! It was quite spectacular actually; it looked just like the soil spraying over an aircraft on a ditched landing just like what the Doolittle raiders had to do in China. Points for a scale landing? I wish. Strip clear and Heavenly Body comes in for a perfect landing.
Damage report on Problem Child, a couple of bolts stripped in the undercarriage. She'll be back in the air quickly to join Heavenly Body on future missions.
Now all we need is some "little friends" for escorts a P-38 Lightning or two and the picture will be complete for a complete assault on Vineyard.

SRCS Club Events for members for discussion

SRCS Rookies Day Out

Rookie Class
Never competed before
Only Club events competed in e.g. Fun fly, pattern

Sports Class
Competed in events outside SRCS
Competed in the SRCS Scale Rally more than twice
Not sure how we handle the "Zyp Effect"

Award trophies not modeling supplies e.g.: Small trophy, Insulated Coffee mug, and Wine Cooler bag

Rookie Class
(Rookies are allowed to have a caller giving instruction on the first flight, remember some rookies have never competed and do not know what to do in competition)

1: Stand back and squint hard Scale (convince the judge it looks like?) (A trainer kind of looks like a Cessna) just a bit of fun
2: Best Flight
3: Pilots choice (whether it be ARF,Kit or Scratch.)
4: Encouragement award (last place or unfortunate circumstances)

Sports
1: Sort of Scale (convince the judge)
2: Best Flight
3: Pilots Choice
4: Encouragement award

Pilot Skills to be judged
Rookie and Sports
1: Safe engine start procedure (encourages safe pit area and activities)
2: Safe Taxi and Take off call procedure (pilot scored on calls and actions)
3: Take Off
4: Level circuit x 2
5: Pilot choice manoeuvre (a straight level fly by DOWN the strip is permitted, its harder than it sounds) make a list for reference e.g. figure eight, roll, inverted, loop, and stall turn.
6: Landing pattern call procedure
7: Landing (go arounds are OK as long as calling is made)
8: Taxi Back and Shutdown

Encourage participation of members in a fun relaxed day, no aerobatics to be scared about. promote safe flying and disciplines. Smooth Control of aircraft and communication at the flight line is the order. Must fly a minimum of two flights on the same aircraft.

Hold BBQ on Day

Cats, Dogs and Pigs
Same Classes as above.
Must complete 3 flights on the one aircraft / helicopter

Award trophies for
Most realistic/controlled flight
Most unusual aircraft
Pilot's choice for most impressive flight over both classes

BBQ on the day

Bronze and Gold Wings Social Day
Want to get your Bronze or Gold Wings?
You know you have the skill, but don't know what the manoeuvres are called or quite know how to do them.?

Today is the day.

Instruction on the day to help progress to wings, or maybe even get your wings.

General flying day
Instruction on manoeuvres for wings, includes demonstration
Promotes safe flying, increases confidence and skills.
The prize is being awarded your wings.

BBQ on the day

FACTS ABOUT FUEL No. 3 - Nitro methane, the Mystery Ingredient?

(The following is the third in a series of articles exploring all facets of model engine fuel. The writer is Don Nix, past owner of Power master

Nitro methane…..everybody knows it's there, but few, it seems, really know much about it. Although most seem to know - at least vaguely - that's its primary purpose is to add power, we still get an occasional call or letter asking, "Why do you use it in model fuel?" At best, there is much misinformation regarding this somewhat exotic ingredient. Let's see what we can do to clear some of it up.

Nitro methane is just one of a family of chemicals called "nitroparaffins." Others are nitro ethane and 1-nitropropane and 2-nitropropane. Nitro ethane can be used successfully in small quantities. (Top fuel drag racers, which generally run on straight nitro methane, sometimes add a little in hot, humid weather to prevent detonation.) At one time, nitro ethane was only about half as expensive as nitro methane, but its cost now is so nearly the same, using it to lower cost is hardly worth the trouble. Neither of the nitropropanes will work in model engine fuel. Incidentally, nitro methane is made of propane, in case you didn't know (and I'll bet you didn't).

Yes, NITRO = POWER! But….there is conditions and contingencies. First of all, it **doesn't** add power because it's such a "hot" chemical. Not at all. This may come as a surprise to most readers, but the methanol (methyl alcohol) in the fuel is by far the most flammable ingredient….nearly twice as flammable as nitro methane. As a matter of fact, if nitro were only 4 degrees less flammable, it wouldn't even have to carry the red diamond "flammable" label!

In actuality, nitro methane must be heated to 96 degrees F. before it will begin to emit enough vapors that they can be ignited by some sort of spark or flame! (I demonstrated this not long ago to a friend by repeatedly putting a flaming match out in a lidful of nitro. I might add that he insisted on standing about 20 feet away during the demonstration.)

So….how does it add power? We all know (I think) that although we think of the liquid part substance we put in fuel tanks (in our automobiles or model airplanes) as the fuel, in truth, there is another "fuel," without which the liquid part would be useless. Remember what it is? Right….just plain old air (in reality, the oxygen in the air).

Every internal combustion engine mixes air and another fuel of some sort….in our case, a liquid…glow fuel. The purpose of the carburetor is to meter those two ingredients in just the right proportions, and every individual engine has a requirement for a specific proportion of liquid fuel and air. Try to push in too much liquid without enough air, and the engine won't run at all. That's the purpose of the turbocharger on full-size engines….to cram in a lot more air than a simple carburetor or fuel injection system can handle.

Now…..suppose we were to find a way to run more liquid through our model engines without increasing the air supply? That would add power, wouldn't it? Well, guess what….we can! An internal combustion engine can burn more than 2 ½ times as much nitro methane to a given volume of air than it can methanol. Voila! More Power! That's how it works, and it ain't all that complicated. Nor do we have to spend a lot of time thinking about it in the course of a normal day's sport flying.

However, there are some factors we do need to consider. As a practical matter, virtually all our everyday sport flying can be done on model fuel containing from 5% to 15% nitro methane. If you're flying something like a trainer or a Cub or similar model, there's probably no reason why 5% won't work perfectly well. Need a little more power? Move up to 10% or 15%. In most of our sport engines today, I really wouldn't recommend going any higher than that. It probably won't hurt anything, but it won't do you much good, either.

We sell more 15% fuel than any other single blend, and for good reason. Most of the popular engines on the market today are built to run on something very near that blend. Typically, European engines will successfully run on lower nitro blends, because they are built to do so. Why? In Europe, nitro can cost between $150 to $200 a gallon! Reason enough?

Nitro does more than just add power. It also helps achieve a lower, more reliable idle. One good rule of thumb for checking to see if a particular engine needs a higher nitro blend is to start the engine, let it warm up for a few seconds, set throttle to full idle and remove the glow driver. If it drops rpm, move up to a 5% higher nitro blend. If there is no discernible drop, you should be fine right where you are.

One of the most popular misconceptions is that by adding substantial nitro, the user will immediately achieve a huge power jump. Just ain't so. Most will be surprised to learn that in the 5% - 25% nitro range, you will probably only see an rpm increase of about 100 rpm static (sitting on the ground or on a test stand) for each 5% nitro increase. In the air, it will unload and achieve a greater increase, and it will probably idle better, too.

My pet rule is this: If you have a model that's doing well, but just isn't quite "there" power wise, go up 5% in nitro. If that doesn't do it, you need a bigger engine, not more nitro!

Most of our popular sport engines in use today aren't set up to run on much more than 15% or 20% nitro. Increasing the nitro has the effect of increasing the compression ratio, and each specific engine has an optimum compression level. Exceed it and performance will probably suffer, not gain, and the engine will become much less "user friendly."

High performance racing engines, for example, are tuned entirely differently….compression ratio, intake and exhaust timing etc….and are usually intended to run on much higher nitro blends. One exception, of course, is racing engines used in certain international and world competition (FAI). By the rules, these engines are not allowed to use any nitro at all, and they go just as fast as those that run on 60 or 65%! The first question that comes to mind, then, is, "Why aren't all engines designed to run on no nitro, so we can all save a lot of money?" Ask any of the world-class competitors. Those engines are a serious bitch to tune and run, and are definitely not user-friendly! In fact, they are well beyond the skill levels of most average flyers. There's a price to everything.

Another statement we read or hear frequently is that nitro methane is acidic and causes corrosion in engines. It isn't acidic, and the manufacturers say it doesn't happen…..can't happen. However, at least one noted engine expert and magazine writer insists that it does. Flip a coin. (I once asked Dave Shadel, 3-time World Pylon Champion, and a fellow who works on more high performance engines than anyone I know, how frequently he encounters rust in engines that have been using high nitro blends. His answer? "Never.")

Why does nitro cost so much? While I have no clue as to the cost of manufacturing, other than it takes a multi-million dollar investment in a large refinery to produce it, there is one pretty good reason: There is only one manufacturer of nitro methane in the Western Hemisphere. Figure it out for yourself.

Also (and this will come as a big surprise), our hobby industry only consumes about 5% of all the nitro methane produced; and full-size auto racing about another 5% or so. This means we have no "clout" whatever, and simply must pay the asking price. Where does the rest of it go? Industry. It's used for a variety of things - a solvent for certain plastics, insecticides, explosives (yes, it was an ingredient in the Oklahoma City bombing) and I'm told it's an ingredient in Tagamet, a well-known prescription ulcer medication (no wonder that stuff is so expensive!). Please note that while nitro methane is an ingredient in making some explosives, under normal use, it in itself, is not explosive. (Remember….the guy used fertilizer, too.)

Hardly a month passes that someone doesn't call to ask, "I hear more nitro will make my engine run cooler. Is that true?" Nope. The higher the nitro content, the higher the operating temperature. Fortunately, in most of our sport engines, the difference in operating temps between 5% and 10% is negligible, and there are lot of other factors (proper lubrication, etc.), that are much more important.

Finally, remember in the beginning of this, we said that nitro adds power because we can burn more of it than we can methanol, for a given volume of air? This also means that the higher the nitro content of the fuel, the less "mileage" (or flying time) we will get. In a typical .40 size engine using 15% nitro, we can usually get a minute to a minute and a half flying time for every ounce of fuel. The Formula 1 guys are lucky to get 2 minutes out of an 8 oz. tank!

What's the practical side of this? If you go to a higher nitro blend, be sure to open your needle valve a few clicks and reset before you go flying. Otherwise, you'll be too lean, and could hurt your engine. Conversely, if you drop to a lower nitro blend, you'll have to crank 'er in a little.

FACTS ABOUT FUEL No. 4 - 2-Stroke vs. 4-Stroke Fuels Is There Really A Difference?

(The following is the fourth in a series of articles exploring all facets of model engine fuel. The writer is Don Nix, past owner of Power master, Inc.

Well, what do *you* think? Is there really a difference, or is this merely a big hype by the fuel manufacturers to sell more products? Let's see a show of hands…..ah, yes…about evenly divided. Well, let's explore the *facts*.

Fact: Most 4-stroke model fuels contain less oil than comparable 2-stroke fuels.

The most common response to this is, "But 4-stroke engines have more moving parts….they should need *more* oil, not *less!"* Well, that sounds reasonable, but it doesn't stand up under close examination. The number of moving parts has nothing to do with it. What *is* important? Think about it.

Fact: With rare exceptions, 4-stroke engines run at substantially slower rpms than a comparable 2-stroke engine…most in the under-10,000 rpm range vs. 12,000, 13,000 or more for a typical 2-stroke of the same size. They are engineered to deliver maximum power at slower rpms, with bigger props. What does this have to do with it? One of the main factors used in determining the proper oil content of fuel is heat. To use the well-worn term, it doesn't take a rocket scientist to figure out that the more slowly an engine turns, the less heat it generates from friction. If you don't believe that, rub your palms together slowly, then as fast as you can.

So….lower rpms = less heat = less need for oil.

Fact: 4-stroke engines only fire every other stroke, vs. every stroke by a 2-stroke engine. Firing, or combustion, burns fuel, which creates heat. Logically, it may be deduced that if there is fire in the chamber only every other stroke, the engine has time to cool off a bit between combustion cycles. Let's take that a little further: Using a hypothetical 4-stroke engine turning 10,000 rpm = 5,000 combustion cycles per minute, vs. a hypothetical 2-stroker turning 13,000 rpm…with the same number of combustion cycles per minute….the gap widens. The 2-stroker has *160% more combustion cycles* than the 4-stroker. Even though this is partially offset by the fact that at least some 4-strokers have a higher exhaust gas temperature, the message is clear: 4-strokers remain cooler, and need less oil.

Fact: Oil doesn't burn (or shouldn't) - methanol does. Using a little logic, we arrive at the conclusion that a properly made 4-stroke fuel will deliver better performance than a 2-stroke fuel in the same engine.

Why? Remember…the 4-stroker is only firing every other stroke. This results in the plug element wanting to cool down between strokes, resulting in a "colder" plug. Excess or unnecessary oil, constantly dousing the element, is going to make it more difficult to achieve a slow, smooth idle. Those who contend that, "Well, using too much oil can't hurt anything" are wrong. In addition to causing undue friction in the engine, keeping the metal parts from properly mating, etc., too much oil in 4-stroke fuel is constantly trying to cool a plug element that is already having problems. Sort of like pouring a bucket of cold water on a poor guy who is already shivering.

Again, since oil doesn't burn, it's doing nothing to help us develop power….it simply lubricates and goes right out the exhaust and all over everything. *Howeve*r, suppose we *don't* put unnecessary oil in the fuel, and replace it with methanol, which *does* burn. Well, what do you know…greater top end power! Hey, I think we're on to something here! Remove unnecessary oil from 4-stroke fuel, and we get a "twofer" - two benefits for the price of one….a slower, more reliable idle plus greater top end power!

Conclusion: For reasons that should be clear above, a properly blended 4-stroke fuel should deliver better all-around performance in a 4-stroke engine than a regular 2-stroke fuel in the same engine.

While it's not going to actually harm anything to run 2-stroke fuel in a 4-stroke engine, *never, ever* run 4-stroke fuel in a 2-stroke engine. It's not going to have enough oil. Now, for those of you will say that you have done it with no problems, I'll agree…..if you have a real good ear and keep the needle valve "fat" (rich), it will probably work just fine…but the official word is DON'T! It reduces your margin of error unacceptably.

Finally: Because engine manufacturers have been burned in recent years by some fuel makers' attempt to lower the cost of their products by using either too little oil or a cheap grade, most manufacturers today are recommending that you run a 2-stroke fuel only in their 4-stroke engines, or will specify what would seem to be an abnormally high oil content (and it probably is). Who could blame them? Since they know they have no control over the oil used in someone else's fuel, they're just trying to cover their fannies. So would I.

Note: I believe it's commonly known that the manufacturers of YS engines…among the most powerful 4-stroke engines available….mandate that only fuels containing oil contents in the normal 2-stroke range be used. Their engines are unique, and the manufacturer's recommendations should be followed, although, as with anything, there are exceptions.

FACTS ABOUT FUEL No. 5 - Storing Fuel for Maximum Shelf Life

(The following is the fifth in a series of articles exploring all facets of model engine fuel. The writer is Don Nix, past owner of Power master, Inc.

During the Q&A part of countless "Dog & Pony Shows" at hobby clubs all over the U.S., one of the frequently asked questions is, "What's the shelf life of fuel?" The answer if both simple and easy: Properly stored, model engine fuel will last almost indefinitely. So….what constitutes "properly stored"? Let's take a look.

Contrary to many things you might have read or heard, just about the only thing that adversely affects model fuel is the absorption of moisture from the air. Keep the air away from it, and your fuel will likely be potent longer than you are! Methanol - the major ingredient in model fuel - is hygroscopic. This means it's virtually 100% soluble in water, and absorbs moisture from the air like a vacuum cleaner sucking up dirt. Most modelers have no idea how rapidly this can - and does - happen, and tend to be rather skeptical about the idea. Let me paint a picture for you: Almost everyone has spilled a little fuel on the top of their fuel can in their flight box. If so, you've no doubt noticed that the shallow film of raw fuel takes on a

cloudy, milky look. What you are seeing is the methanol sucking moisture right out of the air. Since the quantity of fuel is thin with a lot of surface area, the absorption is rapid, the water won't mix with the oil and the fuel turns cloudy. Just remember how quickly this happens…..almost immediately….and it might give you an idea of just how quickly your fuel can be ruined if you leave the cap off, allow a vent tube to remain open, etc.

The wide surface area relative to the quantity of the fuel exposed is disproportionate, of course, to leaving the cap off the fuel jug, but I think you get the idea. In a humid condition such as exists in parts of the U.S., it doesn't take very long at all to adversely affect your fuel. And it doesn't take a large opening….a cross-threaded cap, a small vent line, etc. is all that's needed to do the damage.

The solution is simple, of course….just keep it tightly sealed. And yet, sometimes that's not enough. Most of us have seen small droplets condensed inside our fuel jugs after it's become partially empty. This is the result of condensation of moisture as the air trapped inside the jug cools. Until about a year ago, there was little we could do about this, but there is now a method to take care of this problem. Since it's not the purpose of this column to commercially promote our own products, those interested are invited to contact the writer at the e-mail address above, and we'll be happy to tell you about the product that will solve the problem.

For the reasons above, it's our opinion that it is rarely a good idea to buy model fuel in 55-gallon drums. Unless all the fuel is poured up the first time the drum is opened, a substantial volume of air is trapped inside the drum each time it's opened. Steel containers of any kind warm and cool much more readily and rapidly than plastic, and condensation is much more evident in this type container. The result is that the last portion of the drum of fuel is quite likely to be contaminated with moisture, sometimes to the point of being unusable.

There is another downside to buying fuel in drums, especially if more than one person is using it. With no control over the type container the fuel is dispensed into….perhaps not bearing sufficient or proper warnings, etc., the liability is incredibly high if an accident of any sort should occur. Model clubs considering this type of fuel purchase for their members should be particularly aware of the potential liability….which is huge! While it's true that the UV in sunlight (or in fluorescent lights, for that matter) will cause pure nitro methane to deteriorate over time, it's our experience that once the nitro is in solution and substantially diluted, the deteriorative effect is relatively minor.

To test this, some years ago we put a gallon of 10% fuel out in direct sunlight (in sunny Southern California) for a month. At the end of that time, we tested that fuel in an engine vs. fresh product and could see no difference. While it certainly won't hurt anything to store fuel away from direct sunlight, etc., it's our personal opinion that the adverse effect of sunlight on fuel under normal operating conditions is too little to worry about.

Making a servo-lead extension - Keith Mitchell

A perfect solder joint to an electronics engineer is a satisfying, almost artistic creation. It has the quality of the dew-drop, smooth and glistening, surface-tension holding it together until solidification freezes it *in perpetuity* (remember this image when you do it~. Achieving it, however, is a technique and requires some practice. First, a preliminary, the basic tools list:-

1) A soldering iron of at least 25W power and preferably 50-70W (Weller Type W6OD recommended; available from Maplin No: DF47B).
2) Wire-strippers with adjustable 'bite' for different wire thickness.
3) Small, sharp-nose pliers.
4) Small (and. sharp) wire-snippers.
5) Flux-cored (radio) solder.
6) A moistened sponge to remove burnt residue from the tip of the soldering iron.
7) Heat-shrinkable tube of appropriate diameters (3mm for standard servo leads and 5mm for higher current servo and battery supply Leads).
8) Hot Air Gun - the normal paint-stripping variety will do.

To this, I would also suggest adding a small bench top vice/component clamp (the type with adjustable arms and crocodile dips) as soldering is often a 'three-handed' operation and the clamp is useful in holding the wire ends in place whilst soldering is performed. Once we've procured these bits and pieces we can set about the operation. Let us assume that we're going to add an extension to a servo plug-lead; the following list will help us tackle the job systematically:

i) Cut as many 1" lengths of heat-shrink tube as required.

ii) Remove approx. 3mm of the wire insulation from the ends of the wire being joined ensuring that the wire-strippers have the 'bite' adjusted so that the insulation alone is removed; the wire strands must not be damaged or cut as a local weakness will be produced.

iii) Clean old burnt residues from the soldering iron tip by wiping on the moistened sponge.

iv) Pre- *'tin'* both prepared wire-ends *('tinning'* is the process whereby the parts to be joined are coated with fresh solder, thereby removing oxide deposits which are present *even though the wire may be commercially-tinned and brand new).* Failure to perform this task properly is one of the biggest reasons why amateur hobbyists produce poor solder joints.

v) Slip the heat-shrink tube over one of the wires and mount both wires in the damp so that the prepared ends lie alongside each other. Apply the iron and solder to the joint simultaneously and if you've got it right a smooth, shiny joint will result with just a touch of residual flux remaining (remember the image I mentioned previously). It is important to appreciate that the soldering iron is purely a hand-held heater designed to facilitate rapid melting of the solder. It therefore needs to be held firmly and steadily at the joint to produce this. Obvious? Not so, as I am afraid to say that many bad joints *('dry joints'* in engineers' parlance) are caused by the soldering iron

being used either in the manner of a 'dibbling' tool, or, 'flicked' in a way somewhat akin to a woman manipulating a knitting-needle. This is a totally wrong action. Be careful, however, that the iron is not held on so long that all the flux is boiled off and the joint begins to take on a matt, roughened appearance indicating crystalline changes in the solder. This will adversely *affect* the electrical and mechanical properties of the joint If this happens, merely apply some fresh solder and remove the old residue. Melting of the insulation should also be avoided by prolonged heating, but if this happens 'snip-off' the damaged end and start again. if you don't get an acceptable joint the first time revert to some gash wire and practice on it until you do!

vi) Slip the heat-shrink over the joint, and shrink with the heat gun in circulating movements ensuring that the sleeve is uniformly shrunk taking care not to melt the
wire insulation.

vii) If you're confident you've got it right for the first lead, go on and complete for the other two. Always remember, this trivial operation, performed in seconds once you're proficient, could dictate the longevity of that creation for which you've sacrificed time, money, marital harmony, etc., etc.. *Get it right then, man!!*

One aspect I haven't mentioned is the extension leads them selves. As invariably these will be being lengthened we need to consider the type of wire to use. Well it needs to be pre-tinned, multi-stranded copper wire of 3A rating for the smaller, large model system e.g. models up to 3Olb weight, and, 6A rating for the larger systems where heavy duty servo's and very long extension leads are required. This is because it is not only the current-carrying capacity of the wire which is important but it's resistance which needs to be lower to reduce voltage drops between the battery supply, receiver(s) and servo's. Such wire is readily available from Maplin, RS Components or Farnell (see P20) and I suggest' you obtain reels in red, white and black colours in both ratings. These will serve you for most models you will build in a lifetime.

We also need to improve the electromagnetic properties of the extension lead by twisting all three wires together. Wires, which are twisted uniformly, produce less external electromagnetic field from the currents that are passing through them and are less affected by external electromagnetic fields passing through them. Put simply, they generate less interference and are less affected by interference within the model itself (how they are laid out in the model is another important issue, dealt with in Part 2). A neatly twisted lead is easy with a vice and hand-drill Cut equal lengths of all three wires - be over-generous because the twisting reduces the overall length somewhat. Clamp the wires in the vice at one end and the chuck of the hand-drill at the other, tauten and twist at the same time and *Hey Presto!* a neat twisted cable will result. Attach your plug and socket as previously described.

Making-up a Battery Pack- *Keith Mitchell*

An efficient, reliable and robust battery pack(s) is essential to successful operation of large models. Never skimp on the quality of cells and purchase only the best. In my view *Sanyo* yellow cells (and red cells if it's for the highest performance or fast charge use) take some beating. Beware the 'bargain-busters' at the shows as they are just that - *a bargain and they'll bust your model!* As for connecting them together I am sure that no large-modeler needs to be told that those disgraceful abominations called 'battery trays' should never, ever be used in model-aircraft R/C systems (as a golden rule *never rely on an electrical contact which is not hard-wired* unless it is a purpose-designed plug-socket combination - and even these should be reduced to the bare minimum in power supply and servo' leads). The welded packs supplied by the radio manufacturers eliminate such problems but I must say I prefer to make-up my own for a variety of reasons. A welded pack has a potential problem, which relates to how the cells are connected together. The manufacturer uses spot-welding at the cell's terminals, which not only provides electrical connection but the physical rigidity of the pack. This is quite acceptable for that in the transmitter, but when it comes to the flight-pack, prolonged vibration or a violent shock e.g. a crash, may cause a weld to shear. One is then left with a pack that outwardly looks OK, but is relying on 'touch' contact for its function. Many years ago I lost a beautiful scale 'Zlin' because a broken weld eventually stopped. making contact. The message was also reinforced on the Beaufighter - a 12V, 10-cell welded pack driving the landing light and camera flash - has had three of the welds fail. I therefore prefer to make up my own primary flight-packs that do not suffer from this problem because electrical integrity is maintained whilst allowing some 'give' between the cells. The procedure is as follows:

i) Lay the cells alongside each other in alternate senses i.e. pos-neg-pos-neg etc., as they are to be connected in series. Apply a bead of silicon (bath-tub sealant) along the joint of each cell stick a strip of broad masking tape along the tops of the cells and carefully turn the pack over. Silicon the underside of the joints. Allow 24hr to cure.

ii) Cut several short lengths of your heavy-duty (6A) wire (1" for small cells, 2" for large cells). Strip 1/8" of the insulation off each end and tin the wire. Bend the strips into a slight curve.

iii) To solder the cells together requires plenty of heat and needs to be done quickly as prolonged heating can damage them - this is why we need a high power soldering iron (50-70W) and a broad bit (at least 1/8") to aid heat conduction. Put some fresh solder on the bit and hold firmly on the cell. The negative end of the cell will take longer to heat because it is part of the case. Run some more solder into the joint and as the case begins to 'tin' rub the bit in a circular motion on the cell, apply fresh solder and the tinned area will be seen to spread outwards. This area needs to be no greater than 1 ⁄ 4" across. Take one of the prepared strips of wire and solder, maintaining heat with the iron and applying fresh solder to maintain flux and produce that glistening, dew-drop appearance described before. Remove the heat and hold the strip in place till the solder solidifies - this could take a few seconds. When it comes to attaching the other end of the strip to the positive terminal on

the adjacent cell it's a doddle because less heat is required the terminal heats very quickly and tinning and soldering are much easier. If the joint has a roughened, or matt appearance, reject it and start again. If you're having problems don't prolong the heating of the cell trying to get it right, get an old cell out of the scrap box and practice on it till it's right. If you're still worried let your local electronics bod' check it out when you've finished.

iv) Twist-up around 18" of your heavy-duty red and black wire, strip and tin the ends and connect to the output poe. & neg. terminals as above *(Important: make sure the other ends can't touch each other as you'll short-circuit the pack).* Solder your chosen output plug on. For these I suggest you have a look at the delightful RS snap-connectors mentioned previously in my column (ES 464-369 & ES 464-397). These will handle up to 3A. For the larger more complicated models (601b and up) I suggest the professional multi-pole type with gold-plated pin/socket contacts (ES 466-747 shells; ES 485-839 pin contacts; ES 485-855 socket contacts & ES 466-955 hoods). These are what I use on the Beau'. Some modelers have noticed the locking model car-type connectors hanging out of the nose of my model, but they are used as charging connections only. They must *not* be used as primary connectors as the pin-socket contacts are not high enough quality and can distort and become intermittent, particularly under high currents, and, after repeated making & breaking.

v) Finally, wrap the entire pack in fabric based tape or 'Duck' tape *(OK ordinary PVC will do but it ain't as good!).* Form a slight loop in the connection wire underneath it. This will serve as a stress reliever if the plug and wire is ever 'yanked'. For external shock absorbing I use the flexible, blue-foam like packing material or that made out of shredded bits of foam. Wrap the lot with Duck' tape.

You will now have a pack with that important bit of 'give' in it so that in the event of vibration or high 'g' e.g. a heavy landing or crash, the silicon and flexible tape act as 'shock-absorbers' allowing the cells to move slightly. Electrical integrity is assured because of the flexible wire links. Another nice advantage of making your packs up like this is, if one cell goes duff it's relatively easy to replace it than have to throw the whole lot away.

CLUB EVENTS 2006

EVENT	DATE	ALTERNATE DATE
Hog Day	Sunday 18th June	
Bronze and Gold Wings Social Day	22nd July	
Kevin Gray Memorial	Saturday 12th August	Saturday26th August
SRCS Scale Rally	Sunday 15th October	
SRCS Gala Day	TBA	