



Newsletter

No9 2020 September

Kinross Newsletter and Dalgety Bay Diary.

An Article about KRMFC has been submitted to the Kinross Newsletter and the Dalgety Bay Diary for publication. Publicity is always good to attract new members. It is not known when they will be published at this time but I will keep you posted. A copy of the article is below:

Kinross Radio Model Flying Club



Kinross Radio Model Flying Club (KRMFC) was formed in 1996 with the objective of promoting and furthering activities in the field of radio control model construction and flying. We are always looking for new members.

Our flying site is situated 2.5 miles west of Kinross on the A977. You will see our sign on the left just past a layby.



Interested? Then pop along to our site and have a look and a taster of what it's all about or complete the online form on our website.

We have one of the longest grass runways in Scotland which allows us to operate large models and the occasional jet with no problems. It runs east to west to take advantage of the prevailing westerly winds. A club hut provides shelter if the weather is inclement.

We are keen to help anyone new to the sport and, if required, can offer friendly advice in choosing, setting up and flying your first aircraft. We also offer flight training under close supervision of our instructors using a buddy box system, which makes the learning time considerably shorter and hopefully saves first time buyers from damaging their new purchases.

Our Scottish Aeromodellers Association (SAA) examiners can help members further their skills and work towards the SAA achievement scheme.

Club days are Wednesday and Sunday from around 10:00. However, in winter or summer if the weather is clement and the wind is light, you'll find people flying at our field on just about any day.

We cater for all aspects of flying, from gliders to electric to nitro, petrol and jets. Our members have a huge range of aircraft from trainers to war time replicas to large 100cc petrol aerobatic aeroplanes.

The flying field



Getting yourself set up in this hobby can easily be done for around £250 or so, but speak to us first and we will let you know what's out there for the beginner.

An acrobatic model

A typical trainer



Children under 16 years of age must be accompanied by an adult.

For more information and contact details, just visit our website: www.krmfc.com or Facebook page: www.facebook.com/kinrossradiomodelflyingclub

Activity at the Field – August 2020

Wednesday 12 August 2020 – Everything was very wet due to torrential rain the night before. The left hand end of the runway was under an inch of water. The wind kept changing speed and direction. Hot and sunny. 24C approx.

Bert, Mike and Billy H were at the field. Billy H was fixing plastic mats to the uprights on the benches to protect the aircraft wings. Alan had apparently been at the field earlier.

Mike was flying a helicopter when Neil arrived but as soon as he got out of his car the helicopter came down in the field. Easy to find this time and little damage but both got wet feet as there was about 3 inches of water in the grass.

Bert's plane had already crashed so he had nothing flyable.

Mike and Neil got the trimmer out and managed to get it working. The harness proved to be a bit complicated but it wasn't really needed as Billy had already trimmed most of the edges. Mike trimmed the car side of the safety fence. Neil painted half way along.

Mike left leaving Neil there alone. 2 flights with the Apprentice and 2 flights with the Tutor 2. Neil's wife appeared and took a video of the Tutor 2 flying. (still to be edited).

Saturday 15 August 2020 – damp air with a 8mph crosswind from the south. Runway still wet.

Tom at the field very early and had already cut the grass by 9:30 but it was still very wet.

Dave flew his helicopter with Tom offering advice. There was a hard landing first time but the second landing was gentler.

Dave Kelly flew his Chilli wind 40 a few times with some excellent manoeuvres. Then flew his Boomerang Jet twice which was very impressive. Billy H was chuffed when he had a go but Neil refused to take the controls.



Neil flew his Tutor 2 five times and is now getting more confident with loops and barrel rolls (there is going to be a crash!). Under Dave's instruction he attempted a stall turn but the plane wouldn't do and stalled.

Sunday 16th August 2020 Several people on site and a reasonable amount of flying against a very grey sky. Dave Kelly turned up with his Boomerang jet which he has spent hours on rewiring and getting to start reliably. He had been flying it and had even passed the controls to Billy Hatley for his first jet pilot experience the previous day. He even offered Alan V a go of the controls, but wisely retracted the offer when Alan told him it was disappearing from his view when he banked it, and the only way he knew where it was, was by the sound! He was enjoying the flying when Jim Mc turned up to watch and Dave turned onto final approach but was a bit high, he spiralled gently to lose height and the plane went into a fatal spin. Dave takes up the story:

"Second flight I came around for landing I had to do a zig zag approach to lose a bit of height it was 100m up and it dived as it spiralled in...did I stall it? Did it flame out? (You don't hear flame outs when you are down wind) who knows? I'd done a stall and single turn spin with it earlier on Sunday and control response was great! I only lost 20-25metres height. When it started spinning I put in aileron both directions and (after letting it fall a bit) full up elevator and rudder...with no response. It dived in. It is repairable but it will take me a while if I do repair it..."

I am sure we all offer Dave our condolences and hope it will fly again soon.

Wednesday 19th August 2020 – Neil and Douglas arrived about 08:30. They were unable to fly as it was very foggy. Instead some field maintenance was carried out with weed killer around benches, under helicopter bench and along security fence. By then the sky had cleared.



Douglas Fulton flew his Riot and is still trying to get his landings right. Neil flew his Apprentice twice and his Tutor 2 four times.

Alan arrived but couldn't fly his Stearman biplane as he had issues with the engine.

Mike arrived about midday and flew his Riot and Helicopter.

Charles flew a Howard IKE DGA-5 which he got second hand from a friend at Old Warden, Bedfordshire. The model plans were from 1979. It was originally built for an IC engine but now runs on four cells and pulls 850 watts. It was built from scratch from the plan. It didn't fly too well as it was very pitch happy and roller-coasted around the sky. Charles is happy to have the challenge of getting it to fly properly.



Jim flew his Ugly stick a couple of times which was very impressive. It certainly moved around the Sky.

Douglas Gilmour flew his Arising Star very well and is pleased with his progress getting back into the hobby.

Grass cut by Mike & Neil.

Sunday 23rd August 2020

A busy day, lots of members present. It ended up a blur to Alan as he spent more hours setting up the Stearman only for it to start acting up yet again. With a little diagnostics from Tom Wilson we decided that the next point to change is the receiver switch. When shorted out of the system the plane started behaving better, but as Alan had disconnected the gyros it remained unflyable. Tom kindly cut Alan an east wind pilots box in the grass. So he can once again fly when the wind changes. Bert had fixed his Arising Star trainer with some bits from a scrap toaster, so he started the morning with a full hangar of planes. Unfortunately he got a bit carried away and nearly lost a plane due to having two ten min flights without changing the battery. Landing called just in time at 3% power left in the Lipo. Maxim came to the field with a powered glider still in the box. We know they call them ARTF but you're supposed to set them up in the workshop not on the grass at the field. He flew it literally straight out of the box, needing next to no trim, like a display pilot. We hope that he takes more care in the pre-flight full size Boeings he flies for a living!



Monday 24th August 2020

Perfect flying weather apparently. Billy Hatley was there all alone in the afternoon. After he left someone started strafing the runway with a Spitfire. We know we need a new mower but this seems like an extreme way to keep the grass cut!



Wednesday 26th August 2020

Heavy rain coming down. Neil, Alan and Douglas sat under the shelter between the sheds until the rain stopped. Sky cleared a bit after 45 minutes. Alan had been there since 10:30 and had 5 flights with his two well used electric planes. Douglas flew his Riot but then had to leave for the

supermarket. Neil flew his Tutor 2 twice but on the second flight the rain started to come down again so had to cut his flight short. Once everything was put away and the plane was wiped down he was soaking wet and left about 17:00.

Saturday 29th August 2020

The forecast was saying light westerly winds predicted. Trevor, who learnt to fly at our club a couple of years ago and reluctantly moved back to the Midlands earlier this year, paid us a visit. The reality was a Northerly wind averaging 15mph with gusts of 20mph. Trevor had several flights with his electric Wot4. Alan V. flew the Kingfisher. Dave Kelly embarrassed us all after having a few flights with the Chilli Wind, used all his remaining fuel flying his trainer. Upside down, sideways, rolling passes and more. It was also good to see Lindsay Dickie in energetic flying mood. Tom cut the grass for us. As far as I could see John Carson just came for the donuts.

Sunday 30th August 2020

Excellent day at the field. The sun didn't show itself very much and the wind wasn't sure whether it was going to blow from the south or the east but at one stage there must have been about 20 people flying their aircraft with nearly all flight benches in use. Presumably the high attendance was due to a popular ex member paying us a visit for the weekend. Trevor had travelled up from Birmingham as he missed KRMFC so much.



Pat Baxter was amongst the visitors to the field today and he was keen to qualify anyone who wanted to be tested. Alan and Douglas talked Neil into attempting his bronze, and he passed with his Tutor 2. Mike also passed his fixed wing bronze but it was just a formality for him. Well done to both Neil and Mike. Elbow bumps all round!



Dave Kelly was there but left early after impressing everyone putting his Nuance through its paces.

Trevor had waited all day to fly his Harvard. After assembling it he had a near perfect take off. He did a couple of circuits and then deployed flaps for a very smooth landing. He was ecstatic and he is now hooked on bigger scale petrol powered planes. It really topped off his trip to Scotland.



Newsletter Feedback and Contributions

Please let Alan know of anything you think should be included in the Newsletter, things you like or dislike. Any feedback would be much appreciated. Now that lockdown is over and the editors have other things to do, the Newsletter will be published monthly around 1st of each month. As always, the email address for articles is: alnvkrmfc@gmail.com

Radio Controlled Jet Aircraft *by Dave Kelly*

Neil asked me to put pen to paper for the club newsletter again, this time to discuss gas turbine jet engines. Radio controlled turbine powered aircraft have been around since the early 80's. Brit. Jerry Jackman was the first person to achieve a successful flight on March 20th 1983 at RAF Greenham Common with his own design engine and model called the "Barjay".



Jerry Jackman's 1983 Barjay with Homemade Engine, the first!

By 1992 the propane fuelled French Turborec JPX T240 became the first commercially available engine for RC use. Also in 1992 German, Kurt Schreckling published his book "Gas Turbines for Model Aircraft" with a full set of plans inside for his FD3/67 engine design. Key features were a plywood and carbon fibre bound homemade compressor (REALLY!!!) and diesel as the fuel of choice. Many tried but few succeeded in producing a reliable and powerful enough FD3/67 to sustain flight. This all changed with collaboration between Shreckling and Spanish turbine designer Jesus Artes with their KJ66 design. The pair realised that a much larger engine with around 12lbs (5.4Kg) of thrust upwards was required for carrying the weight, and extracting performance from models at the time. He also realised that propane, and carrying a high pressure gas cylinder in a van or car was not practicable for the majority of modellers and so like Shreckling chose diesel or kerosene as the fuel. The KJ66 was so named after Artes utilised a cast, commercially available 66mm Garrett automobile turbo charger compressor wheel, allowing higher RPM (and compression/power than a plywood compressor) and he published the engine plans which were available to buy. He also fabricated parts to enable jet engine kit builders and homebuilders to achieve successful builds of his design via this route. The engine design was modified and upgraded by Markus Zipperer as The Jetcat P80 and by other commercial entities. Power output varied between 12lbs (5.4Kg) for the

homebuilt engines and 17lbs (7.7Kg) of the now commercially available Jetcat. The engines all featured Gas start (more on that later) and kerosene/diesel fuel.



The Jesus Artes KJ66 Engine sectioned.

Back in Britain John Wright and Mike Murphy went an alternate route and decided smaller, lighter and higher throughput engines were the way to go, eventually forming Wren Turbines in Rotherham, England. Their engines by comparison featured 54mm and 44mm compressors (and although less powerful than the KJ66's and derivatives) they were an ideal power plant for all the converted ducted fan airframes commonly available at the time. John and Mike also made the first turbo shaft helicopter and turboprop gas generator versions of their designs commercially available too.



Progress has not stood still since, and this recent photo shows a direct comparison between the 2020 and 1992 technology.



Top: Manual start propane fuelled JPX T240 of 1992, 4.5kgs thrust, 2kgs weight.

Bottom: Full auto kero-restart (for glider use too) Xicoy X45 of 2020, 4.5kgs thrust 0.48Kgs weight.

We have come a long way in a short time!

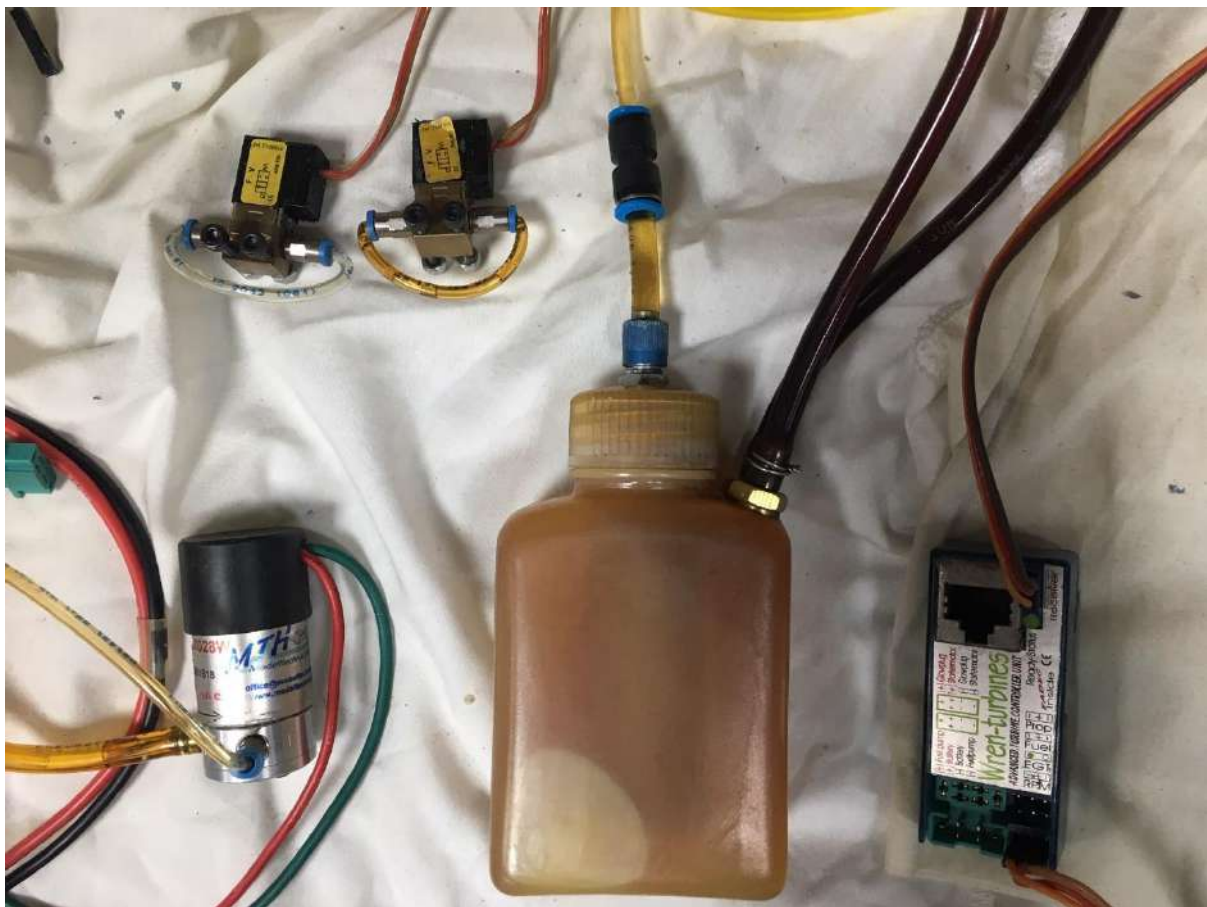
So how do they work?

Starting. The compressed air divers scuba bottle of the JPX days has been replaced with an electric motor and retractable starter Bendix. This also doubles up after engine shutdown for drawing cold air through the engine to reduce engine internal temperatures below 200 degree C thus preserving the engines longevity by reducing heat soak and possible distortion. All engines feature hypodermic needles as fuel nozzles inside the combustion chamber. However with the cold nozzles and low fuel pressure the fuel cannot be atomized sufficiently for combustion to begin, therefore propane or butane gas is applied after being ignited by a standard glow plug with the element “teased out” into the gas stream to allow sufficient heat in the combustion chamber, thereby atomizing the fuel during the starting or “fuel ramp” phase. The latest engines employ Kerostart which effectively pumps pulses of kerosene (with increasing frequency) across a piezo igniter providing the heat for atomization, thus dispensing with starting gas.

Fuel. Used nowadays is mostly kerosene / jet A1 or diesel and a mix of 5% Oil. Turbine oil can be used. Although some people prefer using racing outboard motor oil (DTE Light) and claim benefits include preventing coking of engine internals and ease of handling due to turbine oil having health and safety ramifications. The fuel is supplied via a precision machined and lapped electric pump (brushless on the latest turbines) and you can expect to consume 300-400ml a minute at full power for a 100N (Newton) (10Kg) engine. Thankfully you don’t use all that power often! And correspondingly less consumption at lower throttle settings. Processing such quantities of fuel

means that a fuel filter is installed both in the pit box / refuel station and in the model itself. I generally install the filter downstream of the pump. If the pump disintegrates you have a chance of catching the debris before it blocks the very fine fuel sticks and / or oil feed mix to the engine bearings. Unlike an IC engine any air bubbles in the turbines fuel supply will not give warning by uneven running. The turbine will “flame-out” instantly. To try to prevent this we utilise a small header tank with a filtered centre feed fixed clunk, or a pickup surrounded in a Gore-Tex bag / membrane to prevent ingress of air to the high pressure turbine fuel feed. Speaking of bearings, all turbines today feature ceramic angular contact ball bearings with a gentle preload applied by spring pressure.

All phases of engine running start / flight / shutdown are controlled with a small electronic ECU (Engine Control Unit) or FADEC (Fully Authority Digital Engine Control). These units all require RPM and temperature inputs and in return schedule the gas for starting and fuel pump supply via solenoid valves.



Turbine fuel system components:.. Clockwise from Top Left. Kerosene and Propane Fuel Solenoid valves, The Turbine Brain “The FADEC”, Centre lower the Bubble stopper UAT (ultimate air trap) header tank, precision machined fuel pump.

Airflow. The air enters the rotating compressor and is thrown radially outwards and compressed against tapered wedges on the front face of the diffuser. Our model engines are all of the “reverse flow type” whereby this rearwards flowing compressed gas stream is now passed along the inner wall of the turbines outer case eventually striking and changing direction on the rear casing. Before this some of the rearward gas flow, (through a series of angled holes in the combustion chamber), is utilised for chamber wall cooling and stabilises and centres the forward flowing flame inside the chamber. When mixed with the burning kerosene in the combustion chamber this now forward

flowing gas stream is once again turned around on the rear face of the diffuser, (note the curved radius on the sectioned KJ66 picture above), and again flows rearwards. This hot expanded gas stream now exits the engine via the nozzle guide vanes (NGV) expanding over the turbine blades where the energy is extracted providing the turbines motive force and exiting the engines exhaust nozzle..

Lubrication of the engine bearings is provided for by a “t-piece” in the fuel supply line and a restrictor which limits flow to the front bearing to prevent too high an oil flow, (smoke in exhaust and possible bearing skating issues), after exiting the front bearing the lube mix flows down the shaft tunnel (visible in the sectioned KJ66 photo) through the rear bearing where it is burned in the gas stream.

For any turbine flyer it's essential to take to the field a serviceable CO2 extinguisher for safety. (As mandated by the SAA, BMFA and JMA Safety Codes). A fuel station for refilling and draining the model with fuel is extremely beneficial as typically anything from 1.5Litres to 6 Litres of fuel may be required onboard the model (depending on engine size).



Composite ARF Flash Sport Jet with Jet Central Cheetah 140N Turbine

I have been flying turbine models since 2004. I think the noise, smell, smoothness and just the sheer performance of the models themselves is what excites and motivates me. I will say though that the difference between a wood/ foam Boomerang /Excalibur type “Club Field Model” with an 80N (8Kg) engine is a world away from an all composite sport jet with 120N+ (12Kg+) power on a disused airfield. Both are tremendous fun, I can assure you! But for me the Sport Jet is a real adrenaline rush. Imagine flying 6-8 minutes on a disused airfield at North of 160mph? ...It is a lot of miles and sky covered in short order and a fresh set of challenges for the pilot!

I have tried to pass the transmitter on occasion at the field and have tried to let others experience this facet of RC flying. It is really not difficult at all. Different? Certainly. Management of the throttle and the turbine is needed as the throttle response is not instantaneous. Unlike an electric or IC model, turbines require 3-5 seconds from idle to accelerate and a similar delay in decelerating as airflow through the engine catches up with the change in fuel flow due throttle position. You

definitely need the ability to stay ahead of the model (especially when fuel heavy at take-off speed when handling can be a little lethargic). I hope that with this article it will dispel the myths and intrigue around jet flying and hope many others will also take the plunge and experience it.

It is a thrill all the way and with the buoyant second hand market for turbines, engines and models it is becoming more affordable than ever before.

Civil Aircraft Markings *by Alan Veitch*

Whilst not wanting to turn you all into an anorak, plane spotting geek like me, here's something to ponder over. Apologies to those of you with PPLs that know more than me about the subject.

Some of you may have wondered about the markings on model planes, and their meanings. If you are building to scale, the markings of civilian planes mainly tell you (just like car registrations), where they were registered. With civilian planes that have letters in their registrations the first letter or letters before the hyphen show the country of origin. We in the UK have the designation G- then a four-letter code for the particular plane. Here are a few more.....

F- France, D- Germany, C- or CF- Canada, SP- Poland, CS- Portugal (CR pre 1975), SE- Sweden

Some countries took a slightly different approach and instead of using letters used an alpha numeric registration, which actually makes a reduced number of possibilities before you start to repeat yourself. The use of four letters gives 456,976 different registrations, using four numbers gives only 9,999 different registrations.

Hence the wonderment that the USA, the country with the most planes registered anywhere in the world decided to have N followed by a number.

N1 to N99999 **oops, stick some letters in.**

N1A to N9999Z **still not enough, put some more in.**

N1AA to N999ZZ. **That's better now we can use call signs like everyone else.**

Prior to 1948 the letter 'N' was usually suffixed by one of the six following; 'C' for Commercial, 'L' for Limited, 'P' for Private, 'R' for Restricted, 'S' for State or 'X' for Experimental.

So, when you are building your models think about getting some scale details which can make all the difference. I apologise in advance for my anti-American comments here but I am not a fan of the American aircraft industry, past or present so any addition to my hanger needs to be modified sooner or later. My Stearman came with an American N registration, which was stripped off as soon as I acquired the plane.



But as you may or may not have noticed it now carries the registration G-ALNA on it in discrete graphics. My apologies to the tiger moth which this registration really belongs to. My other plane the Seagull Challenger carries the registration G-ALNV on it but I am unable as yet to find out which aircraft it belonged to. You must realise in the early days a lot of aircraft crashed and were scrapped on their first flight, or very soon after starting life. Much like your models, which means that registration details can be thin on the ground.

A Blast from the Past



Weekend 21st & 22nd June 2014

Saturday 21st June

A mixture of fortunes this weekend with Billy Dunn taking the brunt of things. First up was Saturday and a visit to the Balbedie Mid-Summer Extravaganza. Billy and Davie rendezvoused in a layby just short of the site. I'm sure this must have looked like something dodgy to the passers-by! Heading in we off loaded and got a few flights under our belts. Later in the day Ally Grant turned up. Ally had brought along his nice shiny Texan, flying it very scale like?. It approached for landing, suddenly it ballooned up and flipped over onto its back, unfortunately it would not respond to any movements and landed in the farmers field, damaged but not beyond repair and now in the hands of Doctor Bennett.

Davie Cameron took his Heli up for a flight, so impressed were the onlookers that when Davie landed he got a round of applause.

Unfortunately we never made it back to KRMFC that day but I'm told that although quiet for a Saturday, those who were there enjoyed themselves.

Sunday 22nd June

Up early and the site set up. It was not long before club members began to turn out. A good turnout of fixed wing and Helicopters. A BBQ was sparked up at 12:30 and anyone that had brought some food threw it on, a great idea and one which we hope to have again soon. Pat Baxter I'm glad to report has become a regular at the club again and is flying his plane like he has never been away. 2 turbines on display and sounding good. Gary Lee is throwing his Heli about like a man possessed, at one point he was inverted over the farmers field and his blades dipped just under the top of the corn and he quickly pulled out.....LOWER!!

Tom Brown turned up in a pair of shorts.....not a pretty sight.

Dougie Thornton launched Billy's delta for him. Sadly Billy took his eye off it for a split second which was enough to see it go in, his dog Kaylee is being used as the excuse. Get that one in the book of excuses.

Young Mark removed the training legs from his Heli for the first time (or should I say the club troublemakers did), thankfully no problems apart from nerves.

Nice to see both club trainers in use, young Mark had a go on the Boomerang. Billy had a shot of the Heli, and surprisingly Jim Kane asked if he could have a go of the Boomerang. Jim as most of you will know has now converted to Jets, I think he was actually enjoying flying the trainer!!

Hope the weather stays with us; we are ebbing closer to the Heli Fly-in.....

Good health to you all

KEEP WELL

The Committee