

# BRISBANE VALLEY FLYER

APRIL - 2014



Watts Bridge Memorial Airfield, Cressbrook-Caboonbah Road, Toogoolawah, Q'ld 4313.



Orlican L40 Meta Sokol, Watts Bridge airfield. Come to the Fly-in – see page 6.

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### **Wheelbarrowing an Aeroplane is not Cool.**

**(By Rob Knight)**

*Scene 1: A fine day with a light wind blowing across the runway at about 5 knots. A light aircraft is on short finals, airspeed is just a few knots fast and the aircraft, tracking slightly, is astride the centre-line and a bit high. The aircraft reaches the flare point further into the runway than the pilot likes so he decides to get the wheels onto the ground where he will have some braking.*

*Scene 2: Inside the cockpit the pilot hasn't allowed the aircraft to float as normal to wash the airspeed off. He flares just enough to let the aircraft touch down on the mains and nosewheel simultaneously.*

*Scene 3: From outside the aircraft the tyres squeak and the aircraft bounces gently. You can see the trailing edge of the elevator move down as the pilot pushes the stick forward to hold the aircraft on the ground. The nose is forced down onto the nosewheel wheel and the nosewheel suspension flexes as the leg shortens. The aircraft has begun to drift slightly across the runway with the crosswind*

*Scene 4: Inside the cockpit the pilot reaches for the brakes and applies them firmly. Too much of the runway is behind him so he presses the stick further forward and applies even more pressure on the brakes.*

*Scene 5: The main wheel leg lengths extend as the tail rises and the nose pitches even further down. The main wheels stop rotating as the traction diminishes; the weight has come almost completely off the main wheels. Directional control is lost – falling airspeed has robbed the controls of their effectiveness and any chance of useful differential braking is gone- the braking wheels are virtually off the ground and, anyway, the pilot is too engaged to try to use them. The aircraft continues to drift further away from the runway centreline.*

*Final scene: The aircraft suddenly snaps and yaws violently, yawing into wind and pivoting around the point of contact of nosewheel with the runway. The nose leg fractures and collapses. The prop strikes the ground and bends backwards as the cowling crumples and tears away beneath engine. The tail and windward wing rise and the aircraft slowly topples tail over nose to lie upside down on the runway. There is silence except for the crackle of bending metal as the wreck settles. There is a strong smell of petrol in the air.....*

Wheel-barrowing is a dangerous condition that occurs when the weight of an aircraft becomes concentrated on the nose wheel during a take-off or landing roll.

On take-off, the common cause is the pilot holding the aeroplane on the ground too long, particularly when a crosswind is present. When this flawed technique is used the forward stick that holds the aeroplane on the ground by pitching the nose down unloads the main-wheels, transferring the load to the nosewheel. This extra heavy nosewheel loading compresses the nose-wheel suspension and forces the nosewheel to remain in firm contact with the runway. This is *wheel-barrowing*.

In this condition, any yaw will set up a couple that will turn your aeroplane, and your very world, upside down. All directional control will be lost and the aeroplane will trip over its nose-wheel.

In reality, there is no cause to keep an aeroplane on the ground after it has reached its  $V_x$  (best angle of climb speed), indeed, there are very good reasons to be airborne before this figure is reached. If a pilot considers that he/she should hold their aeroplane down until attaining its  $V_x$  before lift-off, then the flight should be cancelled or postponed until better conditions exist.

Wheelbarrowing is more frequently an issue during the landing phase. Commonly, it results from approaching too fast and then touching-down too flat. As the rebound from the undercarriage tries to make it fly off again the pilot takes the stick forward to hold the aircraft on the ground. The applied forward stick will pitch the aeroplane nose down, unloading the main wheels and loading the nosewheel instead. With the aircraft main wheels on tip-toe braking will be lost because the wheels have insufficient weight on the tyres to provide

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traction for brakes to function. The nose wheel, still in firm contact with the runway, will suffer substantial drag, and any lateral movement will create a powerful couple that yaws the aeroplane and it will pivot violently about its nosewheel.

To get a grip on this topic, it is necessary to be clear on what a 'couple' is in this sense.

A Couple is a force acting about a point. The magnitude (power) of a couple varies with either a change in the power of the force applied, or a change in the arm of the force. A couple can ONLY be opposed by another couple.

In a 'normal' landing, when the main wheels (PW and SW) touch the runway with the nosewheel (NW) clear, two couples are generated by the contact the wheels have with the runway. The magnitude of each couple is determined by the drag force of the tire/wheel and the length of the couple arm - the distance between the point of application of the drag force and the aircraft Centre of Gravity.

Assuming the same drag applies to each wheel, when the aircraft is pointing in the same direction as it is travelling the couples are equal (red and blue couple arms are the same length) and no yaw will be caused by this interaction.

This makes a nosewheel equipped aircraft easy to control on the runway because it is

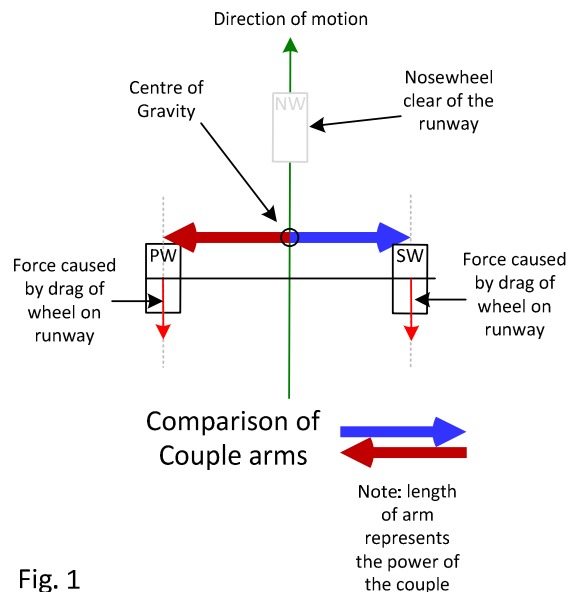


Fig. 1

*Using the correct take-off and landing techniques provides a directionally stable aircraft. Drag from the wheels in contact with the runway provides a directionally corrective force.*

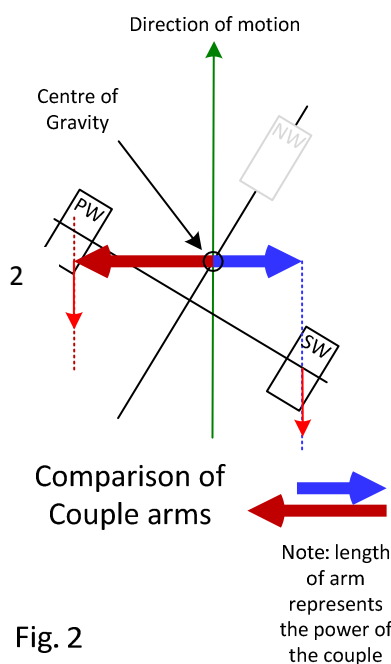


Fig. 2

directionally stable and its forces try to keep its nose aligned with its direction of movement without pilot input. See Fig. 1.

As Fig. 2 illustrates, this is a STABLE action because it yaws the aircraft back towards its direction of motion and as it does so the couple arm shortens, diminishing the force as the alignment completes. In other words – the aeroplane WANTS to move in a straight line. The weight and drag forces tend to keep the aeroplane moving straight

However, this will ONLY be the case while the main wheels are on the runway and have traction with it. If the main wheels are not in contact with the runway and the load is on the nosewheel, an entirely different situation exists.

If, whilst the aircraft has weight on the main wheels, the nosewheel is clear BUT the aircraft nose is NOT pointing in the same direction as the aircraft is moving, then the couples will not be equal – the leading main wheel will have a greater arm and therefore more powerful couple. This, the red couple as illustrated, is more powerful than the blue couple, and the

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imbalance provides a force to yaw the aircraft's nose and align it with the direction of motion.

However, when the nosewheel is on the runway and the main wheels aren't, the situation becomes critical.

Fig. 3. If, in this state, the drag generated by the nose-wheel is directly aligned with the centre of gravity and the direction of motion, no couple is formed and there is no yaw force generated.

However, Immediately the nosewheel diverges from its alignment with the centre of gravity will immediately create a couple that generates the unstable yawing moment. For example- See Fig's 4, 5, & 6.

Fig. 4. If the nosewheel has moved to the right, the drag force caused by nose wheel contact with the runway is now no longer aligned with the centre of gravity and direction of motion. A couple is formed.

*Yaw creates an unstable condition that that can quickly become an out of control situation.*

Fig. 5. The grey force of the aircraft's mass acting through the aircraft centre of gravity is moving forward while the red drag force created by the drag on the nose-wheel's contact with the runway acts rearwards. This will savagely yank the aircraft into a right yaw state and, as the yaw takes effect and the angle change increases, the arm gets longer and thus very quickly more powerful.

Fig. 6. The magnitude of the couple has increased greatly with the changing angle. Not only is the arm longer, but the front wheel has less rolling ability and the now scuffing tire has greater drag than it initially had.

The situation is now serious. The aircraft still has just the nosewheel on the runway and the yaw forces are now beyond correction by the rudder. Removing forward pressure on the stick and then adding full power may allow the aircraft to fly off but as curative action it is doubtful at best. Effective control is lost and there are no remedial options available to the pilot at this late stage.

This is, in effect, a ground loop condition and the side loads on the nose wheel assembly will quickly exceed their design limits. The nose leg will fail. The prop may strike the ground and disintegrate. Parts of the propeller may enter the cockpit with fatal consequences. This can ruin your WHOLE day. However, on the bright side, the landing will be short!

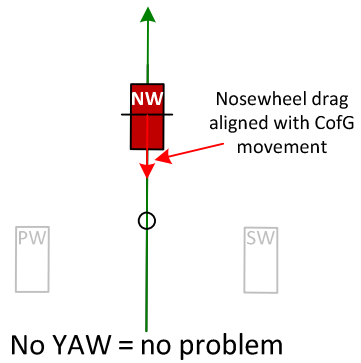


Fig. 3

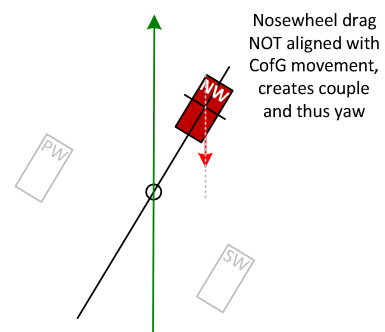


Fig. 4

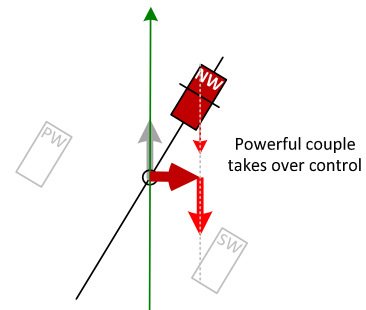


Fig. 5

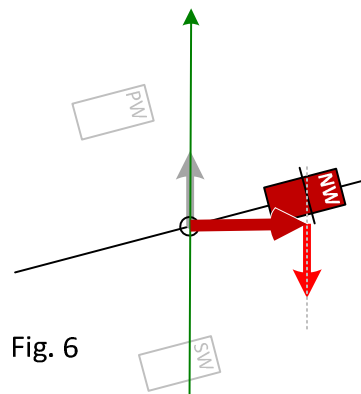


Fig. 6



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While the best correction is to never get into this condition in the first place, an immediate go-around BEFORE substantial yaw is experienced can resolve the problem – but early recognition of the pending problem is paramount. The correct landing technique has the main wheels touching first and the nose wheel settling only in such a manner that a positive load is retained on the main wheels as the speed washes off.

As you can see, there are very good reasons for this.

### **BREAKING NEWS BREAKING NEWS BREAKING NEWS**

#### **CLUBROOMS**

At LAST - the BVSAC Clubrooms at Watts Bridge have finally been signed off by the Somerset Council. This is a great conclusion to a major club undertaking.

This did not happen on its own – like all things in all clubs there have been a number of Shakers and Movers without whom the job would never been started let alone finished.

This debt of thanks goes to every club member that assisted but in particular to:


- ✓ Mal McKenzie who was instrumental in getting the idea off the ground and did a lot of the initial planning work, getting of quotes etc.
- ✓ David, Peter, and Ian Ratcliffe. These brothers did a lot of work with the fit-out, trimming and finishing.
- ✓ Mike Smith did many jobs and co-ordinated the electrical fit-out.
- ✓ Peter Freeman assisted with the gas installation and making the toilet system work.
- ✓ Wayne Petty finished up the bathroom and fitted shelving and doors to the kitchen area. He also organized the final inspection.

Now we need to have a party to christen it.



BVSAC Clubrooms being put to great use

# ALL-IN FLY-IN 2014



**Watts Bridge Memorial Airfield Inc**  
**31<sup>st</sup> May 2014**  
**9:00am - 4:00pm**

**Catering By: Beyond Limits**  
**Supporting Youth For Education**


All pilots and aviation enthusiasts are invited to the Watts Bridge Airfield Open Day, showcasing the diversity of all forms of recreational aviation.

The All-In Fly-In is an all day event with on-field catering and coffee available.

Entry is free with no landing fees.  
Aviation fuel is available on the airfield.

Richard 0412-317-754      Liz 0419-369-963

**If it flies - It's welcome at Watts Bridge !**  
**[www.wattsbridge.com.au](http://www.wattsbridge.com.au)**



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### WARNING

#### Insitu Pacific operations at Watts Bridge

Insitu Pacific intends to operate from Watts Bridge for a two week period between April 7-17. Flight Operations will be conducted during daylight (Mon-Fri) and will continue to 'Fly Neighbourly'.

Flight operations between 8-11 April will be conducted in co-operation with ARCAA, who will also be present at Insitu Pacific's site.

Insitu Pacific will arrange NOTAM activation of the overhead airspace (D651) at Watts Bridge.

#### Nigel Meadows

##### Chief Remote Pilot | Insitu Pacific

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[www.insitupacific.com](http://www.insitupacific.com)

Insitu Pacific Main Office: 07 3182 4000

**Note the dates – START April 07 – FINISH April 17<sup>th</sup>.**

#### Clifton Fly-in (by Mike & Priscilla Smith)

Peter and Julie Freeman flew down in their Cessna and a number of members drove. The airfield was in great condition as usual, and about 65 planes flew in throughout the day.

The weather remained good, albeit a little windy. On flying back to Jacobs Well, we had to dodge a few showers and endure a very rough ride over the hills, but a reasonable trip overall.



Priscilla and the Jabiru, with Greg Robertson's Nynja behind at Clifton.

#### FLY-INS Looming

<b>Apr 12</b>	Caloundra, QLD	<a href="#">Aero Engine Run Day</a>
<b>Apr 12</b>	Murgon (Angelfield), QLD	<a href="#">Angelfield Brekkie Fly-in Murgon</a>
<b>Apr 18</b>	Sunshine Coast, QLD	<a href="#">SCAC Friday Clubhouse BBQ &amp; Bar</a>

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### Inglewood Ultra-Light-3 Day weekend

**25<sup>th</sup> - 27<sup>th</sup> April 2014**

ANZAC Day Service will be 10am at the ANZAC Memorial Park

From lunch time on **Friday 25<sup>th</sup>** – we will be offering tea/coffee, soft drinks, hot pies, & sausage rolls and salad rolls available at the airstrip. Accommodation and eateries are listed below.

**Saturday the 26<sup>th</sup>** – breakfast, smokos, and the Saturday night **Special Dinner** at the airstrip.

**Sunday the 27<sup>th</sup>** – breakfast and smoko will be available before you fly home.

All proceeds from the weekend will go to help families on drought affected properties in Western QLD. The money will be spent on food vouchers to be used at their local supermarkets to help the businesses in the towns.

#### **ACCOMMODATION**

Inglewood Motel	Darryl	07-46521377
Olympic	George & Ann	46521333
Commercial Hotel	George & Ann	46521357
Spur H Caravan Park		46521407
Lake Coolmunda Caravan Park	Troy	46524171
Royal Hotel	John	46521080

#### **Food**

Inglewood Bake House	Tony	46521315
Inglewood Coffee Shop	Rob & Sharon	46522125
Olympic Restaurant & Take Away	George & Ann	46521333
Inglewood Bowls Club		46521103
Rosa Bella Nursery (Saturday)	Helen	46521800
Shell Inglewood	Dave & Sharon	46521142
Dorries Takeaway	Dorrie	46522502

#### **Businesses**

Shell Inglewood - Fuel	Dave & Sharon	46521142
Ralphies RACQ - Fuel	Ralphie	46521386
McDougall's Merch & H/Ware	Meg	46521499
Newsagency	Trisha	46521011



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### Mystery Aircraft (April Issue)

What's this?



ALAS  
No one contacted me to identify this  
aircraft.

### Mystery Aircraft (March) issue

The mystery aircraft in the March 2014 Issue was a Pützer Elster B with 52 hp Porsche engine. German built, and derived from a pre-WW2 German glider, this aircraft was first built in 1958. Several examples are still flying.

## Joke for the Month

1. Basic Flying Rules: (Cont)
  8. Weather forecasts are horoscopes with numbers attached.
  9. Keep looking around. There's always something you've missed.
  10. When in doubt, hold on to your altitude. No one has ever collided with the sky.
  11. If you push the stick forward, the houses get bigger. If you pull the stick back, they get smaller. That is, unless you keep pulling the stick all the way back, then they get bigger again

## BirdsiPhotography

Want an air-to-air or ground shot of you and your dream machine? It's easy to arrange and will cost less than you might think. Grab the phone and contact Peter Davies or Rob Knight on 0400 89 3632, or email [kni.rob@bigpond.com](mailto:kni.rob@bigpond.com)



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### **Keeping up with the Play** (Test yourself – how good are you, really?)

1. The shortest distance between any two points on the earth's surface is:  
☐ A. Would be a track made good.  
☐ B. Would be great circle track.  
☐ C. Would be a rhumb line track.  
☐ D. Would be a linear planetoidal track.
2. A pilot takes-off on a day with no wind. First he flies due East for two hours, then he flies due north for two hours. He then turns and flies due West for two hours. If he then flies due south for two hours he will be:  
☐ A. At home at his departure point.  
☐ B. West of his departure point.  
☐ C. South of his departure point.  
☐ D. East of his departure point.  
☐ E. North of his departure point.
3. Why does an aircraft nose yaw towards the dropping wing in a wing drop stall?  
☐ A. Because the drag increases on the dropping wing.  
☐ B. Because the pilot is recovering from the wing drop and using the rudder correctly.  
☐ C. Because of aileron drag when the ailerons pick the wing up in the recovery.  
☐ D. Because of "P" factor from the propeller.  
☐
4. In a slipping turn:  
☐ A. The angle of bank is too shallow for the rate of turn.  
☐ B. The angle of bank is too steep for the rate of turn.  
☐ C. Aileron drag from the crossed controls helps keep the angle of bank constant.  
☐ D. Aileron drag causes the angle of bank to reduce.
5. When a pilot turns a magneto OFF:  
☐ A. They OPEN the circuit carrying current through the points to earth.  
☐ B. They CLOSE the circuit carrying HT current to the spark plugs.  
☐ C. They CLOSE the circuit carrying current through the points to earth.  
☐ D. They OPEN the circuit carrying HT current to the spark plugs.

ANSWERS: 1. B, 2. D, 3. A, 4. B, 5. C.

If you have any problems with these questions, call me(in the evenings) and let's discuss it! Ed.

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# BRISBANE VALLEY SPORT AVIATION CLUB Inc

## MINUTES OF THE 01.03.2014 GENERAL MEETING

**MEETING LOCATION:** Watts Bridge Memorial Airfield – BVSAC Clubrooms

**MEETING DATE:** 1<sup>st</sup> March 2014

**MEETING OPENED:** 10:07AM

**MEMBERS PRESENT:** 20

**APOLOGIES:** Steve Cattanach, Mal McKenzie, Wayne Petty, Scott Meredith

**VISITORS:** 1

**NEW MEMBERS:** Nil

**MINUTES:** February 2014 meeting of the BVSAC Inc.  
Proposed: Mike Smith Seconded: Richard Faint.  
Acceptance motion carried.

**PRESIDENT'S REPORT:** No report.

**SECRETARY'S REPORT:** Letter from WBMA re: South East Queensland Astronomical Society.  
Letter from WBMA re: Concreting hangar floor.

**TREASURER'S REPORT:** Priscilla provided a financial statement advising the BVSAC Bank Account Balance is \$17,196.04 and provided a summary of the major income and expenditure items.

**WBMA REPORT:** Bruce Clarke noted that bailing of the grass on the airfield has been undertaken.

Bruce also spoke about early planning to have the Gathering Of Eagles Fly In which is held in late August, become a 2 day event open to the public. The fly-in would be aimed at attracting all kinds of aircraft including larger "heavy metal" aircraft as well as there being joy flights etc. There would be an entrance fee for drive-in visitors. Homebase Groups would be encouraged to support the event.

**BUSINESS ARISING:** A wreath for the ANZAC Day Remembrance Service will cost \$110.  
Neil to go ahead with obtaining a wreath for the service.

WBMA advise that concreting the hangar floor will not require approval on the proviso that the work be carried out to relevant standards by approved trades people.

Priscilla advised that the NAB have a variety of short term interest bearing products.

A motion to invest \$15,000 in an NAB Rewards Saver account was put to the meeting.

Moved by Jim Bowling. Seconded by Peter Ratcliffe. Motion carried unanimously.

**GENERAL BUSINESS:** Mike Smith noted that the Smiths arrived early for the meeting!

Finishing the clubrooms was discussed.

Richard to contact Wayne Petty re: Completing the cornice in the bathroom and manufacturing and fitting cupboard doors in the kitchen area.

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Richard to advise the WBMA that BVSAC is prepared to allow the South East Queensland Astronomical Society the use of the club's facilities on a "once off" trial.

The fee would be \$100 for the weekend.

It was stressed that the SEQAS should leave the clubrooms in a clean and tidy condition.

Concreting requirements for the club's hangar floor was discussed.

Ian Ratcliffe and John Innes are to procure quotations for concreting the hangar floor.

RA Aus representative Mike Smith spoke about CASA Ramp Checks and the various requirements that need to be met to successfully pass a ramp check.

Mike spoke about the "checklist card" that was enclosed in the RA Aus Sport Pilot magazine.

### **NEXT MEETING:**

The next meeting will be 05 04 2014 in the BVSAC Clubrooms Watts Bridge at 10:00AM

A BBQ lunch will follow the meeting.

### **MEETING CLOSED:**

There being no further business, the meeting was declared closed at 11:07AM

A BBQ lunch was held after the meeting.

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