FLY ABOUT

OFFICIAL ORGAN OF THE NORTHAM AERO CLUB (INC)

POST OFFICE BOX 247 NORTHAM WA 6401

PRINT POST 100018823

Volume 48 Issue No. 8 August 2017

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PRESIDENTS REPORT

Hi Members, it is finally upon us, this magnificent and colourful National Ballooning Championships. Our competitor numbers are up on last time but we are more prepared this time around. Friday 1st September will be pilot registration in the afternoon at the club rooms so come on down and meet the pilots and crew. Saturday and Sunday will be practice days, weather permitting, with competition starting on Monday, all welcome. A big thanks to all our volunteers.

I would like to welcome Kim Lawrence as our new Committee member and the re elected Committee for 2017/2018. Kim will be in charge of House and Grounds.

A big thanks goes to Western Airmotive and Les Ballantyne Jewellers for the donations of the annual dinner trophies with Peter Hill once again being named Club Champion, closely followed by Ashley Smith and Howie Pieterse coming in third. A big thanks also to all the competitors and our judges during the year.

Thank you to the National Ballooning Championships committee for the $5,000 they donated towards our Aviation Scholarships. We have recognised 5 successful applications in both ballooning and fixed wing and wish them good luck in their flight careers.

Huge recognition to Peter and Michael Clements and young apprentice Jack for the work they did on the Northam Aero Club briefing room. Peter and Michael will need to be careful because young Jack is a very quick learner and will soon be telling them how to do their job.

As a great souvenir of the Championships we have a number of stubby holders for sale at the bar in the clubrooms so I would advise you to get in early before they are sold out.

We would like to sell TIFs and TIF vouchers during the Championships so please contact either myself or secretary@northamaeroclub.com for details.

We have formed a 50 year anniversary sub-committee being Claude, Gren and Matt and they will be your contact points for any input towards the Anniversary which is still undated but definitely going ahead in 2018.

Cheers, Errol
0428 880 149

Club Captains Report

Sunday 13 th AUGUST was our Monthly Flying Comp.
" WONGAMINE BROOK RECONNAISSANCE ."

Nominated Times with Radio Calls and Short Field Ops, plus ground targets to be identified etc.
Each Pilot nominated their own time for the journey so not a race ,just a safe and interesting little cross country.

We all enjoyed the flying, though some of our Valued Pilots were not with us today, maybe superstition around number 13?
I must admit the weather was a bit of a challenge , but everything went well.
We welcome a new guest/old Pilot from Dowerin region, Mr Bob Carr, Bob flew 2 separate sorties as navigator for some of our Pilots,who appreciated his company and hope to see him as a regular at NAC Flying Comps in coming months.
Welcome to NAC Bob!
NAC flight Crews gathered in the Flight office in good spirits with a nice cuppa and cake from the Lovely Ladies of the Kitchen!
As always I would once again sincerely thank our ladies for their fantastic cakes and bikkies, tea and coffee etc. Megan, Makayla & Kate, THANK YOU!
All TEAM NAC pilots had full Comp Sheets 30 days prior as usual, so ample time to read/print off /fly some practice runs.
Pilots who fly NAC Monthly Comps give themselves every opportunity to keep their flying skills current, well honed and proficient, so it is no surprise that all scores are pretty close.
Visitors had great seats and lots of tea and cake!
Nominated Times decided the finishing order for this Comp..
JUDGES: Radio: Matt Bignell.
Runway: Shaun, Megan and Junior Member Makayla.
Thank you, we all value your work greatly.
NEXT NAC FLYING COMP : SUNDAY 10th SEPTEMBER 2017. 9 a.m. start Northam Airfield. "JENNACUBBINE AIR TRIAL"
All Pilots have full Comp sheets with 4 weeks to go, so Fly it.
All Members welcome, refreshments provided, and seats available in Club Aircraft for Members who would like to fly with TEAM NAC.
See you Sunday 10th SEPTEMBER, 9 am at Northam Airfield.
Until then, Thank You and Stay Safe.
Peter Hill
Club Captain 0450415947 prh@aurora.net.au

MONTHLY COMPETITION RESULTS:

First Place	Cessna 172	VH-PGL	Ashley Smith
Second	Cessna 152	VH-BFC	Peter Hill
Third	Cessna 172	VH-PGL	Russell Steicke
Fourth	Cessna 172	VH-PGL	Ian Berry

Sincere congratulations to all Competitors !

Matt is away for September

Just a reminder that while Matt is away for the month of September and will be unavailable for Aircraft Bookings during September.

Dave Beech will be the contact to make aircraft bookings.

You can contact Dave Beech for Aircraft Bookings on 0416 242 846 or dbeech@iinet.net.au

The Aero Club Members Bar will be open from 5pm – 7pm during the week of the
National Ballooning Championships
1st to 9th September
subject to staff volunteers.

WANTED

Pictures, Stories, Tales, Adventures, Gossip.

In fact anything at all.

If you have a story to tell please send it to me and share it with your fellow club members.

I am always on the lookout for items to share.

martinj1@iinet.net.au

UPDATE

01 April 2017

2017 National BALLOONING Championships NORTHAM, WA

ONLY 2 WEEKS TO GO

The National Ballooning Championships 2017 will take place between 2 and 9 September 2017 in Northam. The event is just around the corner and the Planning Committee is busy making preparations for the event.

Business and Activity Opportunity

There will be an increased number of people in Northam during this event. This will provide the perfect opportunity to run an activity or to open your business as people will be looking for things to do, places to eat and things to see during their visit to Northam.

Contact the Shire of Northam's Community Development Officer, Michelle Blackhurst by email cdo@northam.wa.gov.au or telephone 9622 6100 so that we can assist you to market your activity to the community.

Pilot Registrations

Registrations for Balloon Pilots to attend are now open and the Committee has started to receive registrations from Pilots who will be attending.

Volunteers

Would you like to be amongst all the action and join us for a week of fun and do something you'll never forget? The Committee is searching for volunteers for the following tasks:

- Drivers with a 4WD who are able to tow a trailer with the balloon and basket and drive the pilot and crew to the launch field and retrieve the balloon once it has landed.
- Balloon Crew. You would be helping set up the balloon for launch and packing the balloon away once landed. This is a very physical task so you would be required to do some heavy lifting.

Training will be provided for all tasks.

This is a great opportunity to get up close and personal where the action is and spend the week chasing balloons. Please only apply if you are available from 5am-9am and then 3pm-6pm, from the 2/9/2017 - 9/9/2017.

Merchandise

Limited edition Ballooning badges are now available for $5 (plus postage if required). These can be purchased from the Northam Visitor Centre or you can place an order for a badge via email bbacclements@bigpond.com.

Sponsorship Opportunity

The Planning Committee are offering a limited number of sponsorship opportunities. If you are interested in finding out more, please contact us via email northamballooning@gmail.com.

NAC

NORTHAM AERO CLUB

LEARN TO FLY

Flight Training available at Northam Aero Club

Dual Hire ……..……$300/hour

Private Hire ……......$210/hour

TIF's ……..……$155/30mins

Instructor only (Club aircraft) ……..$100/hour

Instructor only (pilot provides own aircraft)…..$90/hour

Landing fees and AirServices Australia charges:

Where applicable are to be paid by the pilot or Student Pilot.

Call Matt Bignell for Aircraft bookings,
0407 873 700

NORTHAM AERO CLUB

Stubby Holders:

Members $7.50

Non-members $10.00

An Update on the Ed's Air Force

Well an awful lot has happened since my last update and yet no progress has really been made on getting all or any of my private air force back in the air!

A long road trip from Batchelor in the NT to Benalla in NE Vic. with our latest acquisition VH-GWD has taken place.
We departed Batchelor in the mid to late afternoon, after removing the wings and loading "Gertrude" (GWD) on to a purpose built recovery trailer. (Below left).

Gertrude on her way home at Glendambo Roadhouse.

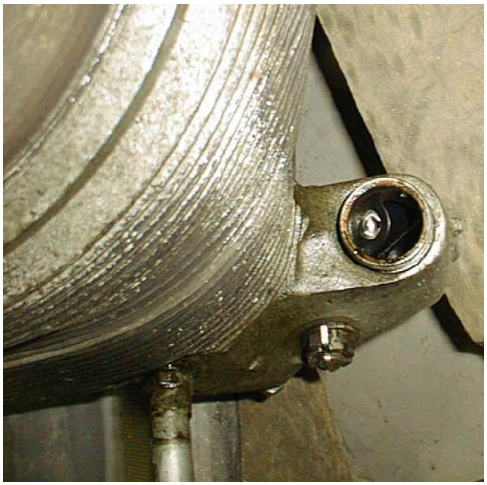
If you think Avgas is expensive, buy petrol in the outback!!

Three days and $1300 worth of petrol later and she was safely on a storage dolly in a hangar at Wangaratta. (Below)

"Rattles" (VH-RTL) is all ready to be loaded on to the same trailer for the same trip, more on this trip next month!!!

FRIED VALVES

Reprinted from the AV Web, website
https://www.avweb.com/news/pelican/182155-1.html
PART II



Our story continues this month with a picture (left), of the Side view of rocker box, showing parts.

Even at idle RPM, and even though valves actuate only once in two engine revolutions, the mechanisms are a blur in action. All valves are held closed with very strong springs, and get pushed closed even harder by the pressure of combustion. They are opened by means of a "pushrod" driven by cam rings in radial engines or by camshafts in "flat" engines. The valve head must be at the top of the cylinder, so the valve stem projects out and away from the engine. The usual method of choice for actuation is to have a "rocker arm" with one end of the rocker on the end of the valve stem, and the other on a "pushrod" that rides on the cam ring or camshaft. The cam rings and camshafts are geared so that a "bump" or "lobe" comes up under that pushrod every other crankshaft rotation.

Even though the valves open and close in split seconds, the slope of the cam lobe "gradually" opens and closes the valve, reducing the impact forces transmitted through the linkage. The slope on the back side of the cam also lets the valve close "gently." "Gently" is a relative term here — at least it's more gentle than letting that valve snap closed under full

The interface between the valve face and the valve "seat" that is pressed into the cylinder head is absolutely critical, but not for the reasons you might expect. It's true that this metal-to-metal interface needs to make a good seal to contain the 800-1000 PSI combustion event, but that can be done with a very slim point of contact. The really critical purpose of the metal-to-metal interface is for cooling the valve face, which gets pretty hot.

For more on this, see the following two links to John Schwaner's Sacramento Sky Ranch web site:

http://www.sacskyranch.com/bvalve.htm
http://www.sacskyranch.com/eng176.htm

How Valves Keep Their Cool

All valve heating comes from the combustion event, which takes place right at the valve face, inside the combustion chamber. The valve face is subjected to a momentary blast of 3,000°F to 4,000°F when combustion is taking place. As the piston drops away, the pressure (and with it, the temperature) falls dramatically. Once the combustion event is over, the valve opens, and burned gasses (at much lower temperatures) exit past that valve-to-seat interface, carrying some heat away.

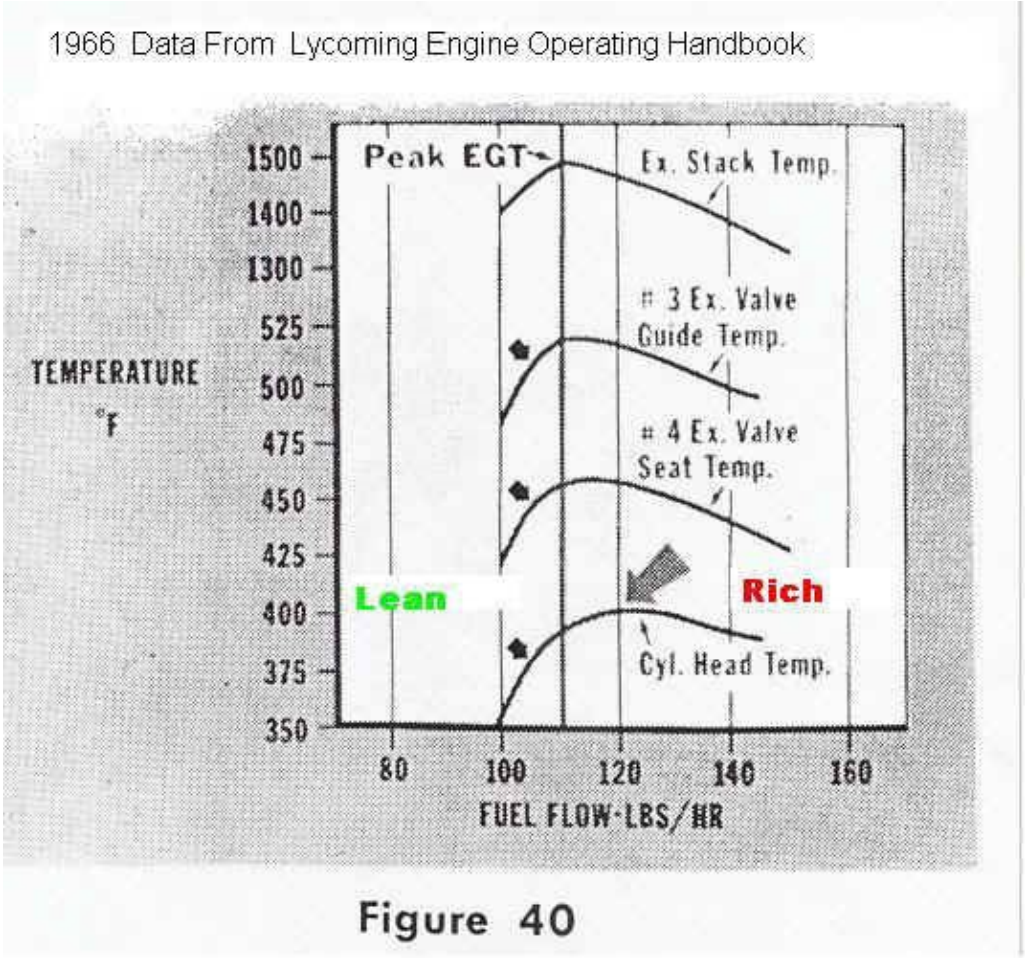
Somehow, the heat in that valve face must be removed. There are only two paths for that heat to take: (1) via the rim of the valve face to the valve seat, and (2) via the valve stem to the valve guide. During the time the valve is closed (about 75% of the time), most of the heat is conducted from the hot valve face into the much cooler valve seat, then to the still cooler cylinder head and cooling fins. Once there, it is carried away by airflow (or liquid cooling on engines so equipped).

Some heat conducts along the valve stem, and if the fit in the valve guide is true and correct, that will also be conducted to the valve guide, to any oil bathing the area, to the cylinder head, the cooling fins, and away.

Estimates vary, but normally, about 75% of the remaining heat in the valve is conducted away by the valve seat, and about 25% by the valve guide. (Sodium-filled valves are a little different — maybe 65%/ 35% or 60%/40% on the split.) Now, the valve itself doesn't go from 4,000°F to 400°F degrees in an instant, and back again. The flash of the combustion event during the power stroke will heat the valve up a little, then the metal-to-metal contact will cool it a lot, and the process repeats, 20 or more times per second. The valve itself will stabilize at some intermediate temperature.

It's important to remember here that the crankshaft makes two turns for each combustion event (in one cylinder). That means the valve is closed (and cooling) for a bit less than 540° and open for only a bit more than 180°.

It should be intuitively obvious then, that the valve temperature will correspond most closely with the cylinder head temperature (not the EGT), and indeed, old data from Lycoming (1966) and the old manuals from the big radials confirm this.



Lycoming valve temperature data

Note that CHT, valve guide, and valve head temperature all increase together, all peak at roughly the same point on the mixture curve (just rich of peak EGT), and all fall together. It stands to reason then, that if your CHT is too hot, then less heat will be carried away from the valve. It's a double-whammy, because you're probably making more heat in the combustion chamber, which makes the valve hotter, and the hotter cylinder isn't able to accept more heat.

EGT plays a part in all this, of course, but contrary to nearly universal belief, a pretty minor part.

The key elements in good valve cooling are:

1. Good valve face to valve seat contact (it needs to be nearly perfect); and
2. Good valve stem to valve guide fit; and
3. Cool cylinder head temperatures.

All these VASTLY outweigh the effect of EGT.

Like many parts of these engines, the miracle is not that it runs so well, but that it runs at all! But run they do, for millions of cycles.

If you operate any of the "big flat sixes," you probably see EGTs of around 1400ºF to 1550º F in normal cruise. Are you worried that 1550ºF may be "frying" your valves? Well, on the same engines, usually with the same valves, but with turbos and lower compression ratios, you'd see TITs (Turbine Intake Temperatures) in the 1600º to 1650º F range in cruise, and up to 1850º F at peak TIT at very high power settings!

With that in mind, if you run a normally aspirated engine (no turbo), your concern over EGT as an indicator of valve temperatures should be like Alfred E. Neuman's, "What, me worry?" It IS possible to "fry" a valve in a normally aspirated engine, but EGT is NOT the indication you're looking for. Pay attention to the CHT, and the valves take care of themselves.com

Fact is, those same part number valves in the high-powered turbocharged engines shed heat to the cylinder heads just like your normally aspirated engine does. They wouldn't survive if valve temperatures were determined by EGT.

What DOES determine exhaust valve temperatures are the three factors I've mentioned above. Good contact at the valve seat and the valve stem, and less heat in the first place.

What Makes That High Heat?

Glad you asked!

First and foremost, the heat comes from high combustion pressures. Think of an engine where the designer foolishly had the peak pressure occurring EXACTLY AT TDC (Top Dead Center). The pressure would build up before TDC, peak at TDC, and then the pressure would decrease after TDC. Of course, this engine wouldn't even run, but bear with me?

Can you see that the pressure (and thus the temperature) would be enormous at TDC, right where the combustion chamber is at its smallest? Can you see that NO usable power would be transmitted to the crankshaft (and prop)? Pretty silly design, right?

Now, can you imagine the heat that would produce in the combustion chamber, piston, cylinder walls, cylinder heads, spark plugs — and valves?

Now, let's use our imagination, and move the peak pressure out to around 15º after TDC. Can you see that the pressure would be a LOT less, and so would the temperature? It just so happens that the theoretically ideal point for the "peak pressure pulse" (PPP) to occur is right around 15º past TDC. At that point, the temperatures in all components have dropped off dramatically.

So, what are the factors that contribute to high peak combustion pressures in some of our typical engines? Take a look at this matrix:

Factors Contributing to High Peak Combustion Pressures

	Factor	Normally Aspirated	Turbo-charged En-	Comments
1.	High power	260 to 300 hp	285 to 350 hp	
2.	Advanced spark timing	22º to 25º BTDC	20º BTDC	Some turbocharged TCM engines use 24º
3.	High com-pression ratio	8.5:1 (TCM) 8.7:1 (LYC)	7.5:1 (TCM) 7.3:1 (LYC)	
4.	Fuel/air ratios that are in the "danger zone" from just LOP out to 125ºF or	Same effect	Same effect	**NOTE:** Setting the EGT at 25º to 50ºF ROP guar-antees the very hottest exhaust valve tempera-tures possible!
5.	High induc-tion air tem-perature	Not a factor	May be a factor, espe-cially if no	This is not a major fac-tor, but worth noting
6.	Lower-octane fuel	May be a factor if you	Heaven for-bid!	

Note the turbocharged engines have employed engineering design parameters (like lower compression ratios and retarded spark timing) that are designed to LOWER peak cylinder pressures compared to the normally aspirated engines. Among many reasons this must be done is to **keep the exhaust valves cool**!

Bottom line, from data from the test stand: Given two engines, one normally aspirated and one turbocharged, both running at the same cylinder head temperature and the same horsepower, the **valve** temperatures will also be about the same, while the EGTs are about 1600º F in the turbocharged engine, and 1450º F in the normally aspirated engine.

So, "Where's the beef?" What can cause problems with these valves? They run just fine throughout a wide range of temperatures and power settings. As long as that finely ground rim on the valve face plants itself squarely on the matching valve seat and the metal-to-metal interface is wide enough, and the valve stem rides smoothly against the valve guide, the valves won't give any trouble, **even if you abuse the engine**. (Yes, there ARE limits, but they're not critical for VALVES.)

How the engine is operated, whether ROP or LOP, high power or not, is far less a factor than simple CHT. Manage CHT properly (including well-installed and maintained baffling), and your valves will be just fine. If there is some pilot error that affects valves, there will be other damage as well, giving the clues.

Who's to Blame for Fried Valves?

Flat statement: I believe that **virtually all valve problems originate with the factory or the overhaul shop**.

The hole through the cylinder that takes the valve guide must be true, straight and centered. The valve guide must be true and straight. Finally, the valve rim must match precisely the face of the valve seat, and both mating surfaces must be wide enough to provide enough surface area to conduct the heat.

This calls for some very fine machine work, and sadly, the factories haven't done it very well. The main hole will always be microscopically off-center, and it will never be perfectly straight. Close doesn't count here. The guide must also be machined or honed to very tight tolerances, and it must be straight and true.

It appears that for many years, TCM has simply drilled the "big holes" in the cylinder head, stuffed pre-reamed valve guides in, and then installed the valves. When done this way, it's very unlikely you'll end up with a nice straight valve guide. The cylinder is heated, the valve guide is chilled with liquid nitrogen, and pressed into place. When the temperatures stabilize, the guides are very tightly gripped, and some distortion is inevitable. The results are highly unpredictable, unless you predict poor results, and early top-end work!

Doing it this way takes less care and is less expensive than doing it right, at least for the manufacturer or the overhauler. It may even work. It may work to 500 hours, or it may even go to TBO. But, it probably won't. When everything heats up to normal operating temperatures, there may be the slightest bit of abnormal slop in the fit of the valve to the seat or the valve stem to the valve guide. That may tear up the guide or valve stem. One part of the stem may be hotter than another, causing a subtle warping. ANY imperfection in the valve-to-valve-guide contact will reduce the amount of heat conducted away from the valve face. If you don't get the heat away from the valve face, it gets hot. Now the trouble begins.

A FAR better way to do this is to take all the above steps, but install a guide that is too small to accept the valve stem. Allow the guide to absorb any of the forces placed upon it, and accept the small, inevitable distortions. Once installed, THEN ream it out to the exact size needed for the valve stem. This "post-reaming" technique will produce that straight and true hole. Consistent reports from visitors to the TCM factory, and comments from TCM, reveal that they are NOT "post-reaming." Some have reported TCM people as saying, "Yes, we're about to start post-reaming," but to date, I've seen no evidence that they have.

A recent Aviation Consumer article reflected this in its findings of some really sloppy fits for the TCM cylinders that they compared to the "Millennium" cylinders made by Superior Air Parts. I'd guess that some bright bean counter at TCM figured out a way to save a step or two.

This is probably the biggest single reason these engines suffer so many premature valve problems, today.

But that's only part of the story. Once the valve is installed nice and true, there remains the task of making the correct metal-to-metal contact between the rim of the valve face and the valve seat (which is itself yet another insert that needs to be placed with great care).

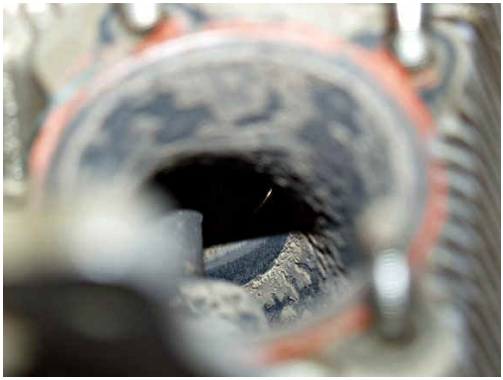
The usual way of doing this is to put a fine grinding compound on the surfaces, stick the valve in, and spin it, or rotate it back and forth, so that the two surfaces grind away at each other, hitting the high spots on both surfaces, eventually leaving a perfect match. This is called "lapping," and it's an evil chore. As John Schwaner points out, if the person doing that is tired, or ready to go home, or just doesn't care, it's awfully tempting to grind away until it looks reasonable, then just stuff the valve in, install the springs and keepers, and go home. Having once been a line boy drafted to do this chore in my "spare time," I can relate to that comment! I always figured that quiet moments on the line were my reward for working hard when things were busy, but Clyde Jones, founder of Jones Aviation in Sarasota, Fla., my boss at the time, didn't like paying seventy-five cents an hour for a line boy doing nothing. Whenever he could catch me, I got drafted for other duties. Like lapping valves, and sandpapering parking meters by the thousands. (Now THERE's a story for another column!)

Not all the engine overhaulers "lap" valves anymore. Monty Barrett of Barrett Performance Aircraft (one of the few excellent engine builders) in Tulsa, Okla., feels that the abrasive compound gets embedded in the matching surfaces at the molecular level, and may eventually cause problems. He prefers a much more modern system for grinding valves and seats — I think it's called a "Serdi" system — that does not require hand work or abrasive compounds.

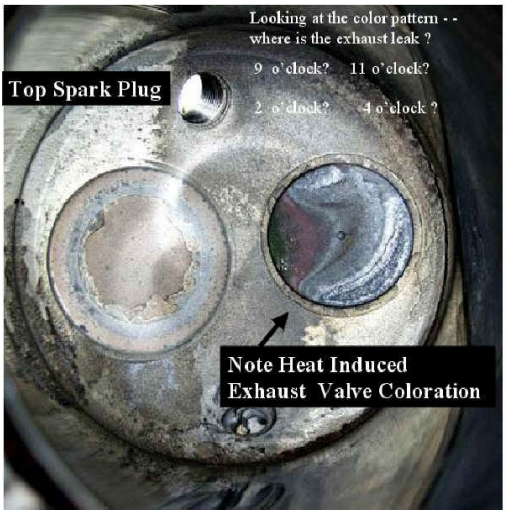
But, I digress, as usual.

Ideally, that area of contact has to be some minimum width, and it must be equal all the way around, or the valve head will be cooled unevenly. Uneven cooling will cause hot spots and cold spots, and the valve head will actually warp a bit. When that happens the contact is not even all the way around, and a microscopic gap opens. At first, the pressure of the combustion event is probably enough to smash the valve head closed and correct a small warp, but eventually, the gap will allow a tiny amount of the combustion gases to leak past. Once this begins, it's only a matter of time. This is where you begin to see a loss in compression, some-

A Case in Point ……. Here's a jug removed for that very reason!



Picture taken through the exhaust port, looking at the back side of the exhaust valve. Note the tiny sliver of light from a flashlight in the combustion chamber.



Remember, that combustion event can be upwards of 4,000ºF and that heat blowing through a small crack will cause an intense hot spot on the rim of the valve. With the rest of the valve getting cooling, and this little arc not getting any, the result looks like this:
A piston's view of the combustion chamber, showing both valves and spark plug holes. Camera's flash exaggerates discoloration of exhaust valve and the orange discoloration in the lower quadrant of the barrel is a reflection of that.

For those folks who didn't have a misspent youth working on aircraft engines, the small valve is the exhaust valve, and the larger one is the intake valve.

Closeup of "fried" exhaust valve. Can you tell where the hot spot is? (Are you sure?)

Oh, by the way, these pictures are of the SAME cylinder, and **this cylinder was never operated LOP** — only at 50º to 100º ROP, just like the factory recommends. Just a few engine-hours before this picture was taken, the cylinder passed a compression test during the annual inspection. Within that few hours, the static compression dropped to almost nothing.

When I first saw these pictures, I assumed the discoloration at the six o'clock position was the "fried spot." But engine expert Monty Barrett took one look at the picture and instantly identified that spot as "normal," and said that the true hot spot was clearly (to Monty) the portion centered around the 10:30 position. Without knowing anything but what was in the picture, he stated unequivocally that it MUST be repaired before further flight. George Braly still has the jug and valve, and confirms that, AND confirmed that's the location of the "sliver of light" in the picture from the exhaust port side. I learned something, so it's been a good day.

Once a valve has gone this far, lots of things can happen, all bad, and they're fairly unpredictable. Pieces of the valve can break off, or the whole head can break off.

That's called, in the vernacular, "Swallering a valve."

Now, the factories and the tech reps, wanting to deny any and all claims, may tell you that you ran your engine "too hot," and "fried that valve." Well, maybe running "too hot" will hasten the demise of an improperly installed valve, but I cannot bring myself to believe that running the engine continuously at even elevated cylinder head temperatures will cause more than modestly accelerated wear and failure problems with PROPERLY INSTALLED valves, guides, and seats.

I really get a little testy with the factory suggesting pilots are the cause of "fried valves" when I think of the factory redline limit for CHT, usually 460º F, or 475º F, sometimes even 500º F, and we who are trying to teach "a better way" are saying LOUD AND CLEAR:

"Treat 400F as a max continuous redline!"

Just who is kidding whom, here?

We even take that a step further, and suggest 380º F as a nice "target," so we'll never exceed that 400º F.

I'm also hearing rumblings that TCM may start suggesting that a little bit of leakage past the exhaust valve is acceptable. Now, I'm not a lawyer, and I don't play one on TV, but if I were, I think I'd be quietly suggesting to TCM, "I really don't think you ought to do that."

I hope I've convinced you that EGT, ROP, LOP, octane, and all the other "usual suspects" have little or nothing to do with valve temperatures, valve recession, valve failure, or valve anything. It's NOT how the pilot operates the engine that really affects VALVE health, it's how the engine builder put your engine together. That said, you CAN "improve" your chances by keeping your CHTs well under 400º F during ALL phases of flight. You can do that LOP, or you can do it ROP, the choice is yours.If I haven't convinced you, at least I hope you're thinking about it. Above all, **DON'T let anyone blame valve problems on you!**

Be careful up there!

NAC

NORTHAM AERO CLUB

BAR ROSTER 2017—2018

August		
5th-6th	-	Peter
12th-13th	-	Matt
19th-21st	-	Mick
26st-27th	-	Crofty

November		
4th-5th	-	Matt
11th-12th	-	Peter
18th-19th	-	Mick
25th-26st	-	Crofty

September		
2nd-3rd	-	Howie
9th-10th	-	Peter
16th-17th	-	Mick
23rd-24th	-	Crofty
30th		Matt

December		
2nd-3rd	-	Howie
9th-10th	-	Matt
16th-17th	-	Peter
23rd-24th	-	Closed
30th-31st		Closed

October		
1st	-	Matt
7th-8th	-	Peter
14th-15th	-	Mick
21st-22nd	-	Crofty
28th-29th		Howie

January		
6th-7th	-	Mick
13th-14th	-	Crofty
20th-21st	-	Howie
27th-28th	-	Matt

Bar Hours

Sat. 5pm—7 pm **Sun. 5pm—7pm**

IF UNABLE TO DO YOUR ROSTERED DAYS PLEASE MAKE ARRANGEMENTS TO SWAP WITH SOMEONE

THE NORTHAM AERO CLUB (Inc.)
PO Box 247 NORTHAM
WESTERN AUSTRALIA 6401

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NEXT CLUB COMPETITION

9am Sunday 10th September 2017

The Northam Aero Club Committee meeting will be held at the club rooms on Sunday 10th September 2017 at 1:00pm

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