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**From:** jeffrey E. <jeevacation@gmail.com>  
**Sent:** Sunday, April 10, 2016 8:32 PM  
**To:** Pete Rawson  
**Subject:** Re: GIV update

the right and left were both showing 3 , until 25 mi= in and then right side again went to 9 and stayed there, ♦=A0 we turned on wing ice and it came to 2. no lower. . ?=C2♦ is it possible that the pulse is the result of the voltage maxing ou=. . ? thanks for your time.

=div class="gmail\_extra">

On Sun, Apr 10, 2016 at 4:19 PM, Pete Rawson <[REDACTED] <mailto:[REDACTED]>> wrote:

Hi Jeffrey,

I have added my comments to your questions-

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From: jeffrey E. <jeevacation@gmail.com <mailto:jeevacation@gmail.com>>  
Sent: Sunday, April 10, 2016 7:46 AM  
To: Larry Visoski; Pete Rawson  
Subject: Re: GIV update

understood, ,

question , does the voltage max out at 9?

My training manuals s=ow that the system is up to 14 VDC, it goes through a resistor and is a 10=VDC Maximum to the torque motor.

Remember that the box=in the Radio Rack is an add-on, it is not normally installed, and there ar= no requirements for calibration-

The 9 volts seems to =e appropriate for the full close signal to the valve-

The valves respond to=Pressure, not voltage.

The voltage is then c=verted into a pressure that the valve responds to.

if not then th= valve works at 9,?

The valve is normally=open, the voltage shows sending a close signal, in this case, a full close=signal to increase the Temperature to 400 Degrees-

The left side is show=ng a signal for that side valve to be placed in a slightly open position-<=span>  
It seems to be modula=ing, as I suspect to be normal.

altitude seems to effect it. so your answer seems po=sible,

Both LP valves "an Air valves" are original, they are not a high fail item.  
The valves are not set warm air through them, so "Cold Soaking" could be an issue.  
The valves are located in the pylons, just forward of the heat exchangers that are visible from below.  
The maintenance check for the system are basically-  
Engines running, no airflow through the heat exchanger (guy on a ladder feeling for airflow)- hi=h Tech.  
Select Wing heat, and confirm airflow overboard.  
Turn off wing heat-</pan>

Increase power, and confirm airflow, no numbers for power settings given-

the voltage is applied as a result of resistance and computer.

Correct, the inputs are the Temp sensor and Anticipator, being sent to the Controller (ie the Computer).  
The valves are not electrically controlled-  
The electric signals are sent to a Torque motor.  
The panel shows the pressures being sent, and matches the voltages.  
The pressure is the most important part, as the valves respond to pressure.  
The Torque motor converts the electrical signal into a pressure input to the valves to Open/Close them,  
No Voltage, No pressure, valve is spring loaded to open-  
High voltage, high pressure, valve is commanded to close.  
There is no indication of the valve responding to the command.  
The Torque motors/pressure regulators were swapped at Westfield-

the right engine tgt is higher does that mean=that the fan valve is more closed than it should be? maybe a result =f a bad resistor ?

The LP air does not go through the Engine, So I don't see it as an issue to account for any TGT split.  
The HP air bleed off would account for TGT issues.</pan>

is it a big deal to change fan valve?

No, not a big issue. =e need to remove Pylon Panels, top and bottom.  
We can do it in a ♦=A0 day.

could it have been damaged by the bent tube you found=?

No, I can't see that-  
The line supplies air=in and out to control the valve position.  
The valve only responds to the air pressure supplied.

the other mystery is why a pulse =n the reading. ? valve? resistor , computer. , electrical bus?=/div>  
I suspect that there =s a fault in the ground for the strobe lights-  
The pulse seems to be=regular.  
I don't think tha= the system could catch up with it.  
I haven't seen th= issue before-

Regards,  
Pete

On Sun, Apr 10, 2016 at 7:17 AM, Larry Visoski <pan dir="ltr"><[REDACTED]<mailto:[REDACTED]>>= wrote:

Jeffrey  
Message from Pete.,below:

Dave and I are at airport now in case you decide to depart earlier tha= 10am,,  
Plane is fueled and ready.,

From Pete:

Hello Jeffrey,</=>

Larry knows that I am l=ng winded with my responses,

Here is my brief-

Feel free to read all a= your leisure-

They are mostly my thou=hts so far-

I suspect that the righ= precooler (fan air) modulating valve is bad.

They are both original.=/span>

From the last video and=Photo's;

The readings show that =he left side is being given a voltage to the Torque motor sending a=C2◆pressure to command the valve to be partially closed.

Zero volts, zero pressu=e is for full open, ie: cold air into the precooler and lowering the tempe=ature into the supply system.

The signals show a steady state condition; 3 Volts, 3 PSI.

The valve has been sent signals, and has responded correctly, and therefore is in the proper position to maintain 400 degrees in the supply system.

This is being monitored and controlled by the controller, and the sensor inputs.

There is no signal from the valve, the temperature monitoring circuit controls the changes required.

The right side shows that it is being commanded to close due to the high voltage, and pressures. (9 volts, 9 PSI)

It seems that the signals are not being followed, or that the valve cannot respond to them.

Since the control system does not see the temperature change from the sensors, it continues to increase the pressure to the valve.

Brief complete.

As for the full version:

This was done as a draft, please excuse any duplication for items noted in the brief, these were my original thoughts.

I agree with all that you stated.

The guidelines are for what the electrical system does.

We have found a bad controller - the sweeping voltage and pressures, and replaced it.

There was also a bad sensor that was replaced.

We have swapped the pressure regulator/torque motors.

Latest swap was the Anticipators.

There seem to be multiple issues, and we are narrowing them down.

I believe that the electrical and control systems are now operating normally.

Now on to the air side =f it.

From the last video, an= photo's-

I believe that the left=side is operating properly.

The Temp is being contr=led by sending a regulated pressure to the valve, and it responding.

The pressure supplied i= closing the valve, and maintaining the 400 Degrees requested.

No voltage equals no pr=ssure, Valve open, lowering the Temperature.

The right side shows gi=ing a close signal to the precooler (fan air) valve.

High Voltage, and press=re supplied to the Valve on that side to close, and increase the temperatu=e.

That side doesn't s=em to respond.

The valve has a 4 inch =nput/output side.

The control line is abo=t 1/4 inch.

That is one of the line= that we found collapsed, and started us on this direction.

Is it possible that the=supply air is not being able to overcome the pressure at the valve?=/p>

The pressure read at th= panel is a control pressure, also known as "Muscle air".=/p>

Maybe the input air at =he 4 inch diameter inlet, can overcome the control air.

I again suspect an issu= with the LP valve-

There is no valve posit=on, or feedback signal from the valve-

The electrical signal i= showing to close the valve,

The pressure is also sh=wing to close the valve.

One way to check is to =elect Wing heat on-

The system causes the a=plicable side to remove the signals, and allow the valves to go full open.=/span>

Wing heat is not normal=y used at altitude-

When the aircraft is in=below 0 degrees temps, there is no reason, since any precip won't stic=.

Ask Larry if there any =ssues with selecting the wing heat on at altitude-

I don't believe tha= there are any limits to the altitude, but the fuel burn will be increased=

Just a quick check-

The ground checks for t=e precooler system are limited,

Engines running, there =should be no air flowing from the lower pylon heat exchanger at idle-

Increase power, and the=e should be airflow noticed.

My training manual show= that the valve should start to open at about 74% HP on the ground,=p>

Wing heat on, there sho=ld be airflow.

Regards,  
Pete

Sent from my iPhone

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