The National FAA Safety Team Presents

Federal Aviation Administration

Topic of the Month - May

The $300 Inspection
What a Great Deal!

Presented to: <Audience>

By: <Presenter>

Date: < >

Produced by:
The FAASTeam Band of Brothers
NC, SC, & IA FAASTeam Program Managers

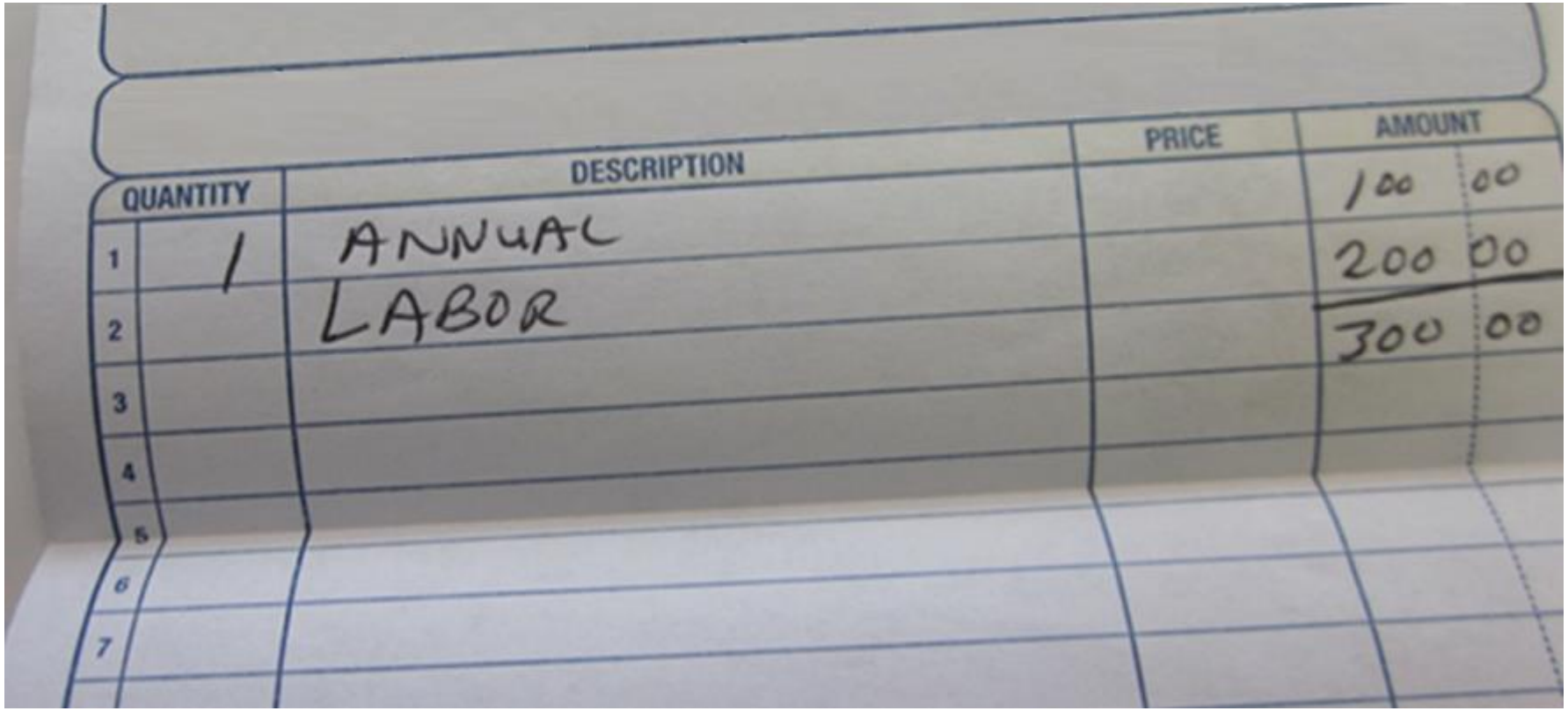
Welcome

- Exits
- Restrooms
- Emergency Evacuation
- Breaks
- Sponsor Acknowledgment
- Other information

Overview

- **Labor Rates**
- **What is required for an Annual Inspection**
- **Parts**
- **Who is responsible**

$300 Annual



QUANTITY	DESCRIPTION	PRICE	AMOUNT
1	ANNUAL		100 00
1	LABOR		200 00
			300 00

So, Let's Break It Down. Labor and Parts

Labor Rates Comparison

- Honda Dealer $122 per Hour
- Ford Dealer $124 per Hour
- Chevrolet Dealer $140 per Hour
- BMW Dealer $145 per Hour
- Independent Car Repair Shop $75 per Hour
- Diesel truck shops $179 per hour, $150 for International and Freightliner trucks

Labor Rates Comparison

- **$122 per Hour Major 145 Repair Station**
- **$125 per Hour Hawker Service Center**
- **$140 per Hour Cessna Citation**
- **Independent Repair Shop $75 to $100 per Hour**

Typical Flat Rate for an Inspection

- **The IA / mechanic / Repair Station average time to inspect:**
  - Cessna 172 is approximately 15 hours
  - Beechcraft 17 – 24 Hours
  - Piper 10 – 60 Hours (60 for a Navajo)
  - Mooney 16 – 31 Hours
  - Cirrus 18 – 24 Hours
- **What can they accomplish for $300?**

Labor Costs

Based on the previous labor hourly rates for a $300 annual, that would pay the mechanic/IA about $20.00 per hour!

Remember, the mechanic has to have tools, a maintenance facility, supplies, manuals, and calibrations of tools every year. It's part of the regulations for them to have this. Ref: Part 43

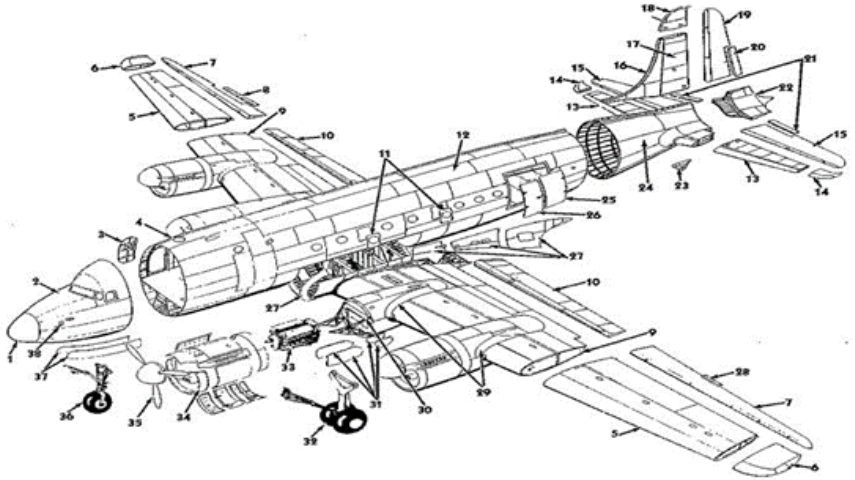
Regulations

Let's look at CFR Part 43.15
Additional performance rules for inspections

CFR Part 43.15

(a) Each person performing an inspection shall:

(1) Perform the inspection to determine whether the aircraft, or portion(s) thereof under inspection, meets all applicable airworthiness requirements



CFR Part 43.15

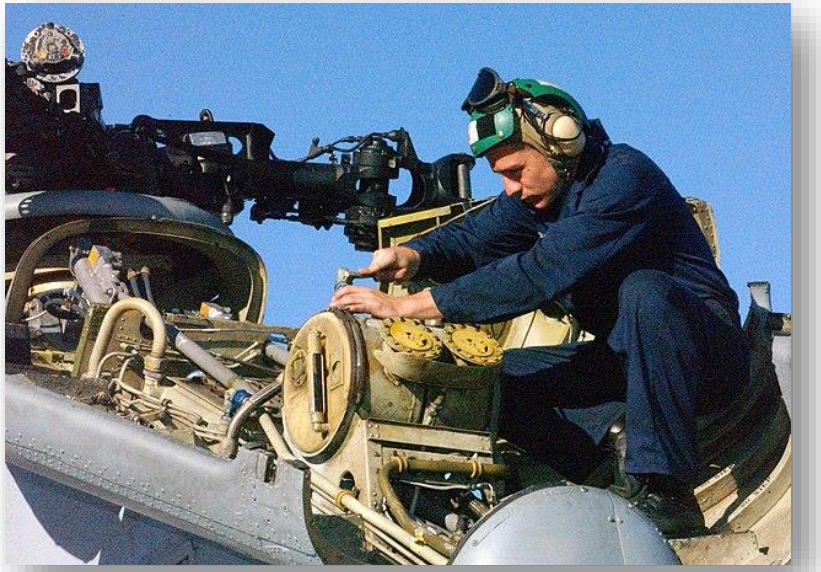
(b) Rotorcraft. Each person performing an inspection shall inspect the following :

(1) The drive shafts

(2) The main rotor transmission gear box

(3) The main rotor and center section

(4) The auxiliary rotor on helicopters.



CFR Part 43.15

(c) Annual and 100-hour inspections.

(1) Each person performing an annual or 100-hour inspection shall use a checklist while performing the inspection.

This checklist must include the scope and detail of the items contained in appendix D to this part and paragraph (b) of this section

CFR Part 43.15

(2) Each person approving a reciprocating-engine-powered aircraft for return to service after an annual or 100-hour inspection shall, before that approval, run the aircraft engine or engines

To Determine *next slide*

CFR Part 43.15

(i) Power output;

(ii) Magnetos;

(iii) Fuel and oil pressure; and

(iv) Cylinder and oil temperature.

(3) Each person approving a turbine-engine-powered aircraft for return to service after inspection shall, before that approval,

run the aircraft engine or engines

CFR Part 43 Appendix D

Let's take a look at Part 43 Appendix D.

There are 49 separate items listed under Appendix D;
We don't have time to cover them all, so let's look at a few –

> **(a) Each person performing an annual or 100 hr. inspection SHALL, before that inspection, remove or open all necessary inspection plates, access doors, fairing, and cowling. He SHALL thoroughly clean the aircraft and aircraft engine. (not a suggestion)**
> **SHALL Inspect:**
>
> **(1) Fabric and skin**
> **(2) Systems/components**

CFR Part 43 Appendix D

Shall Inspect:

(1) Generally—for uncleanliness and loose equipment that might foul the controls.

(2) Seats and safety belts; Windows and windshields; Instruments; Flight and engine controls; Batteries; All systems;

CFR Part 43 Appendix D

(d) Shall inspect (where applicable) components of the engine and nacelle group as follows:

(1) Engine section; controls; Studs and nuts; Engine mount; Flexible vibration dampeners; Lines, hoses, and clamps

(3) Cylinder compression and for metal particles or foreign matter on screens and sump drain plugs.

And the list goes on!!

Annual Inspection

- As you can see, there are a lot of items to cover in these two to three hours of working

- So, what happens when you only take three hours?

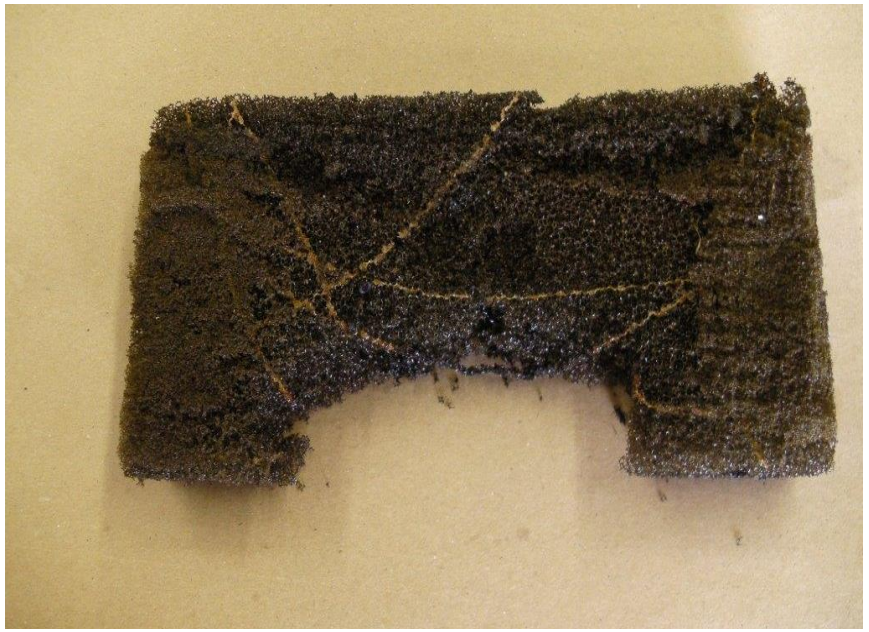
No Cotter Pin Installed

What Could Possibly Go Wrong?

Here is something mechanics may not want to skip on the checklist!!!

What Could Possibly Go Wrong?

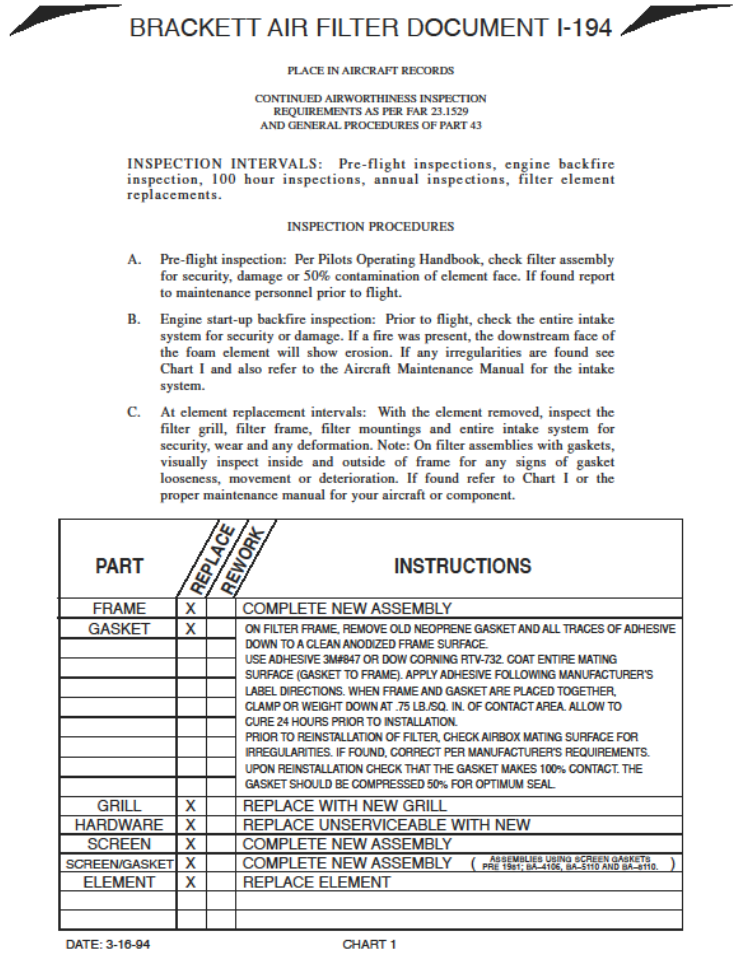
If a mechanic is pressed for time,
they might skip this item on the checklist!!!



Instruction for Continued Airworthiness

Instruction for **C**ontinued **A**irworthiness

(ICA's)



BRACKETT AIR FILTER DOCUMENT I-194

PLACE IN AIRCRAFT RECORDS

CONTINUED AIRWORTHINESS INSPECTION
REQUIREMENTS AS PER FAR 23.1529
AND GENERAL PROCEDURES OF PART 43

INSPECTION INTERVALS: Pre-flight inspections, engine backfire inspection, 100 hour inspections, annual inspections, filter element replacements.

INSPECTION PROCEDURES

A. Pre-flight inspection: Per Pilots Operating Handbook, check filter assembly for security, damage or 50% contamination of element face. If found report to maintenance personnel prior to flight.

B. Engine start-up backfire inspection: Prior to flight, check the entire intake system for security or damage. If a fire was present, the downstream face of the foam element will show erosion. If any irregularities are found see Chart I and also refer to the Aircraft Maintenance Manual for the intake system.

C. At element replacement intervals: With the element removed, inspect the filter grill, filter frame, filter mountings and entire intake system for security, wear and any deformation. Note: On filter assemblies with gaskets, visually inspect inside and outside of frame for any signs of gasket looseness, movement or deterioration. If found refer to Chart I or the proper maintenance manual for your aircraft or component.

PART	REPLACE	REWORK	INSTRUCTIONS
FRAME	X		COMPLETE NEW ASSEMBLY
GASKET	X		ON FILTER FRAME, REMOVE OLD NEOPRENE GASKET AND ALL TRACES OF ADHESIVE DOWN TO A CLEAN ANODIZED FRAME SURFACE. USE ADHESIVE 3M#847 OR DOW CORNING RTV-732. COAT ENTIRE MATING SURFACE (GASKET TO FRAME). APPLY ADHESIVE FOLLOWING MANUFACTURER'S LABEL DIRECTIONS. WHEN FRAME AND GASKET ARE PLACED TOGETHER, CLAMP OR WEIGHT DOWN AT .75 LB./SQ. IN. OF CONTACT AREA. ALLOW TO CURE 24 HOURS PRIOR TO INSTALLATION. PRIOR TO REINSTALLATION OF FILTER, CHECK AIRBOX MATING SURFACE FOR IRREGULARITIES. IF FOUND, CORRECT PER MANUFACTURER'S REQUIREMENTS. UPON REINSTALLATION CHECK THAT THE GASKET MAKES 100% CONTACT. THE GASKET SHOULD BE COMPRESSED 50% FOR OPTIMUM SEAL.
GRILL	X		REPLACE WITH NEW GRILL
HARDWARE	X		REPLACE UNSERVICEABLE WITH NEW
SCREEN	X		COMPLETE NEW ASSEMBLY
SCREEN/GASKET	X		COMPLETE NEW ASSEMBLY (ASSEMBLIES USING SCREEN GASKETS PRE 1981; BA-4106, BA-5110 AND BA-6110.)
ELEMENT	X		REPLACE ELEMENT

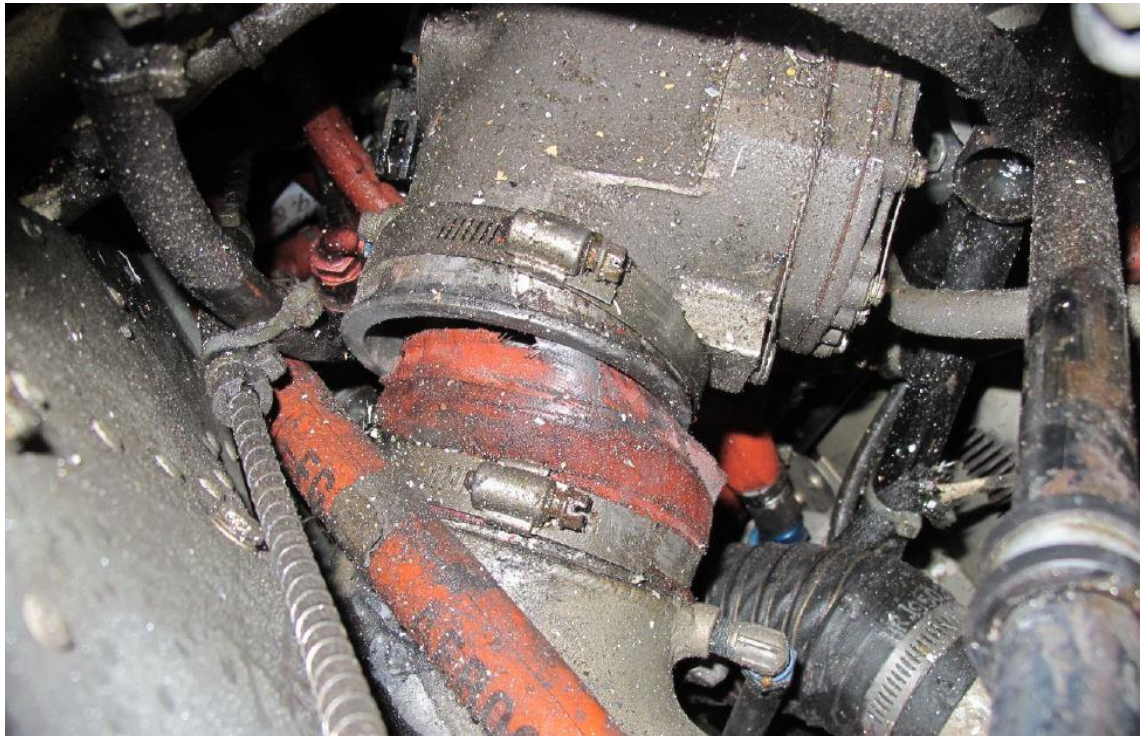
DATE: 3-16-94 CHART 1

What Could Possibly Go Wrong?

Another item that can be done improperly

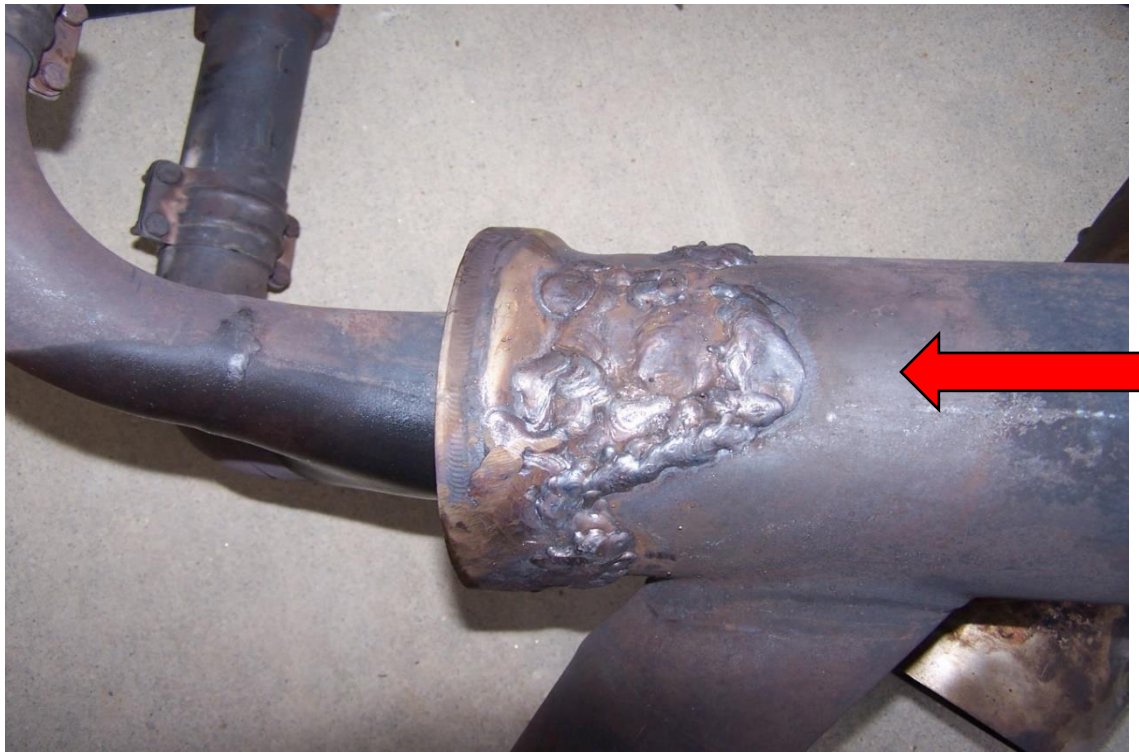
Lack of time to double-check items

Improper installation



What Could Possibly Go Wrong?

Unapproved Repairs of Aircraft Parts

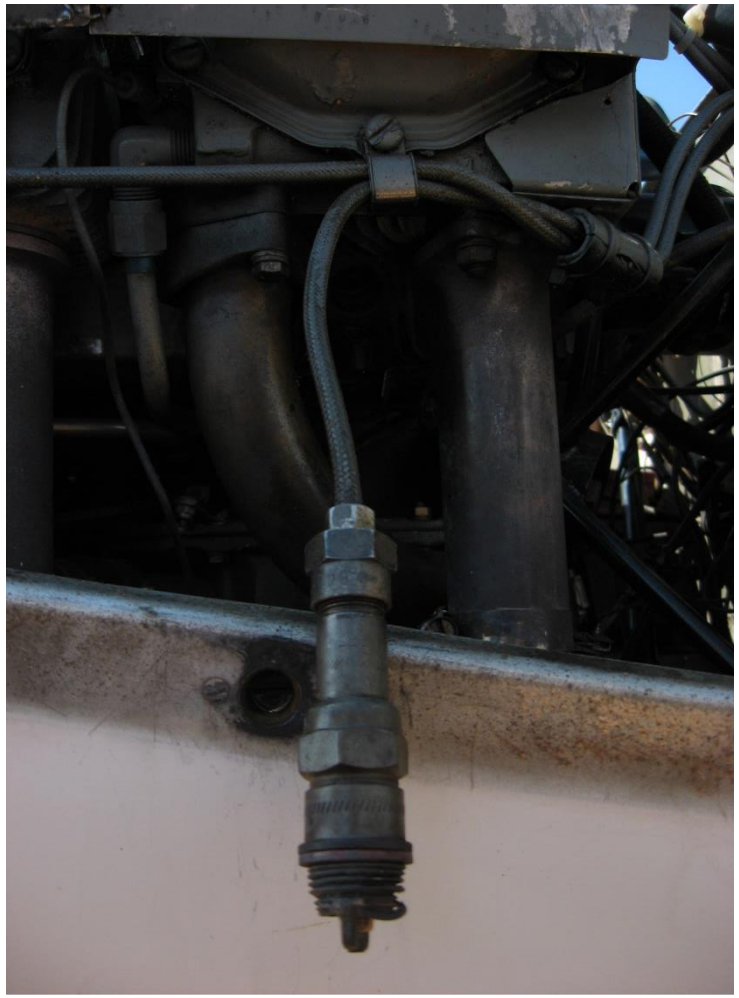


Improper weld per AC43.13 1B

This mechanic should read CFR Part 43.13

What Could Possibly Go Wrong?

Wrong Part Installed



What Could Possibly Go Wrong?

YES!

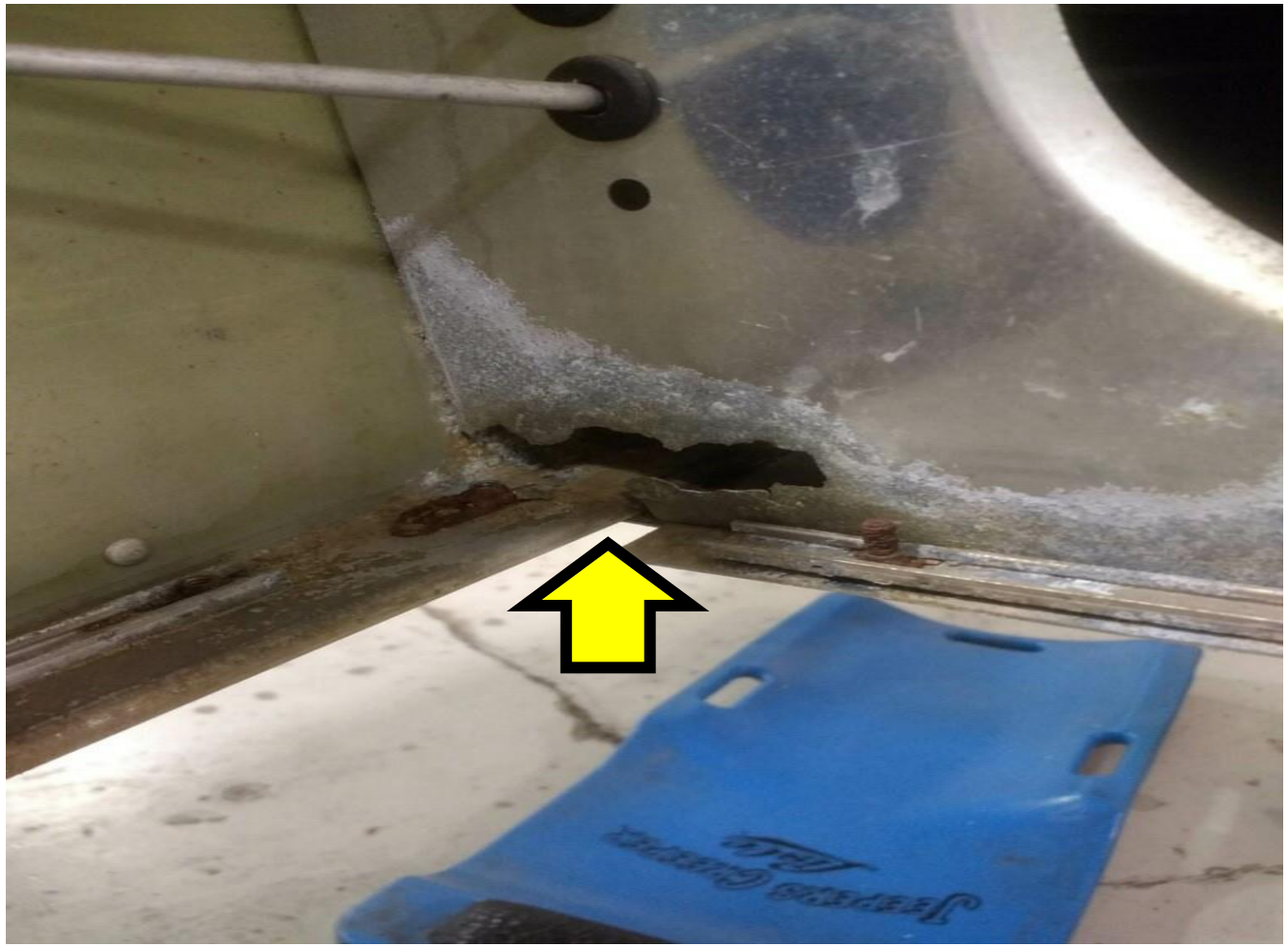
NO!

Lycoming Exhaust Flange

This is supposed to be a flat smooth surface,

What Could Possibly Go Wrong?

What Could Possibly Go Wrong?



What Could Possibly Go Wrong?

What Could Possibly Go Wrong?

Improper torque on cylinder studs

Parts

- If you remember from our invoice, Parts were $0.
- Let’s see what they need to purchase

Parts

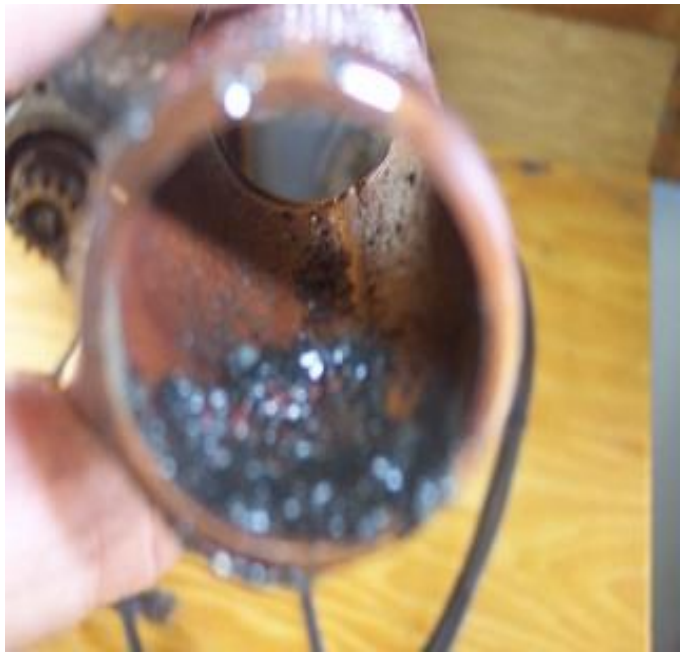
Filter $28.00

Oil $8.00 per quart times 8 quarts =

$92 just to change the oil with
NO LABOR !

Oil Filter Inspection

Do you think they had time to inspect the oil filter?



Airworthness Directive “AD”

- What about checking the AD’s?
- How much time do we have left to do this?

- FAR 91.403 (a) and
- FAR 39

Airworthness Directive “AD”

Sometimes, an AD gets signed off.

Then someone installs a USED PART…

Previously Compiled With

In 2013 a Beech Musketeer crashed after the engine quit.

The fuel selector handle was installed 180 degrees from its correct orientation.

The failure to comply with an airworthiness directive (AD) by maintenance personnel and incorrect reinstallation of the fuel selector handle by unknown personnel, which resulted in fuel starvation

Regulations

Regulations Again ?

Let’s take a look at CFR Part 91

Who is Responsible?

- **CFR Part 91.403 General.**
- **(a) The owner or operator of an aircraft is primarily responsible for maintaining that aircraft are in an airworthy condition, including compliance with CFR Part 39 of this chapter.**
- **CFR Part 39**
  - This is the rule requiring AD compliance.

Who is Responsible?

CFR 91.407

Operation after maintenance, preventive maintenance, rebuilding, or alteration.

(a) No person may operate any aircraft that has undergone maintenance, preventive maintenance, rebuilding, or alteration unless—

(1) It has been approved for return to service by a person authorized under §43.7 of this chapter; and

Who is Responsible?

CFR 91.407

(2) The maintenance record entry required by §43.9 or §43.11, as applicable, of this chapter has been made.

The IA is required to return the aircraft to service per Parts 65 and 43, but the *owner has the Primary Responsibility* to ensure it is safe to fly.

Who is Responsible?

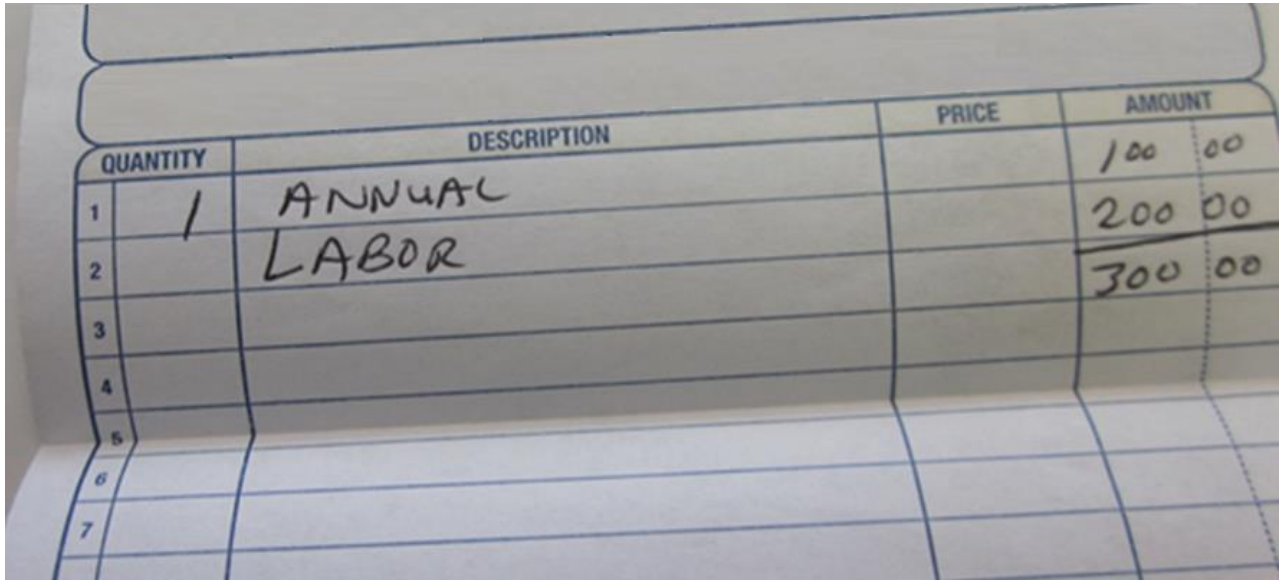
- The owner has Primary Responsibility.
- How can an owner be expected to know all this?
- The owner can ensure all this is accomplished by selecting a good quality maintenance shop.
- Do the research and ask around if you are unsure about a shop.

Who is Responsible?

- The owner has the Primary Responsibility to Communicate!!!
  - Before
  - During
  - And after the inspection

$300 Annual

Do you remember the invoice from Slide #4?



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Let’s look into why the FAA found it and why the three hundred dollar Annual may not have been the value it seemed.

Annual Inspection Scenario

Day One

- **The aircraft was purchased at an estate sale. The transaction was completed at 3:00 pm.**

- **The new owner then flew it 150 miles to an airport to a mechanic for an annual inspection.**

Annual Inspection Scenario

Day Two

- **Annual Completed @ 11:00am. It took less than 24 hours**
- **The Aircraft was flown to the owner's home base at 12:30pm**
- **An Accident was reported to the NTSB @ 4:00pm**
- **The aircraft was destroyed when it flipped over on landing**

Annual Inspection Scenario

Annual Inspection Scenario

Annual Inspection Scenario

Items noted during the records review:

- **Brake calipers- bolts missing safety wire and over-torqued**
- **Altimeter and Static System- CFR Part 91.411 & 91.413 certifications were expired**
- **No Airworthiness Directive research completed**

Summary

We looked at what a good quality mechanic/shop should be charging.

We looked at the cost of the parts.

We looked at the list of items that must be inspected.

Now The question is:

How safe do you feel flying with a $300 annual?

Questions?

Safety Management Systems (SMS) Coming to General Aviation

https://www.faa.gov/about/initiatives/gasafetyoutreach

Faasafety.gov

Are you signed up??

Bring a friend next time !

Get them signed up at FAASafety.gov

Proficiency and Peace of Mind

- **Fly regularly with your CFI**
- **Perfect Practice**
- **Document in *WINGS***

http://www.mywingsinitiative.org/

The Paul and Fran Burger $10,000 *WINGS* Sweepstakes

The ***WINGS*** Sweepstakes mission is to reduce the nation's accident and incident rate by increasing pilot participation in the *WINGS* FAASTeam Pilot Proficiency Program. The *WINGS* program has courses based on real world accident and incident causes so flight instructors, pilots and student pilots get training that can truly make a difference.

Studies indicate that pilots who complete *WINGS* phases are safer aviators. Please join us in saving lives.

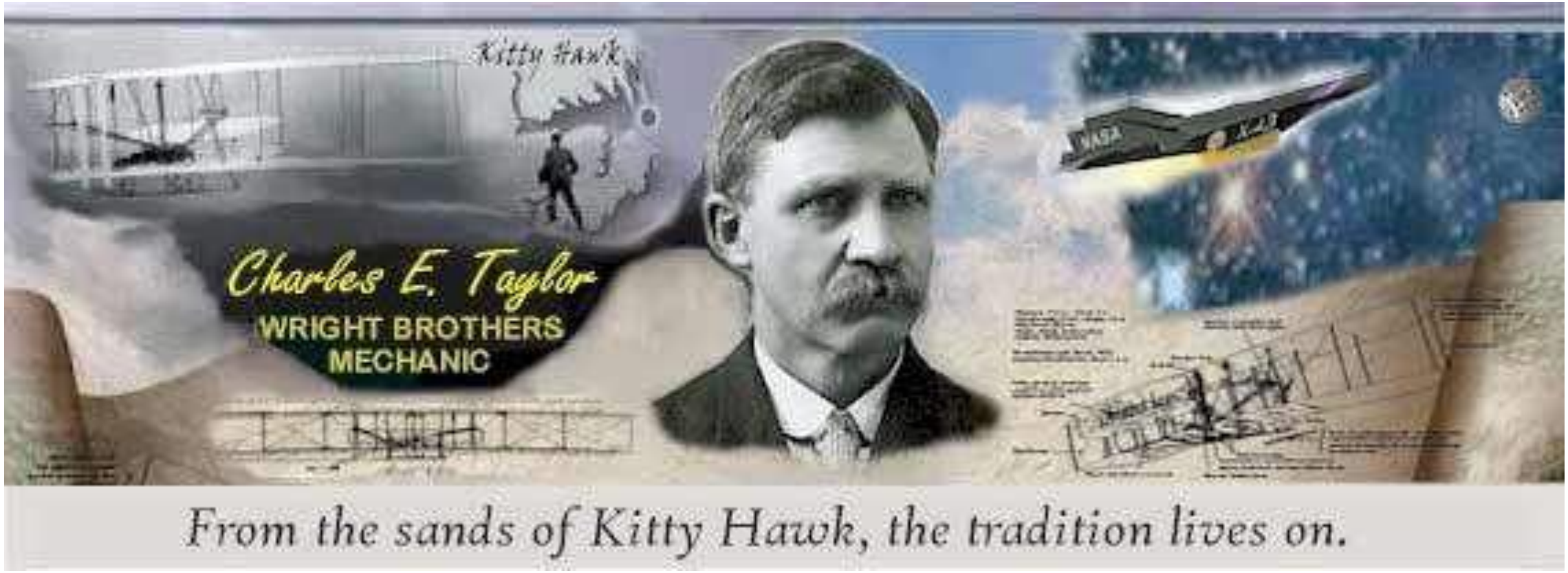
Captain Sully endorses the *WINGS* Pilot Proficiency Program
View the video
learn about the program and its many benefits.

The 2020 Sweepstakes awards 10 cash prizes! Prize levels include:

Four (4) $1,500
Four (4) $750
Two (2) $500

WINGS
Industry Network

Thank you for coming!



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