





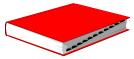
GOALS AND OBJECTIVES:

- EXPLORE THE DEFINITION OF THE TERM "AIRWORTHY."
- LEARN A LITTLE ABOUT OBJECTIVE AND SUBJECTIVE DECISION MAKING.
- MAINTENANCE ENTRIES
- COMPROMISE AND LESSONS LEARNED



QUESTION?

WHAT IS THE DEFINITION OF THE WORD: **AIRWORTHY?**







AIRWORTHY:

IS WHEN AN AIRCRAFT OR ONE OF ITS PARTS MEETS ITS "TYPE DESIGN," OR "PROPERLY ALTERED CONDITION," AND IS IN A "CONDITION FOR SAFE OPERATION."



NICE LEGAL DEFINITION:

BUT WHAT DO WORDS LIKE

- "AIRCRAFT,"
- "TYPE DESIGN,"
- "PROPERLY ALTERED CONDITION," AND;
- "CONDITION FOR SAFE OPERATION" REALLY MEAN?





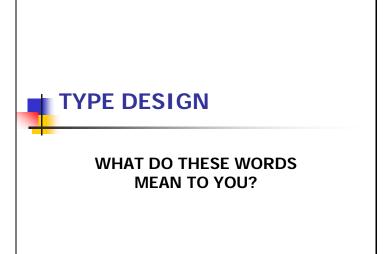


AIRCRAFT: (REF: PART 1)

 A DEVICE THAT IS USED OR INTENDED TO BE <u>NICE LEGAL DEFINITION</u>: USED FOR FLIGHT IN THE AIR:









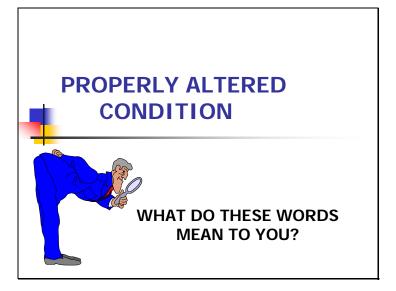
AIRWORTHY:



<u>TYPE DESIGN</u>: (REF: CAR 3, 4B, FAR 23, 25, 27, 29, 31, 33, 35.)

■ THE GOVERNMENT STANDARD(S) FOR AN AIRCRAFT, OR ENGINE OR PROPELLER AND THEIR RELATED PARTS, WAS BUILT TO.







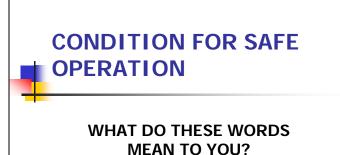
AIRWORTHY:

PROPERLY ALTERED CONDITION: THREE METHODS BY WHICH AN AIRCRAFT OR ONE OF ITS COMPONENT PARTS CAN CHANGE IT'S TYPE DESIGN. THEY ARE:

- STC
- AIRWORTHINESS DIRECTIVE
- FAA FIELD APPROVAL











AIRWORTHY:

CONDITION FOR SAFE OPERATION:

 IS A DETERMINATION OF THE OPERATIONAL CONDITION OF AN AVIATION PRODUCT BASED ON, INSPECTION AND ALLOWABLE WEAR.





BLOCK 5 AUTHORITY AND BASIS FOR ISSUANCE

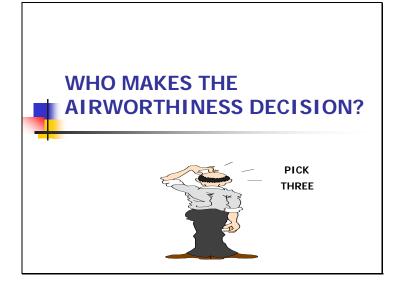
THIS AIRWORTHINESS CERTIFICATE IS ISSUED PURSUANT TO THE FAA ACT OF 1958 AND CERTIFIES AS OF THE DATE OF ISSUANCE, THE AIRCRAFT TO WHICH IT WAS ISSUED HAS BEEN INSPECTED AND FOUND TO CONFORM TO ITS TYPE CERTIFICATE, THEREFORE IS IN A CONDITION FOR SAFE OPERATION, AND HAS BEEN SHOW TO MEET THE REQUIREMENTS OF THE APPLICABLE COMPREHENSIVE AND DETAILED AIRWORTHINESS CODE AS PROVIDED BY ANNEX 8 TO THE CONVENTION OF INTERNATIONAL CIVIL AVIATION, EXCEPT AS NOTED BELOW.



BLOCK 6: TERMS AND CONDITIONS



UNLESS SOONER SURRENDERED, SUSPENDED
OR REVOKED OR A TERMINATION DATE IS
ESTABLISHED BY THE ADMINISTRATOR THIS
AIRWORTHINESS CERTIFICATE IS EFFECTIVE
AS LONG AS THE MAINTENANCE, PREVENTIVE
MAINTENANCE, AND ALTERATIONS ARE
PERFORMED IN ACCORDANCE WITH PART 21,
43, 91 OF THE FEDERAL AVIATION
REGULATIONS AS APPROPRIATE AND THE
AIRCRAFT IS REGISTERED IN THE UNITED
STATES.







- OWNER/OPERATOR----91.407(A)
- PILOT IN COMMAND----91.7(B)
- MECHANIC-----43.9, 43.11

HOW IS AN AIRWORTHINESS DECISION MADE? OBJECTIVE AND SUBJECTIVE DECISION MAKING





AIRWORTHY:

THE FIRST PART OF THE DEFINITION OF THE WORD "AIRWORTHY" SAYS THE AIRCRAFT OR ONE OF ITS PARTS MUST MEET ITS TYPE DESIGN OR PROPERLY ALTERED CONDITION.



AIRWORTHY:

SINCE TYPE DESIGN, STC, ADS, AND FAA FIELD APPROVALS IS <u>PUBLISHED</u> DATA. IT IS RELATIVELY EASY TO MAKE A DETERMINATION WHETHER OR NOT THE AIRCRAFT MEETS THESE REQUIREMENTS.





AIRWORTHY:

 THIS IS CALLED <u>OBJECTIVE DECISION</u> <u>MAKING</u> BECAUSE THE AIRCRAFT CONDITION IS BEING MEASURED AGAINST A KNOWN STANDARD.





AIRWORTHY:

- DETERMINING <u>CONDITION FOR SAFE</u> <u>OPERATION</u> IS NOT AS EASY TO MAKE.
- SINCE WE INSPECT FOR CONDITION AND WEAR, NOT ALL DISCREPANCIES THAT WE FIND ARE IN THE MAINTENANCE MANUAL.





AIRWORTHY:

WHEN THERE IS NO TECHNICAL REFERENCES, WE MECHANICS OFTEN FALL BACK ON OUR OWN BACKGROUND, EXPERIENCE, KNOWLEDGE, AND TRAINING TO HELP US MAKE THE AIRWORTHY DECISION.



AIRWORTHY:

- THIS KIND OF PERSONALIZED DECISION MAKING IS CALLED <u>SUBJECTIVE</u> DECISION MAKING.
- SUBJECTIVE DECISION MAKING ALSO INCLUDE SUCH ADDITIONAL FACTORS AS THE PILOT'S LEVEL OF SKILL, AGE OF THE AIRCRAFT, HOW THE AIRCRAFT IS BEING USED, ENVIROMENTAL CONDITIONS, FUTURE NEEDS, ETC.





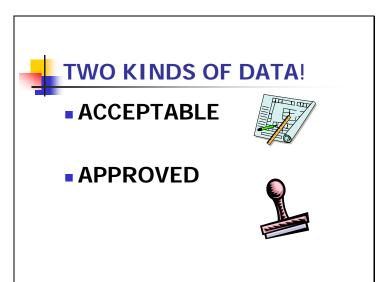
AIRWORTHY:

- SUBJECTIVE DECISION MAKING EXPLAINS
 WHY MECHANICS OFTEN REPLACE <u>AIRWORTHY</u>
 PARTS AT AN ANNUAL INSPECTION.--- FOR
 EXAMPLE:
- A MECHANIC WILL CHANGE OUT A SET OF WORN BRAKE PADS EVEN THOUGH THE BRAKE PADS ARE AIRWORTHY NOW, BUT IN 15 HOURS HE KNOWS THEY WON'T BE, SO TO PROTECT THE PILOT AND PASSENGERS THE MECHANIC CHANGES THE BRAKE LINING.



HOW MANY DIFFERENT KINDS OF DATA ARE THERE?







Written/Typed Instructions
WEIGHT AND BALANCE REPORTS

DESIGN Drawings Photographs

Documents *STRESS* ANALYS IS ELECTRICAL LOADS CHARTS





DATA ONLY REFERENCES:

- TYPE DESIGN INFORMATION.
- HOW TO MAINTAIN, AND INSPECT.



ACCEPTABLE DATA:

 IS USED FOR MAINTENANCE, PREVENTIVE MAINTENANCE, MINOR REPAIRS AND MINOR ALTERATIONS ONLY!





KINDS OF ACCEPTABLE DATA:

- MANUFACTURER'S MAINTENANCE MANUALS FOR A/C ORIGINALLY TC AFTER JAN. 1, 1980. (NOTICE 8300.119)
- SERVICE BULLETIN AND LETTERS.
- AC 43.13-1B ACCEPTABLE TECHNIQUES AND PRACTICES.
- AC 43.13-2A ALTERATIONS.
- PART 121/135 OPERATING MANUALS.



APPROVED DATA:



- MUST BE USED FOR MAJOR REPAIRS AND MAJOR ALTERATIONS.
- CAN ALSO BE USED FOR MINOR REPAIRS AND MINOR ALTERATIONS





KINDS OF APPROVED DATA:



- AIRWORTHINESS DIRECTIVES (ADs).
- TC DATA AND SPECIFICIATION SHEETS.
- STC.
- PMA AND TSO DATA.
- MANUFACTURER'S MAINTENANCE MANUALS FOR A/C ORIGINALLY TC PRIOR TO JAN. 1, 1980. (NOTICE 8300.119)



KINDS OF APPROVED DATA:



- APPLIANCE MANUFACTURER'S MANUALS (FOR MAJOR REPAIRS ONLY)
- CAA FORM 337 DATED BEFORE 10/1/55.
- SFAR 36.
- DAS AND DER APPROVED DATA.





KINDS OF APPROVED DATA:



- FAA APPROVED STRUCTRAL REPAIR MANUALS.
- DATA---APPLIANCE TYPE APPROVAL ISSUED BY THE MINISTER OF TRANSPORT CANADA FOR THOSE PARTS OR APPLIANCES FOR WHICH THERE IS NO CURRENT TSO----TCCA CERTIFICATE IS IN THE INSTALLATION MANUAL.



KINDS OF APPROVED DATA:



FOREIGN BULLETINS AS APPLIED TO USED ON A U.S. CERTIFICATED PRODUCT MADE BY A FOREIGN MANUFACTURER LOCATED WITHIN A COUNTRY IN WHICH THE U.S. HAS A BILATERAL AGREEMENT AND BY LETTER OF SPECIFIC AUTHORIZATION ISSUED BY THE FOREIGN CAA.





KINDS OF APPROVED DATA:



- FORM 337 WHICH HAS BEEN USED TO APPROVE MULTIPLE IDENTICAL AIRCRAFT, BY THE ORIGINAL MODIFER.
- ANY DATA THAT IS FAA APPROVED.



KINDS OF APPROVED DATA:



• AC 43.13-1B ACCEPTABLE TECHNIQUES AND PRACTICES, AIRCRAFT INSPECTION AND REPAIR CAN BE USED AS MAJOR REPAIR DATA IN NON PRESSURIZED AREAS ONLY IF THE FOLLOWING LIMITATIONS ARE MET:





KINDS OF APPROVED DATA:



AC 43.13-1B--USED FOR APPROVED DATA

- APPROPRIATE TO THE PRODUCT BE REPAIRED;
- DIRECTLY APPLICABLE TO THE REPAIR BEING MADE; AND
- NOT CONTRARY TO THE AIRFRAME, ENGINE, PROPELLER, PRODUCT MANUFACTUER'S DATA.



MAKING THE DECISION

THE "YES" OR "NO" COMPONENT





AIRWORTHY:

• WHILE THERE ARE TWO KINDS OF DECISION MAKING PROCESSES (OBJECTIVE AND SUBJECTIVE) USED TO DETERMINE IF THE AIRCRAFT IS AIRWORTHY, THE MECHANIC'S FINAL AIRWORTHINESS DETERMINATION IS ALWAYS EITHER:

YES, OR NO.



AIRWORTHY = YES OR NO

- IT CAN FLY OR IT DOESN'T
- IT GOES TO THE GATE OR IT STAYS IN THE HANGAR
- IT IS AIRWORTHY OR IT IS UNAIRWORTHY
- IF AIRCRAFT IS AIRWORTHY SIGN THE LOG BOOK LIKE THIS:-----





AIRWORTHY SIGN OFF FOR INSPECTIONS:

11/28/02 T/T 5493. I CERTIFY THAT
THIS AIRCRAFT HAS BEEN INSPECTED IN
ACCORDANCE WITH AN ANNUAL
INSPECTION AND DETERMINED TO BE IN
AN AIRWORTHY CONDITION.
PATRICK POTEEN
1809539IA



AIRWORTHY SIGN OFF FOR MAINTENANCE.

11/27/02 ---- TACH: 6234.1 REMOVED ALTERNATOR (P.N.4557891) AND INSTALLED SAME PART NUMBER ALTERNATOR IAW SKYFLASH MAINTENANCE MANUAL, REVISION 21, PAGES 45-46. ALL WORK PERFORMED BY JOE KLEIN, OPERATIONAL CHECK OK.

> PATRICK POTEEN A&P 1809539





QUESTION:



WHERE IN THE MAINTENANCE ENTRY WE JUST SHOWED YOU IS THE AIRCRAFT DECLARED TO BE AIRWORTHY?



ANSWER:

■ THE SIGNATURE OF THE MECHANIC OR REPAIRMAN CONSTITUTES THE APPROVAL FOR RETURN TO SERVICE FOR THE WORK PERFORMED. (REF: SECTION 43.9 (A)(4).









UNAIRWORTHY ENTRY FOR INSPECTIONS:

11/28/02, TOTAL TIME: 8956.3 HOURS

I CERTIFY THAT THIS AIRCRAFT HAS BEEN INSPECTED IN ACCORDANCE WITH AN ANNUAL INSPECTION AND A LIST OF DISCREPANCIES AND UNAIRWORTHY ITEMS DATED 11/28/02 HAVE BEEN PROVIDED TO THE OWNER OR OPERATOR.

PATRICK POTEEN 1809539 IA





UN-AIRWORTHY ENTRY.

- WHEN YOU SIGN OFF AN AIRCRAFT AS UN-AIRWORTHY AFTER AN INSPECTION THE FOLLOWING PROCEDURES APPLY:
- THE AIRCRAFT IS GROUNDED UNTIL REPAIRED.
- TO MOVE IT BEFORE IT IS REPAIRED REQUIRES A FERRY PERMIT FROM THE FAA LOCAL OFFICE.



UN-AIRWORTHY ENTRY.

- THE ANNUAL IS DUE 12 CALENDER MONTHS FROM THE DATE ON THE UN-AIRWORTHY ENTRY.
- AN A&P OR A REPAIR STATION CAN CORRECT THE DESCREPANCIES AND SIGN THE AIRCRAFT OFF AS AIRWORTHY.
- IA GETS <u>CREDIT</u> FOR AN ANNUAL INSPECTION.











COMPROMISES

"COMPROMISES" IN AVIATION MAINTENANCE ARE MADE FOR ONE REASON, AND ONE REASON ONLY. FOR MONEY!

EITHER TO SAVE IT, OR MAKE IT!

COMPROMISING AIRWORTHINESS BEGINS LIKE THIS:

- <u>SITUATION:</u> A PART 135 AIRCRAFT NEEDS TO HAVE A RECURRENT AD COMPLIED WITH, BUT THE FLIGHT IS SUDDENLY SCHEDULED OUT IN 15 MINUTES. NOT ENOUGH TIME TO DO THE AD. IF THE FLIGHT IS NOT MADE, MONEY, A GOOD DEAL OF IT, WILL BE LOST.
- YOUR BOSS WANTS YOU TO SIGN OFF THE AD, AND CHECK IT TOMORROW.





YOU ARE UNDER A LOT OF PRESSURE:

YOUR BOSS ALSO SAYS SOMETHING ABOUT

- BEING A TEAM PLAYER OR;
- THE COMPANY MIGHT NOT MAKE THE PAYROLL IF THE FLIGHT IS NOT MADE, OR;
- THERE WILL BE A BONUS IN YOUR NEXT WEEK'S PAY CHECK OR;
- YOU WILL BE FIRED IF YOU DON'T RELEASE THE AIRCRAFT FOR SERVICE.

SO IT BEGINS, THE FIRST STEP TOWARDS "CIRCLING THE DRAIN."



YOU BEGIN TO RATIONALIZE THE DECISION TO SIGN OFF AN AD WITHOUT COMPLYING WITH IT.



COMPROMISE BEGIN WITH QUALIFYING WORDS LIKE:

- IF, PERHAPS, COULD, MIGHT, SHOULD, MAYBE,
- <u>IF</u> I GET IT BACK TOMORROW, THERE <u>SHOULD NOT</u> BE A PROBLEM
- PERHAPS I COULD LET IT GO JUST THIS ONE TIME.
- MIGHT BE OK FOR A COUPLE OF HOURS MORE. ETC, ETC,

AND WHAT IS THE PRICE ONE PAYS FOR AUTOGRAPHING A LIE?





THE PRICE ONE PAYS IS HIGH TO BE A TEAM PLAYER.

NO ACCIDENT:

- YOU CAN LOSE YOUR CERTIFICATES INCLUDING PILOT AND MECHANIC'S
- PAY A HEAVY FAA FINE.
- LOSE YOUR CAREER AND YOUR LIVELY HOOD.

THE PRICE ONE PAYS IS HIGH TO BE A TEAM PLAYER.

FATAL ACCIDENT:

- YOU CAN LOSE YOUR CERTIFICATES INCLUDING PILOT AND MECHANIC'S
- PAY A HEAVY FAA FINE.
- MANSLAUGHTER CHARGES.
- POSSIBLE PRISON TIME.
- COURT FINES AND REPARITIONS TO THE VICTIMS FAMILIES.
- AND NEVER HAVE A GOOD NIGHT SLEEP FOR THE REST OF YOUR LIFE.





ANOTHER LIFE'S LESSON

- IT IS A MATTER OF FACT THAT THE PERSON WHO ASKED YOU TO AUTOGRAPH A LIE, <u>WILL NOT</u> RAISE A FINGER TO DEFEND YOU.
- MORE LIKELY, AS PAST HISTORY WILL CONFIRM, HE WILL BE ONE OF YOUR MOST VOCAL ACCUSER.

ONE SALIENT FACT YOU SHOULD BE MADE AWARE OF



- THE AVIATION INDUSTRY DEPENDS ON THE INTERIGITY OF ITS MAINTENANCE WORKFORCE.
- MECHANICS MAKE AIRWORTHINESS DECISIONS BASED ON THE MECHANIC WHO SIGN OFF THE LOG BOOK BEFORE US.
- LIES, HOWEVER SMALL IN AIRCRAFT RECORDS CAN EASILY DESTROY OUR PROFESSSION.





A QUESTION:

- HOW WOULD YOU PERFORM AN ANNUAL INSPECTION ON AN AIRCRAFT IF THE FAA CAME OUT WITH A FACTUAL REPORT THAT SAID:
- 90% OF ALL LOG BOOK ENTRIES WERE GOOD, BUT 10% OF THE REMAINING ENTRIES WERE FALSE.
- OR:



A QUESTION:

- INSTEAD OF 10% FALSE ENTRIES LETS MAKE IT 5% OR EVEN 1%. EVEN AT 1% LEVEL OF BAD ENTRIES IN EACH AND EVERY AIRCRAFT LOG BOOK, HOW LONG WOULD YOU BE ABLE TO STAY IN BUSINESS?
- THE ANSWER IS: <u>NOT FOR VERY LONG</u>. AVIATION CANNOT FUNCTION IN AN UNKNOWN ENVIROMENT.





CLOSING STATEMENT:

- AIRWORTHINESS OF AN AIRCRAFT IS WHAT AVIATION MECHANICS DETERMINE, AND IN TURN, ULTIMATELY DEPEND ON THE AIRWORTHINESS DECISIONS OF OTHER MECHANICS.
- WE MUST MAKE YES/NO AIRWORTHY DECISIONS ONLY BECAUSE COMPROMISE, ANY COMPROMISE CONCERNING AIRWORTHINESS, CAN AND WILL AFFECT SAFETY.



CLOSING STATEMENT:

 "MAKING AIRWORTHY DECISIONS IS OUR BOTH OUR JOB AND OUR RESPONSIBILITY!"





CLOSING STATEMENT:

■ TO SELL OUR TRUST, TO PROSTITUTE OUR INTEGRITY, JUST TO AUTOGRAPH A LIE, NOT ONLY AFFECTS AVIATION SAFETY AND PUTS LIVES AND PROPERTY IN DANGER, BUT IN TIME, CAN AND WILL, DESTROY NOT ONLY OURSELVES BUT OUR AVIATION MAINTENANCE PROFESSION.







FINAL REVIEW:

- AIRWORTHY: MEETS TYPE DESIGN, OR PROPERLY ALTERED CONDITION AND IN A CONDITION FOR SAFE OPERATION.
- TYPE DESIGN---STANDARD(S) THE AIRCRAFT, ENGINE, OR PROPELLER WAS BUILT TO.
- PROPERLY ALTERED CONDITION---A CHANGE TO THE TC IN ACCORDANCE WITH A STC, AD, OR FIELD APPROVAL.



FINAL REVIEW:

- CONDITION FOR SAFE OPERATION: A DETERMINATION BASED ON INSPECTION AND AMOUNT OF WEAR.
- OBJECTIVE DECISION MAKING: MATCHING THE AIRCRAFT TO A WRITTEN STANDARD.
- SUBJECTIVE DECISION MAKING: A DETERMINATION BASED ON EXPERIENCE, KNOWLEDGE, AND TRAINING.





FINAL REVIEW:

- YES/NO DECISION MAKING: A DECISION BASED ON NO COMPROMISE.
- AIRCRAFT INSPECTION ENTRIES DECLARE THE AIRCRAFT AIRWORTHY
- THE MECHANIC'S SIGNATURE IN AIRCRAFT MAINTENANCE ENTRY DECLARE THE AIRCRAFT AIRWORTHY.



FINAL REVIEW:

- DATA:
- ACCEPTABLE AND APPROVED
- KINDS OF ACCEPTABLE DATA
- KINDS OF APPROVED DATA
- AC 43.13-1B REQUIREMENTS TO BE USED AS APPROVED DATA.





FINAL REVIEW:

- ANY COMPROMISE, BIG OR SMALL, WILL NOT ONLY AFFECT AIRWORTHNESS OF THE AIRCRAFT WE WORK ON, BUT OUR PROFESSION, AND OUR CAREERS IN A NEGATIVE WAY.
- COMPROMISE AT IT'S BEST, IS A FAUSTIAN BARGAIN.



WE WOULD LIKE TO LEAVE YOU WITH SOMETHING TO THINK ABOUT ON THE WAY HOME.



