



MASTER MINIMUM EQUIPMENT LIST



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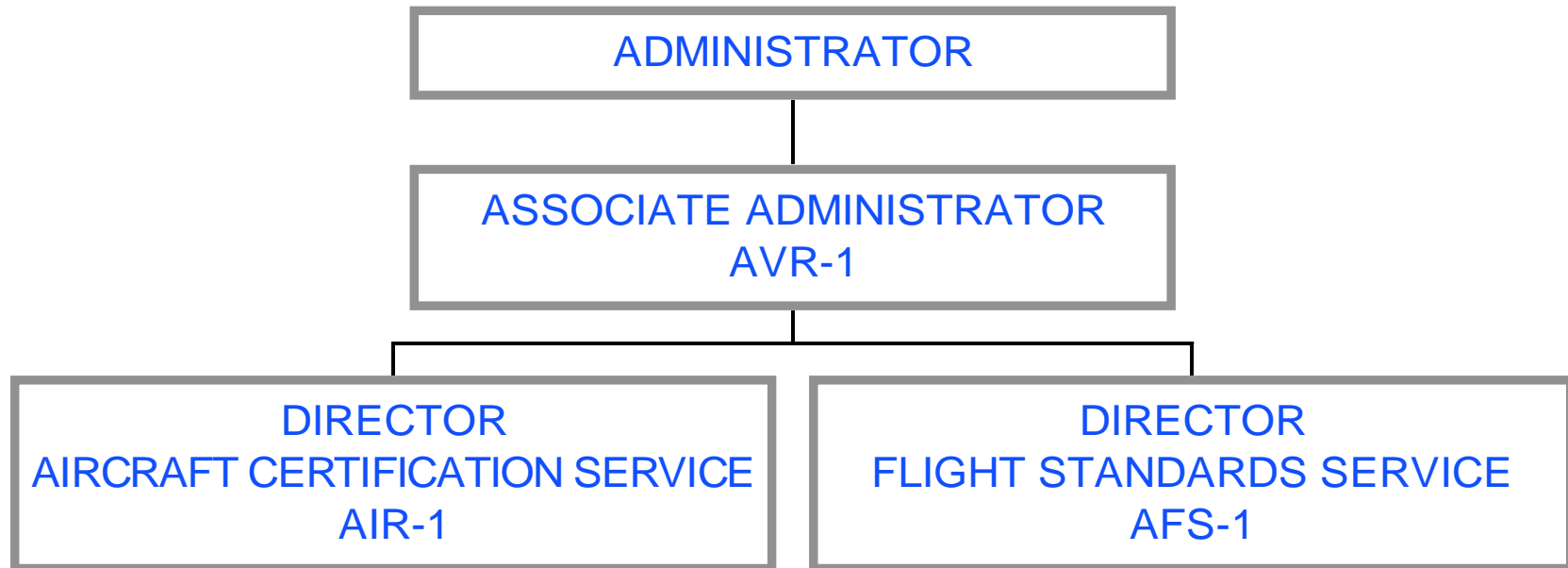
PRESENTATION OUTLINE



- The Flight Standards Service
- Aircraft Evaluation Groups
- Master Minimum Equipment List



FAA ORGANIZATION (AFS AND AIR RELATIONSHIP)





FLIGHT STANDARDS SERVICE



ESTABLISHES AND DETERMINES COMPLIANCE WITH OPERATIONAL STANDARDS FOR:

- **AIRMEN**
- **AIRCRAFT**
- **AIR CARRIERS**



FLIGHT STANDARDS SERVICE



OPERATIONAL STANDARDS FOR:

- **AIRCRAFT**
 - **PROPERLY EQUIPPED IN ACCORDANCE WITH OPERATING RULES**
 - **PROPERLY INSPECTED AND MAINTAINED**



AIRCRAFT EVALUATION GROUPS



- **THE FLIGHT STANDARDS SERVICE REPRESENTATIVE DURING THE AIRCRAFT TYPE CERTIFICATION PROCESS**
- **AIRCRAFT EVALUATION GROUPS REPORT DIRECTLY TO WASHINGTON HEADQUARTERS**
- **ROLE IS TO EXPEDITE INTRODUCTION OF AIRCRAFT INTO U.S. OPERATIONS**
- **COORDINATE FINDINGS TO THE FLIGHT STANDARDS DISTRICT OFFICES**



AIRCRAFT EVALUATION GROUPS INVOLVEMENT IN TC PROCESS



- **MASTER MINIMUM EQUIPMENT LIST**
 - **AEG ESTABLISHES A FLIGHT OPERATIONS EVALUATION BOARD TO DEVELOP AND APPROVE THE MASTER MINIMUM EQUIPMENT LIST**
- **CREW QUALIFICATION REQUIREMENTS**
 - **AEG ESTABLISHES A FLIGHT STANDARDIZATION BOARD**
 - **THE FLIGHT STANDARDIZATION BOARD:**
 - **MAKES A AIRCRAFT TYPE RATING DETERMINATION**
 - **ESTABLISHES MINIMUM TRAINING REQUIREMENTS**



THINGS TO REMEMBER



- **AIRCRAFT EVALUATION GROUPS WORK WITH AIRCRAFT MANUFACTURERS DURING THE AIRCRAFT TYPE CERTIFICATION PROCESS TO EXPEDITE THE INTRODUCTION OF AIRCRAFT INTO SERVICE.**



THINGS TO REMEMBER



- **THE MASTER MINIMUM EQUIPMENT LIST INCREASES AIRCRAFT UTILIZATION**
- **AIRCRAFT MANUFACTURERS SHOULD PROVIDE TO THE AIRCRAFT EVALUATION GROUP:**
 - **A PROPOSED MASTER MINIMUM EQUIPMENT LIST**
 - **A TECHNICAL ADVISOR TO THE BOARD**
 - **A DISPATCH DEVIATION GUIDE IF ONE IS DESIRED**
- **THE AEG WILL ESTABLISH A FLIGHT OPERATIONS EVALUATION BOARD TO EVALUATE AND OBTAIN APPROVAL OF THE MASTER MINIMUM EQUIPMENT LIST**



ESTABLISHING A MASTER MINIMUM EQUIPMENT LIST



MASTER MINIMUM EQUIPMENT LIST



- **PURPOSE**

- **REGULATORY BASIS**

- **FLIGHT OPERATIONS EVALUATION BOARD(FOEB)**
 - **COMPOSITION OF THE BOARD**
 - **THE MANUFACTURER'S PROPOSED MMEL**
 - **EVALUATION PROCESS**

- **PREPARATION AND FORMAT**



MASTER MINIMUM EQUIPMENT LIST



PURPOSE:

- **PERMIT OPERATION OF AIRCRAFT WITH INOPERATIVE EQUIPMENT**
- **INCREASE AIRCRAFT UTILIZATION WHILE MAINTAINING AN ACCEPTABLE LEVEL OF SAFETY**



MASTER MINIMUM EQUIPMENT LIST



- **THE AIRWORTHINESS CERTIFICATE OF AN AIRCRAFT IS BASED ON THE REQUIREMENT THAT THE AIRCRAFT CONFORM TO ITS TYPE DESIGN**
- **IN ORDER TO CONFORM TO ITS TYPE DESIGN, ALL INSTALLED INSTRUMENTS AND ITEMS OF EQUIPMENT MUST FUNCTION AS DESIGNED FOR ALL OPERATIONS.**

(FAA GENERAL COUNSEL INTERPRETATION)



MASTER MINIMUM EQUIPMENT LIST



- **THE OPERATING RULES ALLOW THE USE OF A MINIMUM EQUIPMENT LIST TO DISPATCH WITH INOPERATIVE EQUIPMENT**
 - **FAR 91.213**
 - **FAR 91.213(d) ALLOWS, WITH CERTAIN RESTRICTIONS, SMALL NON-TURBINE AIRCRAFT NOT OPERATED IN FAR 121, 125, OR 135 OPERATIONS TO DISPATCH WITH INOPERATIVE EQUIPMENT**
 - **FAR 121.628**
 - **FAR 125.201**
 - **FAR 135.179**



MASTER MINIMUM EQUIPMENT LIST



- **DEVELOPED FROM THE MANUFACTURER'S PROPOSED MASTER MINIMUM EQUIPMENT LIST(PMMEL)**
- **LISTS ALL ITEMS OF EQUIPMENT WHICH MAY BE INOPERATIVE**
- **CONTAINS CONDITIONS AND AND LIMITATIONS**
- **CONTAINS REPAIR INTERVALS**



MINIMUM EQUIPMENT LIST



- **DEVELOPED BY EACH OPERATOR**
- **MAY BE NO LESS RESTRICTIVE THAN THE MMEL**
- **CONTAINS THE OPERATOR'S EXPANDED OPERATIONS AND MAINTENANCE PROCEDURES**
- **APPROVED BY THE OPERATOR'S FLIGHT STANDARDS DISTRICT OFFICE**



FLIGHT OPERATIONS EVALUATION BOARD



- **THE AEG ESTABLISHES A FOEB TO EVALUATE THE PROPOSED MASTER MINIMUM EQUIPMENT LIST**
- **THE BOARD NORMALLY CONSISTS OF:**
 - **CHAIRPERSON FROM THE AEG**
 - **FLIGHT STANDARDS SERVICE AVIONICS INSPECTOR**
 - **FLIGHT STANDARDS SERVICE OPERATIONS INSPECTOR**
 - **FLIGHT STANDARDS SERVICE MAINTENANCE INSPECTOR**
 - **FLIGHT TEST PILOT FROM AIR**
 - **WASHINGTON HQ POLICY DIVISION REPRESENTATIVE**
- **MANUFACTURER PROVIDES A REPRESENTATIVE TO SERVE AS TECHNICAL ADVISOR TO THE BOARD**



FLIGHT OPERATIONS EVALUATION BOARD



- **THE FOEB EVALUATES EACH ITEM PROPOSED TO BE INOPERATIVE BY THE MANUFACTURER.**

RESTRICTIONS:

- **THE ITEM MUST NOT CONFLICT WITH THE AIRCRAFT FLIGHT MANUAL**
- **THE ITEM MUST NOT BE NEEDED TO ACCOMPLISH ANY ABNORMAL OR EMERGENCY PROCEDURE**
- **THE ITEM MUST NOT CONFLICT WITH ANY AIRWORTHINESS DIRECTIVE**



FLIGHT OPERATIONS EVALUATION BOARD



PHILOSOPHY:

- **THE BOARD CONSIDERS “THE NEXT WORST FAILURE SCENARIO”**
- **CAN THE FUNCTION OF THE ITEM BE TRANSFERRED?**
 - **HOW WILL THIS AFFECT CREW WORKLOAD?**
- **WAS THE ITEM REQUIRED BECAUSE OF A SPECIAL CONDITION OR TYPE CERTIFICATION REQUIREMENT?**



FLIGHT OPERATIONS EVALUATION BOARD



- **HOW WILL THIS INOPERATIVE ITEM AFFECT AIRCRAFT PERFORMANCE?**
- **HOW WILL THE INOPERATIVE ITEM AFFECT EXTENDED RANGE OR LOWER VISIBILITY OPERATIONS?**
- **CAN THE ITEM BE ALLOWED TO BE INOPERATIVE WHILE MAINTAINING AN ACCEPTABLE LEVEL OF SAFETY?**



MASTER MINIMUM EQUIPMENT LIST



- **DRAFT MMEL IS DISTRIBUTED TO OTHER MANUFACTURERS AND INDUSTRY GROUPS FOR THEIR COMMENTS**
- **MMEL IS RELEASED BY WASHINGTON HEADQUARTERS**
- **MMEL IS AVAILABLE THROUGH VARIOUS MEANS:**
 - **FAA MAINTAINED WEB SITE (WWW.OPSPECS.COM)**
 - **FLIGHT STANDARDS DISTRICT OFFICES**



DISPATCH DEVIATION GUIDE



- **MASTER MINIMUM EQUIPMENT LIST CONTAINS:**
- **(O) PROCEDURES**
 - **OPERATIONS PROCEDURE(NORMALLY PERFORMED BY THE PILOT)**
- **(M) PROCEDURES**
 - **MAINTENANCE PROCEDURE(NORMALLY PERFORMED BY MAINTENANCE PERSONNEL)**
- **MANUFACTURER SUPPLIES SPECIFIC (O) AND (M) PROCEDURES IN THE DISPATCH DEVIATION GUIDE**
- **MAY BE CALLED SOMETHING ELSE(i.e. EXPANDED MMEL PROCEDURES, MMEL CREW GUIDE)**



DISPATCH DEVIATION GUIDE



- **SUPPLEMENTS THE MASTER MINIMUM EQUIPMENT LIST**
- **FOEB REVIEWS TO DETERMINE THAT THE MANUFACTURER'S PROCEDURE ACCOMPLISHES THE INTENT OF THE (O) OR (M) AND THAT IT IS PERFORMED BY THE APPROPRIATE PERSONNEL**
- **NOT MANDATORY, BUT VERY DESIRABLE**
- **PROVIDES A VALUABLE SERVICE TO THE OPERATOR**



OPERATIONAL AUTHORITY



- **OPERATIONAL AUTHORITY is a Separate Requirement from Obtaining Aircraft Type Certification**
- **Approval to Operate Aircraft in the United States is obtained from the Flight Standards Service**
- **The Flight Standards Service has over 100 Flight Standards District Offices**
- **It is Essential that Operational Requirements be Considered During the Type Certification Process to ensure that Type Certificated Aircraft can be placed into service expeditiously by the Owner/Operator**



FLIGHT STANDARDS SERVICE



OPERATIONAL STANDARDS FOR:

- **AIRMEN**
 - **PROPERLY TRAINED AND CERTIFICATED**
- FLIGHT STANDARDS DISTRICT OFFICES ISSUE AIRMAN CERTIFICATES AND APPROVE AIR CARRIER GROUND AND FLIGHT TRAINING PROGRAMS**



FLIGHT STANDARDS SERVICE



- **OPERATIONAL STANDARDS FOR:**
- **AIR CARRIERS**
 - **AUTHORIZED TO OPERATE SPECIFIC AIRCRAFT IN SPECIFIC AREAS**

FLIGHT STANDARDS DISTRICT OFFICES ISSUE OPERATIONS SPECIFICATIONS. OPERATIONS SPECIFICATIONS AUTHORIZE AIR CARRIERS TO OPERATE SPECIFIC AIRCRAFT AND SPECIFIC AREAS OF OPERATION



AIRCRAFT EVALUATION GROUPS INVOLVEMENT IN THE TC PROCESS



- **INSTRUCTIONS FOR CONTINUED AIRWORTHINESS**
 - **THE AEG REVIEWS THE INSTRUCTIONS FOR CONTINUED AIRWORTHINESS PROVIDED BY THE MANUFACTURER**
- **MAINTENANCE REVIEW BOARD**
 - **FOR LARGE AIRCRAFT, THE AEG ESTABLISHES A MAINTENANCE REVIEW BOARD TO ESTABLISH THE MINIMUM SCHEDULED MAINTENANCE/INSPECTION REQUIREMENTS**
- **AIRCRAFT FLIGHT MANUAL**
 - **THE AEG REVIEWS THE AFM AND PROVIDES COMMENTS TO CERTIFICATION PERSONNEL REGARDING OPERATIONAL ISSUES**



AIRCRAFT EVALUATION GROUP INVOLVEMENT IN THE TC PROCESS



- **FORWARD OBSERVER SEAT SUITABILITY**
 - **THE AEG EVALUATES THE FORWARD OBSERVER SEAT REQUIRED BY FAR 121.581(a), FAR 125.581(a), AND FAR 135.175(b) FOR SUITABILITY FOR USE IN CONDUCTING ENROUTE INSPECTIONS**

- **OPERATING RULE COMPLIANCE**
 - **THE AEG EVALUATES THE AIRCRAFT FOR COMPLIANCE WITH THE OPERATIONAL REQUIREMENTS IN FAR 91, 121, 125, AND 135**



AIRCRAFT EVALUATION GROUPS INVOLVEMENT IN THE TC PROCESS



- **MINIMUM CREW DETERMINATION**
 - **THE AEG PARTICIPATES WITH CERTIFICATION PERSONNEL TO EVALUATE CREW WORKLOAD**
- **MANUFACTURER'S EMERGENCY EVACUATION DEMONSTRATION**
 - **THE AEG PARTICIPATES WITH CERTIFICATION PERSONNEL, PROVIDES COMMENTS, AND DOCUMENTS CABIN AND FLIGHT CREW TRAINING**



AIRCRAFT EVALUATION GROUPS INVOLVEMENT IN THE TC PROCESS



- **FUNCTION AND RELIABILITY PROGRAM**
 - **THE AEG PARTICIPATES IN COORDINATION WITH CERTIFICATION PERSONNEL TO FAMILIARIZE THE FSB MEMBERS WITH THE AIRCRAFT**

- **TRAINING DEVICE AND SIMULATOR SUITABILITY**
 - **THE FLIGHT STANDARDIZATION BOARD EVALUATES ANY TRAINING DEVICES AND SIMULATORS AND SPECIFIES MINIMUM CHARACTERISTICS**



CREW QUALIFICATIONS



- **AIRCRAFT TYPE RATING DETERMINATION**
- **TRAINING EVALUATION**



CREW QUALIFICATIONS



- **AIRCRAFT TYPE RATING**

FAR 61.31 REQUIRES THE PILOT IN COMMAND OF THE FOLLOWING TO HOLD A TYPE RATING FOR:

- 1. A LARGE AIRCRAFT**
- 2. A SMALL TURBOJET-POWERED AIRCRAFT**
- 3. SMALL HELICOPTERS FOR OPERATIONS REQUIRING AN AIRLINE TRANSPORT PILOT CERTIFICATE**
- 4. ANY OTHER AIRCRAFT SPECIFIED THROUGH TYPE CERTIFICATION PROCEDURES**



CREW QUALIFICATIONS



- **AIRCRAFT TYPE RATINGS DICTATE AIRCRAFT SPECIFIC:**
- **TRAINING**
- **CHECKING**
- **CURRENCY**



CREW QUALIFICATIONS



- **TRAINING REQUIRED FOR A TYPE RATING**

FAR 61.63 AND FAR 61.157 REQUIRE GROUND AND FLIGHT TRAINING IN THE MANEUVERS AND PROCEDURES REQUIRED BY FAR 61, APPENDIX A



CREW QUALIFICATIONS



- **CHECKING REQUIRED BY AN AIRCRAFT TYPE RATING**

FAR 61.63 REQUIRES A FLIGHT TEST IN AN AIRCRAFT OF THAT TYPE



CREW QUALIFICATIONS



- **CURRENCY FOR AN AIRCRAFT TYPE RATING**

FAR 61.67(C) STATES THAT TO ACT AS PILOT IN COMMAND CARRYING PASSENGERS IN AN AIRCRAFT THAT REQUIRES A TYPE RATING, THE PIC MUST HAVE MADE THREE TAKEOFFS AND THREE LANDINGS WITHIN THE PRECEDING 90 DAYS IN AN AIRCRAFT OF THE SAME TYPE



CREW QUALIFICATIONS



- **AIR CARRIER CREWS**

FAR 135.321, SUBPART H AND FAR 121, SUBPARTS N AND O REQUIRE CERTAIN TRAINING, CHECKING, AND CURRENCY FOR PILOTS EMPLOYED BY AIR CARRIERS



FLIGHT STANDARDIZATION BOARD



- **THE AIRCRAFT EVALUATION GROUP WILL CONVENE A FLIGHT STANDARDIZATION BOARD TO MAKE AN AIRCRAFT TYPE RATING DETERMINATION AND EVALUATE TRAINING**



FLIGHT STANDARDIZATION BOARD



- **THE FLIGHT STANDARDIZATION BOARD IS NORMALLY COMPOSED OF:**
 - **CHAIRPERSON FROM THE AIRCRAFT EVALUATION GROUP**
 - **FLIGHT STANDARDS OPERATIONS INSPECTOR(S)**
 - **WASHINGTON POLICY DIVISION REPRESENTATIVE**



FLIGHT STANDARDIZATION BOARD



- **MANUFACTURER AIRCRAFT TYPE RATING PROPOSAL**
 - **NEW AIRCRAFT TYPE RATING FOR INITIAL MODELS**
 - **SAME AIRCRAFT TYPE RATING FOR VARIANT MODELS**
 - **NO AIRCRAFT TYPE RATING**
- **MANUFACTURER TRAINING PROPOSAL**
 - **TRAINING FOR AIRCRAFT TYPE RATING**
 - **APPROPRIATE AIR CARRIER TRAINING DEPENDING UPON PROPOSED AIR CARRIER OPERATIONS(121, 135)**

 - **FSB PILOTS TRAINED TO PROFICIENCY**
 - **GROUND AND FLIGHT TRAINING**



FLIGHT EVALUATION



- **THE AIRCRAFT EVALUATION GROUP MAY CONDUCT A FLIGHT EVALUATION OF SMALL, NON-TURBINE AIRCRAFT TO DETERMINE IF A FLIGHT STANDARDIZATION BOARD SHOULD BE ESTABLISHED**
 - **AEG PILOTS**
 - **GROUND TRAINING**
 - **FLIGHT TIME**
- **REMEMBER: FAR 61.31 ALLOWS AN AIRCRAFT TYPE RATING FOR SMALL, NON- TURBOJET AIRCRAFT**



FLIGHT STANDARDIZATION BOARD



- **USES ADVISORY CIRCULAR 120-53, CREW QUALIFICATION AND PILOT TYPE RATING REQUIREMENTS FOR TRANSPORT CATEGORY AIRCRAFT**
- **AC 120-53 CONTAINS GUIDANCE ON STANDARDIZED TESTS AND DIFFERENCE LEVELS**



FLIGHT STANDARDIZATION BOARD



- **FOR NEW AIRCRAFT**
 - **THE T-5 TEST WILL BE CONDUCTED TO VALIDATE AN INITIAL OR TRANSITION TRAINING PROGRAM**
 - **LEVEL E TRAINING IS ESTABLISHED**
 - **MASTER COMMON REQUIREMENTS ARE DOCUMENTED**
- **VARIANT AIRCRAFT**
 - **MANUFACTURER PROPOSED TEST(T-1 through T-5)**
 - **LEVEL A THROUGH E TRAINING, CHECKING, AND CURRENCY ARE ESTABLISHED**
 - **MASTER DIFFERENCE REQUIREMENTS AND OPERATOR DIFFERENCE REQUIREMENTS TABLES ARE DOCUMENTED**



FLIGHT STANDARDIZATION BOARD



- **THE FLIGHT STANDARDIZATION BOARD IS AUTHORIZED TO DETERMINE COMPLIANCE WITH OPERATIONAL RULES**
- **THIS EXPEDITES INTRODUCTION INTO SERVICE IN THE UNITED STATES**
- **THE FINDINGS OF THE BOARD ARE DOCUMENTED AND PROVIDED TO FLIGHT STANDARDS DISTRICT OFFICES**



OPERATING RULES



- **FAR 61 CERTIFICATION: PILOTS AND FLIGHT INSTRUCTORS**
- **FAR 91 GENERAL OPERATING AND FLIGHT RULES**
- **FAR 121-CERTIFICATION AND OPERATIONS: AIR CARRIERS OPERATING LARGE AIRCRAFT**
- **FAR 135-AIR TAXI OPERATORS AND COMMERCIAL OPERATORS**



FLIGHT STANDARDIZATION BOARD REPORT



- **PURPOSE AND APPLICABILITY**
- **MASTER COMMON REQUIREMENTS**
- **MASTER DIFFERENCE REQUIREMENTS**
- **ACCEPTABLE “OPERATOR DIFFERENCE REQUIREMENTS TABLES”**
- **FSB SPECIFICATIONS FOR TRAINING**
- **FSB SPECIFICATIONS FOR CHECKING**
- **FSB SPECIFICATIONS FOR CURRENCY**
- **AIRCRAFT REGULATORY COMPLIANCE CHECKLIST**
- **FSB SPECS FOR DEVICES AND SIMULATORS**



THINGS TO REMEMBER



- **THE FLIGHT STANDARDS SERVICE ESTABLISHES AND DETERMINES CREW QUALIFICATIONS**

- **THE MANUFACTURER MUST PROVIDE:**
 - **AN AIRCRAFT TYPE RATING PROPOSAL**
 - **GROUND AND FLIGHT TRAINING FOR INITIAL QUALIFICATION OF THE FSB PILOTS**

- **THE AIRCRAFT EVALUATION GROUP WILL ESTABLISH A FLIGHT STANDARDIZATION BOARD TO:**
 - **MAKE THE AIRCRAFT TYPE RATING DETERMINATION**
 - **ESTABLISH MINIMUM TRAINING REQUIREMENTS**



THINGS TO REMEMBER



- **CONSIDERING COMPLIANCE WITH OPERATING RULES EARLY IN THE TYPE CERTIFICATION PROCESS EXPEDITES INTRODUCTION OF THE AIRCRAFT INTO SERVICE**
- **THE MANUFACTURER MUST PROVIDE THE FLIGHT STANDARDIZATION BOARD ACCESS TO A PRODUCTION MODEL AIRCRAFT**
- **THE AIRCRAFT EVALUATION GROUP WILL PROVIDE A COMPLIANCE CHECKLIST IN THE FLIGHT STANDARDIZATION BOARD REPORT FOR USE BY THE FLIGHT STANDARDS DISTRICT OFFICE**