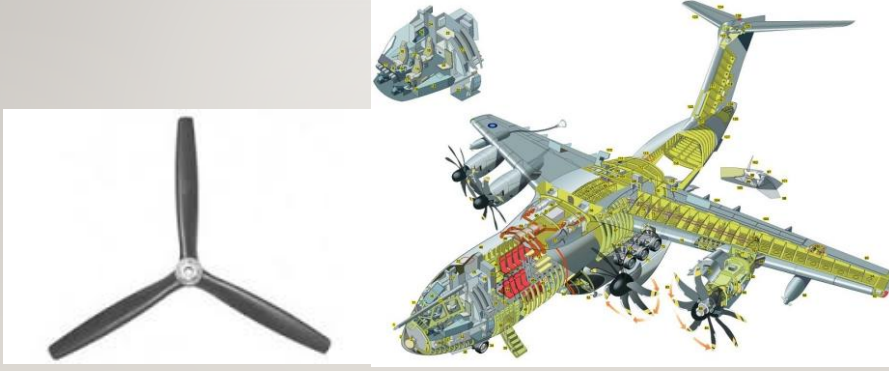


ERCIYES ÜNİVERSİTESİ HUBF BAKIM YÖNETİMİ

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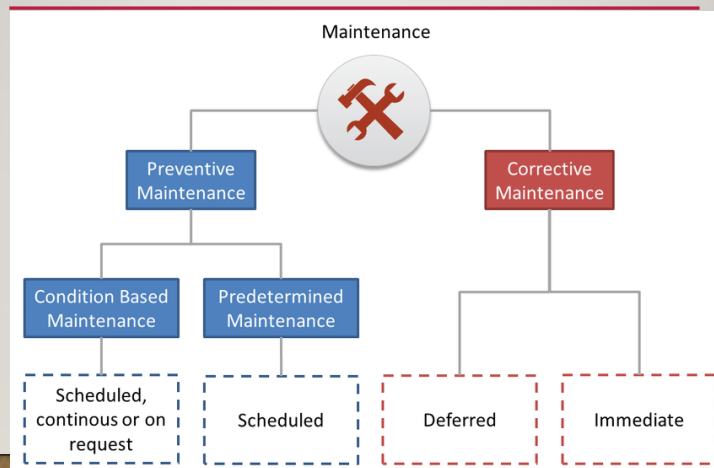


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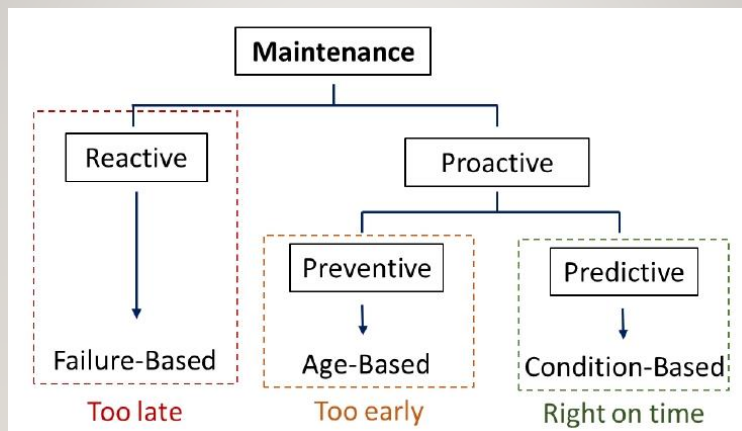
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EVOLUTION OF AIRCRAFT MAINTENANCE PROCESS

- The principle behind the construction of modern aircraft maintenance Schedule is a documentation produced by Air Transport Association (ATA) maintenance steering group (MSG).
- The concept started in the 1960s by FAA on the first generation of wide body aircraft, that is, the Boeing 747, DC10, and L1011.
- Before the application of MSG Logic, hard time (HT) principal was in use, which based maintenance for the aircraft on the theory of preventive, yet expensive, replacement or restoration of components



- The process-oriented approach to maintenance uses three primary maintenance processes to accomplish the scheduled maintenance actions.
- These processes are called hard time (HT), on-condition (OC), and condition monitoring (CM).
- The HT and OC processes are used for components or systems that, respectively, have definite life limits or detectable wear-out periods.
- The CM process is used to monitor systems and components that cannot utilize either the HT or OC processes. These CM items are operated to failure, and failure rates are tracked to aid in failure prediction or failure prevention efforts. These are called “operate to failure” items



- The process used involved six industry working groups (IWGs), which includes structures, mechanical systems, engine and auxiliary power unit (APU), electrical and avionics systems, flight control and hydraulics, and zonal.
- Each group addresses their specific systems in the same way to develop an adequate initial maintenance program. **The first MSG focuses on developing how to conduct a logical decision process to develop efficient, cost-effective maintenance routines that are acceptable to operators, manufacturers, and regulating authorities.**
- The IWGs analyze each item using a logic tree to determine the requirements in the areas of functions, failure modes, failure effects, and failure causes.
- This approach to maintenance program development is called a ***“bottom up”*** approach because it looks at the components as the most likely causes of equipment malfunction

- Over time, the MSG process has evolved from a hard-time concept to CM.
- The process allows malfunctions to occur and relies upon the analysis of information about such malfunctions to determine the proper actions.
- To improve upon this method, MSG-2 was designed and then modified in 1980 in a document released by the ATA.
- Then, MSG-3 was built upon the existing framework of MSG-2. It adjusted the decision logic to provide a more straightforward and linear progression through the logic.
- MSG and MSG-2 are both bottom-up approaches; in contrast, the MSG-3 process is a **top-down** approach or consequence-of-failure approach.
- The component failures or deteriorations are not the main focus of the process; instead, the consequences of the failure and how it affects aircraft operations is considered. The idea is to cover and analyze each task based upon these three dimensions across the full decision tree. A simplified diagram is shown in Fig.

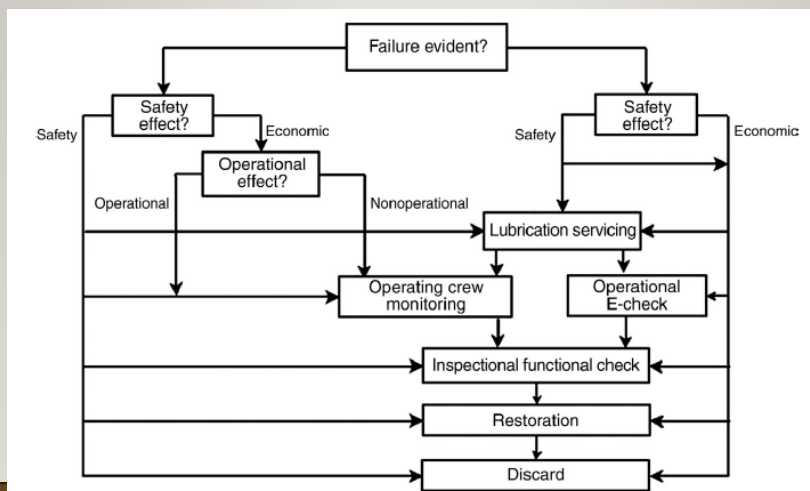


FIGURE 1.3 MSG-3 logic diagram.

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- The result of the MSG-3 analysis constitutes the original maintenance program for the new model aircraft and the program that is to be used by a new operator of that model. The tasks selected in the MSG process are published by the airframe manufacturer in an FAA-approved document called the maintenance review board (MRB) report.
 - This report contains the initial scheduled maintenance program and is used by those operators to establish their own FAA-approved maintenance program as identified by the operations specifications. The MRB report, the manufacturer publishes its own document for maintenance planning. For manufacturers like Airbus or Boeing, this document is called the **maintenance planning document (MPD)**.
 - This document often groups maintenance as an alphabetical checklist with hours, cycles, and calendar time. These estimated times must be altered by the operator to accommodate the actual task requirements when planning any given check activity.

• QUESTIONS

