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Report: ETOPS Maintenance

There has been a growing number of operators providing the Extended-Twin Engine-Operations to the customers. For instance, about 42 % and 76 percent of 757 and 767 operators respectively are flying ETOPS routes. This has been the case since many of the operatives have come to realize the benefits of ETOPS compared to its cost which has turned to be benefiting them when compared with those flying their non-ETOPS routes. In the past, the United States of America came up with regulations that deterred the dual-engine aircrafts from courses that took more than one hour (Gratton, 2015). However, the FAA's Advisory Circular (AC) 120-42A permits the operatives to deviate from the above rule under specific conditions. These explicit conditions are fulfilled by having integrated certain hardware improvements as well as creating particular repairs and operational procedures. Once the operators have ensured the requirements then they can be allowed to fly extended distances of up to three-hours from the takeoff airport.

Monitoring Engine's Health

The Extended-Twin Engine-Operations maintenance procedures were established in order to guarantee safety as well as dependability of flights. In the past airplanes could not fly for over sixty minutes from the alternate airport. But this was causing inconveniences as it proved not to be possible for the commercial airlines to fly over ocean for more than sixty minutes. Therefore, the operators decided to come up with the ETOPS which enables the airplanes to fly for even over three hours non-stop from the alternate airport. In the past, most traditional maintenance program was geared towards ensuring preventive maintenance as well as the ability to predict maintenance issues (Holt & Poynor, 2006). This was realized after looking into the removal rates, repair rates as well as other reliable data.

The Extended-Twin Engine-Operations is based on a concurrent approach that ensures preservation and continuous monitoring of the functioning of the airplane engines. This enables the engineers to identify issues even long before they pose a threat to the operation and safety of the airplane.

Monitoring of Oil Consumption

A normal maintenance routine requires the engineers to check oil before the kickoff of every flight. This is required to be carried only once per day on the 737, as indicated by the FAA. Oil usage is checked at least after every 100 hours. The technicians should ensure that they have noted in the logbook the volume of oil that they have added. They should also calculate the quantity of oil that was used per hour in the preceding flight leg (Gratton, 2015). This ought to be carried out before the dispatch of every flight. If the rate appears to be acceptable, then the flight can be dispatched. If the rate of oil-usage by the engines is beyond the tolerable limits, then it should be checked to correct the condition. For instance, the increased rate could be attributed to oil leak.

Monitoring of Oil Condition

All the airplanes are fitted with the Engine Condition Monitoring (ECM) which assists the operators assess the general health of the engines. The program has been set in a way that it is in a position to keep a close eye on constraints such as vibration, exhaust gas temperature, oil and fuel pressure, N_1 and N_2 . The operators are needed to apply the ECM program so that they can be able to keep monitoring adverse trends in engine performance as well as carrying out of repairs and maintenance procedures in a timely manner (Holt, et al., 2006).

Service Check before Departure

The FAA needs certain Extended-Twin Engine-Operations systems to be re-checked before dispatching any flight. Boeing asserts that whenever a transit maintenance check is performed, it is enough to ensure that the requirements set by the AC 120-42A were met. This was reached for after specific systems related to the Extended-Twin Engine-Operations were restructured for superior dependability as well as dispatch checks were changed for ETOPS (Holt, et al., 2006). The Boeing 737 was the only airplane which was affected by the engine oil servicing check interval.

Basic & Multiple-System Care Practices

Resolution of Inconsistencies; it entails that all items that were fixed or even exchanged to be checked to ensure that they have been properly installed and are operating as they should be before having the maintenance logbook signed off.

Evasion of Numerous Comparable Systems Maintenance; it requires the maintenance team to ensure that they have not carried maintenance works on two similar system on the same maintenance visit. This decision was reached for because some operators might it difficult to carry out maintenance since it must be done at their home base.

Event-oriented Dependability Program

This program which is linked to the ETOPS is different from the conventional reliability programs. The conservative dependability programs rely on historic data or frequency of alert in order to determine whether a certain part needs to be investigated for any possible corrective action (Gratton, 2015). However, the event-driven reliability program ensures that each event on the Extended-Twin Engine-Operations is investigated in order to check whether the issue could be abridged or eradicated by altering the maintenance sequencer.

References

Gratton, G. (2015). *Initial Airworthiness: Determining the Acceptability of New Airborne Systems*.

Holt, M. J., & Poynor, P. J. (2006). *Air carrier operations*. Newcastle, Wash: Aviation Supplies & Academics.

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