

elements of a CAMP for an ETOPS operator:

(1) ETOPS Pre-Departure Service Check

The pre-departure service check is designed to ensure that ETOPS significant systems will perform their intended function throughout the flight. An ETOPS pre-departure service check would have to verify the status of ETOPS significant systems. Some certificate holders conducting ETOPS flights have elected to add other items to their check as a result of operational experience and knowledge gained from their reliability programs. Regardless of any additional items an operator may add to a check, the focal point of this check must be inspection, servicing, and maintenance of ETOPS significant systems.

(2) Dual Maintenance

Dual maintenance is a concept relating to repetition of maintenance errors on redundant systems. There have been instances of a single mechanic repeating a maintenance error on multiple systems. An example of dual maintenance error is failing to install o-rings on engine oil or fuel components on multiple engines. Establishing procedures to avoid dual maintenance can minimize the probability of such errors. The use of two or more mechanics reduces the risk of this type of error. Routine tasks on multiple similar elements, such as oil and fuel filter changes, should never be scheduled and assigned on the same maintenance visit.

However, the FAA is aware that under some limited circumstances, dual maintenance may be unavoidable. For instance, a pilot's report of a discrepancy on an ETOPS significant system may require maintenance on one engine at the same time as a scheduled maintenance event for the other engine. In such cases, the certificate holder must establish and follow procedures to mitigate the risk of a common cause human error.

(3) Verification Program

The verification program ensures the effectiveness of ETOPS maintenance actions. Verification programs are designed to identify any potential problems and may consist of ground tests, flight tests, use of built in test equipment (BITE), and other tests as appropriate. Verification action must be accomplished following corrective action to an ETOPS significant system, primary system failure, IFSD or in response to significant adverse trends. The certificate holder must establish procedures to clearly indicate who is

going to initiate the action and what verification action is necessary. A verification flight may be performed in combination with an ETOPS revenue flight, provided the verification phase is documented as satisfactorily completed upon reaching the ETOPS entry point.

(4) Task Identification

ETOPS maintenance programs include numerous tasks that are critical to ETOPS. Under this proposal, the certificate holder would have to identify specific tasks that must be accomplished by ETOPS qualified personnel. These ETOPS-specific tasks are performed during all phases of maintenance. On the other hand, some tasks in an ETOPS maintenance program are identical to tasks on a non-ETOPS airplane. The FAA realizes that tasks, such as checking seat belts prior to a flight, do not involve ETOPS significant systems and may be performed by non-ETOPS qualified personnel. ETOPS specific tasks would either be identified on the certificate holder's routine work forms and related instructions or parceled together and identified as an "ETOPS package."

(5) Centralized Maintenance Control Procedures

The certificate holder would have to develop and clearly define in their program ETOPS related procedures, duties, and responsibilities, such as the involvement of centralized maintenance control. The function of centralized maintenance control is to be a focal point for operational aspects of ETOPS maintenance and to ensure that ETOPS aircraft are airworthy. Procedures and centralized control processes would be established which would preclude an airplane being dispatched for ETOPS flights after a propulsion system shutdown, significant primary airframe system failure, or significant adverse trends in system performance without appropriate corrective action having been taken. Confirmation of corrective maintenance would require appropriate verification action prior to an ETOPS flight. Depending on the size and scope of the ETOPS operation, the maintenance control entity could be an entire department or one ETOPS-qualified individual for a small operation. "Centralized maintenance control" is also referred to as "technical services center", "maintenance operations control (MOC)", and "maintenance coordination center" among other terms within industry.

(6) ETOPS Program Document

The certificate holder would have to develop a document that identifies all

ETOPS requirements, including supportive programs, procedures, duties, and responsibilities. The ETOPS program document would be for use by personnel involved in ETOPS and would be readily accessible to those personnel. This document need not be inclusive but should at least reference the maintenance program and other requirements, and clearly indicate where they are located in the certificate holder's document system. The ETOPS program document would have to be submitted to the CHDO for approval at least 60 days before beginning ETOPS flights and be subject to revision control.

(7) ETOPS Parts Control

Under this proposal, the certificate holder would have to develop a parts control program that ensures the proper parts and configurations are maintained for ETOPS airplanes. The program would have to include procedures to verify that the parts installed on ETOPS airplanes during parts borrowing or pooling arrangements, as well as those parts used after repair or overhaul, maintains the necessary ETOPS configuration. In many cases, certificate holders utilize the Illustrated Parts Catalog (IPC) as the ETOPS parts controlling document. However, other methods may be used provided that the configuration standard of the airplane and engine is maintained.

(8) Reliability Program

The certificate holder would have to develop an ETOPS Reliability Program or the certificate holder's existing Reliability Program would have to be supplemented. This program should be designed to identify and prevent ETOPS related problems. The program would be event-oriented and incorporate reporting procedures for critical events detrimental to ETOPS flights. For those certificate holders that do not have a FAA approved reliability program, their Continuing Analysis and Surveillance (CAS) would have to be enhanced to achieve ETOPS reliability goals. Reliability data would have to be readily available for use by the certificate holder and the FAA to ensure that an acceptable level of reliability is achieved and maintained.

The reporting requirements differ from the ARAC recommendation. The ARAC proposal indicated that the reporting requirements for ETOPS would be satisfied through reporting required by sections 121.363, 121.703, 121.704 and 121.705. Due to other FAA rulemaking activity to amend sections 121.703 and 121.704, the reporting requirements of 121.703 and 121.704