

**QANTAS AIRWAYS LTD.**

**COMMENTS ON**

UNITED STATES OF AMERICA  
DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Parts 1, 21, 25, 33, 121, 135

**Extended Operations (ETOPS) of  
Multi-engine Airplanes**

RIN 2120-AI03

Docket No. FAA-2002-6717; Notice No. 03-11

## **Executive Summary**

Nearly twenty years ago, twin engined passenger jets began operating. Regulators introduced comprehensive engineering and maintenance procedures and placed a sixty minute maximum diversion time operational limit on passenger operations. This time limit was the same that had applied to piston engine aircraft.

Over the years, the results of the engineering and maintenance combined with the manufacturing improvements have been impressive from a safety and reliability point of view. As a result, the highly restrictive sixty minute maximum diversion time restriction has incrementally been increased to up to 207 minutes, depending on the airline operational requirements and Regulator satisfaction with the airline procedures.

The NPRM was produced to formalise the previous Advisory Circular requirements. Unfortunately, there was a consensus based group (ARAC) which made recommendations to the FAA regarding the NPRM. Many of the ARAC recommendations which were adopted by the FAA are not based on safety or science. The basic concept of ETOPS was not validated but expanded upon.

Hence, QANTAS Airways Ltd. believes that many of the recommendations are fundamentally flawed.

The NPRM proposes additional training. This training requirement would result in a huge expenditure for operators.

The NPRM goes on to propose restrictions for Long Range Operations (LROPS) which would apply to all Multi Engined aircraft. This proposal would restrict the existing operations of many operators for no valid reason. The LROPS proposal is considered commercially and politically motivated and has no place in a safety regulation.

The paradox of the whole ETOPS/LROPS philosophy is that ETOPS has resulted in an unquestioned safety record since its introduction, yet the NPRM proposes even more flight restrictions.

What should happen is that the benefits of the engineering and maintenance processes should result in a REDUCTION in these flight restrictions.

QANTAS AIRWAYS Ltd. recommends that the NPRM should be withdrawn, the ARAC reconvened and that the ETOPS process be re-examined in its entirety.

If this recommendation is not adopted, then QANTAS recommends that the ARAC be reconvened to address the issues highlighted by the majority of responses.

## **QANTAS Airways Ltd. Comments on FAA NPRM: ETOPS**

### **Background**

QANTAS Airways Ltd. is the second oldest airline in the world and has been involved in long range flight operations for most of its 84 year history. It has been operating ETOPS for 18 years with Boeing 767 aircraft.

Australia did not adopt the FAA Advisory Circulars (AC)120.42 (1985) and 120.42A (1988) but adopted slightly different ETOPS rules. These rules are simple to understand, inexpensive to implement and have proven to be extremely safe.

The comments in this paper are based on safety, experience and a thorough operational knowledge of ETOPS.

### **General Comments**

#### ETOPS

Nearly twenty years ago when twin engined jets came on the market, there was a concern that the reliability of these aircraft would be questionable, particularly due to the lack of powerplant redundancy.

As a result, Regulators introduced special rules for twin engined turbine powered aircraft. These rules were based on those introduced earlier for piston engined aircraft, mandated additional engineering and maintenance procedures and limited the planned flight time from alternate airfields.

Importantly, these ETOPS procedures were not based on any empirical science, but a desire to provide some mitigators to allay concerns from some in the industry and the public.

The results of the ETOPS rules (FAA AC 120-42, AC 120-42A) have been most impressive.

Since the introduction of the rules, there has been a reduction in system related diversions. This is no doubt largely due to the additional engineering and maintenance procedures. There has been a significant improvement in system reliability – in particular powerplant reliability.

In fact, by far the greatest reason for enroute diversions of twin engined aircraft has been non-airframe related such as medical emergencies.

Of the few systems related diversions and incidents over the past twenty years, almost none would have been prevented by the ETOPS Rules. This is because they were caused by other reasons such as human error.

By far the most dramatic result of the ETOPS rules has been the change to restrictions in the flight time from alternate airfields. The original restriction was basically a maximum of 60 minutes from an alternate airfield.

As manufacturers continued to build larger and more reliable twin engined aircraft capable of flying long and ultra-long range operations, Regulators have increased the maximum diversion time from 60 minutes to 207 minutes (incrementally 60, 75, 90, 120, 135, 180 and 207 minutes) depending on the particular aircraft and the procedures of the operator.

#### Methodology behind Rulemaking

In the past, many rules have suffered from a lack of knowledge or experience in the area of the rule. This was the case with ETOPS.

As has been demonstrated in many areas, rules which have no clear safety or scientific basis, are extremely difficult to modify because the reasons behind the rule are lost in the corporate memory, particularly where no documentation remains.

An example of this is the 1:36 cabin-crew to passenger ration adopted by Australia many years ago. The rest of the world has basically adopted a ratio of 1:50. This is also the ICAO Recommended Practice. After many months of research it was discovered that there was no safety based reason for the rule per se, but it was made with the introduction of the Fokker F27 aircraft to Australia. Someone in the Australian Regulator at the time believed that the F27 should have two cabin crew instead of one, hence the rule was changed from 1:50 to 1:36.

The impact of this short sighted decision is now being felt by industry. Cabin crew lobby groups were successful in not having the 1:36 rule changed on 'SAFETY' grounds by conducting a very successful lobby campaign.

Today, rule making must be based on more scientific grounds.

The introduction of new or revised rule must at least follow the following steps:

- Are there any identifiable hazards?
  - If so, what is the likelihood that they can cause significant harm?
  - What procedures or mitigators can be put in place to counter the hazards?
- Is there a safety impact?
  - If so, then what are the safety implications?

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- If not, then there is no requirement for a rule.
- Is there any historical data which can be used in an equivalent safety case?
  - If so, data analysis to be undertaken so that the rule can be based on sound safety and proven requirements.
  - If not, is there a reliable mathematical or statistical analysis methodology available?
- What mitigators are available to satisfy the safety requirements?
  - These mitigators could be Certification requirements, Operational restrictions, Crew procedures and training.
- Once the safety case has been addressed, then the available options can be compared using a financial analysis which needs to consider:
  - The financial impact the new rule would have on those subject to the rule.
  - The financial impact of alternatives to the rule.

Then the rule can be processed.

In short, the process should consider:

1. Is a rule required?
2. What options are there to satisfy the safety requirements of the rule?
3. Considering the options, what financial impact would each option have?
4. Adopt with the most economical option which satisfies the safety requirement.

### Political Influences.

The rewrite of ETOPS rules by the FAA and JAA was heralded as the first major harmonisation effort between the two Regulatory authorities.

However, this harmonisation has not occurred.

There is an opinion in some areas of the airline industry that the reason for this harmonisation failure was because of the differing philosophy between the two main aircraft manufacturers and the influence each was able to exert on the consultation process.

In particular, one manufacturer will be predominately producing twin-engined long range aircraft in the future, and would prefer to have any restrictions for these aircraft imposed on all long range aircraft.

The other manufacturer will be producing four engine long range aircraft, and they would prefer to see the existing restrictions retained for twins.

This opinion may be incorrect, however the fact remains that – for whatever reason - the harmonisation has not occurred. The proposed changes by the FAA and JAA only tend to reinforce the opinion.

### International Impact of Proposed Changes

The FAA should be aware that whenever rules are made for the United States of America, they will most likely be adopted by many other States – particularly those operating American manufactured aircraft.

Hence, any rulemaking should consider the international impact of that rulemaking.

The problem with other countries adopting the FAA Regulations is that these foreign regulators may not have the benefit of research and background knowledge which resulted in the rule. As QANTAS has seen with existing ETOPS rules, the foreign regulator is most likely to place even more conservative restrictions on the FAA rule. In some cases, there may also be an incorrect interpretation by the foreign regulator.

The impact on operators from other countries may be quite different to that experienced by operators from the United States of America. (See 'Effect on Existing Operations')

Hence, it is imperative that any new rules are based on a scientifically based safety analysis and NOT on consensus based policy making. Consensus based decision making is often determined by the more powerful participants within the group. The decisions can frequently be based on an agenda other than safety of operations.

It appears that many of the proposed regulations have been based on the **SLAGIATT (Seems Like a Good Idea At The Time)** policy. This is totally unacceptable in these modern times – especially when there is nearly twenty years of reliable ETOPS data available to make informed, scientifically based rules.

### Effect on Existing Operations

QANTAS Airways Ltd. is the second oldest airline in the world and has been operating long range routes for more than seventy years.

In particular, the airline has been operating trans-Pacific non-stop flights for more than twenty years without incident. The proposed rules would not allow that operation without special approval.

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Flights from Australia to South Africa and South America would also require special approval even though the airline has been safely operating to those countries for many years.

The requirements for airport facilities (ATC, RFF, etc) are also likely to have a significant negative impact on QANTAS operations because numerous airports in the network do not have the proposed facilities.

There has NEVER been an ETOPS related flight incident on landing. There have been many incidents where the navigation aids were a contributing factor, but this fact has been ignored in the proposed rule.

### Specific Comments by Paragraph Number

#### 121.99 Communications Facilities

The essential requirement for an operator is to have communication with an ATS and the Company at all times. For many diversions, there is no absolute requirement for voice communications. The prescription of satellite communications is far too specific.

In many countries, the flight dispatchers are not required to be licensed and the Company flight watch can be adequately conducted by HF voice.

Additionally, satellite voice may not be available beyond some latitudes. Ironically, it appears that the requirement for satellite voice was considered for remote airports – particularly those in the polar regions – and this is precisely the region where satellite voice may not operate. At most other regions of the globe where an aircraft may divert, there are adequate ground and communication facilities available.

It is true that crew workload increases during a diversion. It is also true that extended communications with ground facilities add considerably to this workload.

#### 121.106 Required Rescue and Fire Fighting capability at ETOPS alternate airports.

The fundamental issue with any requirement for RFF is that aircraft must demonstrate an evacuation within 90 seconds. RFF are only required to be at the accident scene within three minutes. Whilst acknowledging that RFF have played important roles in some isolated cases, the fact remains that they are only required to extinguish the hull fire and/or gather the evacuated passengers post-accident.

Analysis of the diversions since the introduction of ETOPS indicates that there has never been an ETOPS related incident where RFF were required. This is another case where the statistics from nearly twenty years have been ignored. By far the vast majority of diversions are caused by medical emergencies. Yet, there is no mention of requiring appropriate medical assistance at any diversion airport.

Similarly, most accidents over the past twenty years have occurred when crew have been flying non-precision approaches. From the NPRM, 'It remains necessary to ensure that all the facilities and services are adequate to ensure a safe landing...'. The provision of GPS or RNP approaches would significantly reduce the number of accidents and hence the requirement for RFF, yet this has been ignored in the NPRM.

There are many areas of the world – including Australia – where full-time RFF are simply not available. The introduction of this rule would all but eliminate any ETOPS flight across Australia.

The discussion on page 126 of the NPRM regarding the establishment of en route alternates for ALL extended long range operations is flawed and - many believe – politically and commercially motivated. It should be noted that most accidents are 'unanticipated' and could occur anywhere. It should further be noted that RFF are only required AFTER an accident and **are not an accident prevention mitigator**.

This section of the NPRM must surely contain one of the most amazing statements from a Regulator: '...the fact that an event has not happened does not mean that it will never happen'. If Regulations are based solely on this philosophy, then no aircraft would ever take-off, and would certainly never carry any passengers! Whilst accepting the philosophy that Regulations must consider the possibility of latent failure, this must be done in a logical and scientifically based way. Regulations MUST be based on safety, risk and (lastly) financial impact. The SLAGIATT approach must be avoided at all cost.

QANTAS strongly disagrees with the FAA in that the required RFF capability is proportional to the diversion time. This has no scientific basis and sets a precedent which could cause problems in the future.

#### 121.374 ETOPS Maintenance Elements

QANTAS agrees with the IATA response. Further, this is a classic area where if the rule is not correctly written, it will certainly be mis-interpreted by foreign Regulators.

#### 121.135 (b) (10) Contents: Performance Data

QANTAS support the provision of ETOPS performance data in the performance manual.

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### 121.135 (b) (26) Contents : Passenger Recovery Plan

The proposed requirement for a passenger recovery plan arose with the introduction of cross-Polar flights. The introduction of a requirement for such a plan for ETOPS flights is considered excessive.

Again, any need for a recovery plan should be based on a risk assessment.

Most airlines have such a plan for ALL routes anyway. The introduction of a formal requirement without specific details will create another bureaucratic monster, and open the way for some Regulators to introduce restrictive interpretations on the rule.

If such a rule is to be introduced, then there should be defined regional areas where it is applicable. However, the rule must allow for individual State application of these areas.

For example, QANTAS fly the Western China FANS route. All pilots are trained in the Flight simulator to fly the unique 'escape routes' following depressurisation. Some States may deem this region as isolated. Others may deem it suitable. Similar examples apply in many other areas of the world. Similarly, due to the lack of 'European type' facilities at some airports in Australia, some Regulators may deem the region to be isolated, even though some airlines regularly fly to these airfields.

This proposed rule has huge potential to be misinterpreted and/or abused in the future.

### 121.161 Airplane limitations : Type of route.

The introduction of clear and concise requirements for ETOPS including approval requirements for the different ETOPS times is agreed.

There is no doubt that the robust maintenance programs introduced for ETOPS have been the main contributor to the success of ETOPS. The paradox is that even though ETOPS flights have proven to be extremely reliable and have exceeded expectations, the operational restrictions are planned to be increased.

The introduction of similar restrictions for aircraft with more than two engines is seen as a **politically and commercially based decision with no bearing on flight safety.**

### 121.415 (a) (4) Crewmember and Dispatcher training requirements.

The introduction of training requirements for ETOPS by flightcrew and dispatchers is questioned.

The question must be asked: 'If the rules were simplified then would any training be required?' The QANTAS answer to this question is 'NO'. For the past eighteen years, Australia has had simplified ETOPS rules which every pilot and dispatcher could easily understand, interpret and implement. QANTAS has had no ETOPS related incidents during this entire period.

It should also be recognised that in modern airlines today, the pilot and dispatcher are only a small component of the inflight diversion process. That fact has been ignored in the NPRM.

Unfortunately, an equivalent safety analysis of the Australian rules was not done by the ARAC committee during their deliberations.

The cost of this proposed training will be discussed later in the document.

### 121.565 (a) Engine inoperative: Landing

Safety of flight is the prime concern for operators. QANTAS supports the ARAC recommendation that the pilot-in-command be permitted greater authority to land at the closest *suitable* airport based on several factors.

The NPRM needs to clearly specify exactly what engine failures are required to be reported. For example, many failures occur during reverse thrust application and at times of major thrust change (after take-off clean-up, top of climb or descent). None of these phases of flight are in any way related to ETOPS operations.

It is accepted that the frequency of engine failures is used as a basis for ETOPS approvals. However, the phase of flight where the failure occurs should be considered when assessing ETOPS approvals. For example, if 90% of engine failures occur near or at top of climb or top of descent (where the major thrust changes occur) then that should be taken in account.

### 121.624 Dispatch Requirements for an ETOPS Alternate Airport

QANTAS disagrees with this proposal.

QANTAS totally disagrees with the unsubstantiated assertion that 'experience in ETOPS operations of twin-engine aircraft with en-route diversions for reasons other than engine failure justify the imposition of a requirement to designate en-route alternates for all long-range operations with airplanes with two or more engines.' This is a commercially based proposition and has no safety based relevance.

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Any long range operator will realise that the older a weather forecast, the more inaccurate it is likely to be. That is why Dynamic Aircraft Routing Planning (DARP) procedures were introduced across the Pacific. In the future there will be many more flights exceeding sixteen hours. This will result in even more inaccurate forecasts at the point of dispatch with the likelihood that the forecasts will be more conservative and restrictive on the flight payload and routing.

A much more logical approach is that a valid weather forecast be available for when the airport is – or could be – required. If an airport becomes unavailable, then either another is found, the aircraft re-routes or diverts. This is not a safety based decision making process, but one to be made by the Company after taking all variables into account.

Additionally, there may be occasions where an available airfield becomes unavailable when the aircraft is already within the ETOPS range. QANTAS believe that this is an extremely low risk and believe that the decision on the day remain with the operating Captain.

More importantly, the standard of instrument approach available at the diversion airport is not adequately addressed. As discussed earlier, accidents usually occur due to the non-familiarity with – in particular – non-precision approaches at diversion airfields.

QANTAS is amazed that the NPRM does not specifically mention Safety Height calculations in pre-flight planning. There are many areas around the world where special tracking procedures are required due to terrain, and these must be taken into account during the planning stages.

Similarly, the proposed ETOPS rules always include a descent to 10,000ft when many aircraft have passenger oxygen systems which allow extended operations at 14,000ft.

QANTAS believes that these are major oversights in the NPRM.

### **121.633 Planned ETOPS diversion time limitations**

QANTAS totally disagrees with this rule.

This rule typifies the lack of science behind many ETOPS rules. Whilst it ideally falls into the SLAGIATT philosophy, in practice this would become an almost impossible rule to administer.

The 'preclude and protect' policy is admirable, but to be effective it MUST take all factors into account. In particular, fire suppression systems have been addressed. There is absolutely no scientific or statistical evidence to indicate that this is a safety requirement. Basic questions such as :

- How many cargo hold fires have occurred during the ETOPS phase of flight?
- How many cargo hold fires have occurred during the non-ETOPS phase of flight?
- How many electrical wiring related fires have occurred?
- How many fuel system related fires have occurred?
- What about all cargo operations?
- What about combi aircraft?

These questions and others appear to have been overlooked or ignored.

A critical component of flight safety is the state of mind of the flightcrew. If a Captain knows that the aircraft MUST be on the ground within a certain time that has been arbitrarily decided by the Regulator, then decision making will be affected and flight safety possibly comprised.

If ETOPS approvals are to remain, then they MUST remain a flight planning tool. The Captain of the aircraft MUST at all times be given the authority to operate the aircraft as he determines at the time.

**Arbitrary flight time limits with legal liability will have a negative impact on flight safety.**

**ETOPS is – and will remain – a risk mitigation planning tool, not an absolute safety barrier.**

The NPRM states that 'the likelihood of an engine failure at the critical point followed by cargo fire is extremely remote' yet goes on to introduce rules for increased fire suppression capability. Other factors where the likelihood is significantly greater are totally overlooked.

### **121.646 Fuel Supply Required following Depressurisation**

QANTAS agrees that a rule is required to cater for diversion to an en-route alternate following depressurisation for all types.

However, QANTAS questions the need to allow fuel for a simultaneous engine failure and depressurisation. Most engine failures occur at times of major thrust change, and these usually occur when NOT in the ETOPS range. QANTAS believe that the double failure critical fuel scenario is far too conservative and is not supported by any safety, statistical or historical analysis. Further, QANTAS believes that for the extremely unlikely situation where the dual failure occurs AND the performance of the aircraft is such that more fuel is burned on one engine than on two engines – then that minor increase in fuel burn will easily be covered with the flight variable reserve.

QANTAS agrees with the analysis of weather forecasting and supports the concept of carrying either a 5% wind error or fuel pad.

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QANTAS also agrees with the conservative policy of allowing fuel to compensate for airframe icing for 10% of the time for which icing is forecast. However, icing can also be forecast in the equatorial and other regions due to convective activity. In these cases, the forecast icing can be over an extensive area but isolated to the convective clouds. Pilots divert around these clouds and avoid any actual icing. The fuel for cloud diversion is accounted for in the flight variable reserve. For this reason, QANTAS believe that the rule should allow forecast icing which is caused by convective activity.

A significant point which appears to have been overlooked is that there is no allowance for passenger oxygen. Many airlines carry significant quantities of passenger oxygen to allow flights over higher terrain. This oxygen means that aircraft can cruise at 14,000ft until the passenger oxygen approaches depletion. This oxygen should be allowed for in the rule.

The rule should also consider Minimum En-route Altitudes following depressurisation. In many areas with high or mountainous terrain special depressurisation tracks will be required. These tracks can require significantly longer track miles to the alternate airport.

QANTAS agrees that if the APU is a required power source, then its fuel consumption must be accounted for.

### 121.687 Dispatch release: Flag and domestic operations.

QANTAS believe that this proposed rule is not required.

All pilots are aware of the ETOPS approval e.g. 180 minutes for a particular fleet. If the ETOPS approval is varied for any reason, then the pilots are advised already on the flightplan and it is highlighted in the MEL.

QANTAS believe that the only time a pilot needs to be advised of the ETOPS approval is when there is a restriction on the fleet approved ETOPS. The requirement should be that the Pilot in Command be informed (method unspecified) of any restriction for that flight.

### 121.689 (a) (8) Flight Release Form: supplemental operations

See comments for 121.687 above.

### 12 CFR 121 Appendix O Requirements for ETOPS Approvals

#### A. ETOPS Authorisations: Airplanes with 2 engines

This proposed Appendix highlights the fundamental flaw with the current ETOPS concept and approval process.

The CFR lists 75, 90, 120, 138, 180 and greater than 180 minute ETOPS' approvals together with the reasons for and requirements of the approval.

The CFR then goes on to list numerous exceptions to the rule i.e. the North Pacific where 207 minutes can be applied if there are no airports within 180 minutes.

Amazingly, the longest ETOPS approval in the world applies to the region with the most hazardous weather conditions and restricted alternate airports (the North Pole area with 240 minutes).

The question must be asked: **When is a rule not a rule? The answer from this document can only be: When it doesn't suit.**

This again begs the question: Is the concept of limiting operations based on a non-scientific time limit flawed?

QANTAS believes that the engineering and maintenance requirements together with the aircraft certification requirements introduced for ETOPS operations have proven that the flight operations are significantly safer than in the past. Hence, the imposition of arbitrary time limits and the associated complex flight planning and inflight requirements should not have occurred.

The NPRM gives no real credit for the outstanding history of modern jet engines and aircraft systems. The 60 minute rule arose from piston engine operations in the 1950s, yet that rule remains in the NPRM. At the very least, an historical and safety analysis would show that 120 minutes should be the starting point of the approval process. QANTAS believes that there is no place for 60, 75 and 90 minute approvals for modern aircraft and they should be totally withdrawn.

QANTAS believes that if any operator has satisfactory quality and safety systems in place (with appropriate surveillance), then the ETOPS approval should be automatic. There should also be grandfather rights for operators who have been flying required routes for some time. For example, QANTAS has been safely flying non-stop trans-Pacific flights for more than twenty years, yet this rule would require the company to obtain an approval.

#### B. ETOPS Authorisations: Airplanes with more than 2 engines.

QANTAS believes that this is a commercially based rule and has no place in any safety discussion.

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If implemented, this rule would all but stop flights from Australia to North America, Australia to South America and flights from Australia to Africa. These flights have been operating safely for many years with four engined aircraft.

Again, QANTAS stresses that there needs to be some science behind any rule making. An arbitrary 180 minute time limit from an alternate is not backed by history or science and should be reliability based.

The discussion is based on the 'preclude and protect' philosophy, yet some of the primary causes of diversion are not even addressed. By far the majority of diversions today are caused by passenger requirements. Yet, this rule does not address the issue. QANTAS was the first airline in the world to introduce heart defibrillators for this very reason.

In the future, paramedics may be required as crewmembers. Arguably, this would have a greater impact on flight safety than any flight time limit from a diversion airfield.

City pair route approvals are also a problem. If any approval is required, then it should be a regional approval. The reason for this is because of the introduction of User Preferred Routes (UPRs) in many world regions. QANTAS flights between North America and Australia can track anywhere from overhead Honolulu to overhead Tahiti depend on the optimum route.

There has never been a cargo fire in the en-route phase of flight, yet the rule intends to introduce new cargo fire fighting requirements. On-board fires which have resulted in catastrophic consequences (passenger entertainment , fuel pump, kapton wiring etc) have been ignored.

### C. Polar Area (North and South Pole) and ETOPS beyond 180 minutes North of the NOPAC area

Again the validity of this rule is questioned when intrastate operations within the State of Alaska are excluded.

The requirement for exposure suits, for example, requires more thought. At present some operators carry the exposure suits in the hold. On flights from New Zealand to South America the only diversion airfields are in warmer areas, yet all the cold weather equipment requirements remain.

The rule was obviously written for the North Pole operations. If the rule is to be introduced, then South of 78.00 degrees should also be declared.

QANTAS believe that Polar operations, the associated approvals and procedures should be a separate NPRM and not associated with ETOPS. There are numerous and unique requirements for Polar operations which do not and should not apply to operations in other areas of the world.

### Economic Summary

The economic analysis presented in the NPRM is overly simplistic and immature.

The benefits proposed from ETOPS are a nonsense, because ETOPS rules actually impose restrictions on the route of flight. The fact that these restrictions can be reduced (i.e. 60 minutes to 207 minutes), does NOT mean that ETOPS presents an economic benefit to operators.

There are absolutely NO financial benefits to imposing ETOPS rules on three and four engined aircraft. At present, User Preferred Routes are being flown daily, and any ETOPS rules would simply reduce the efficiency of these operations. This is the case without even considering the cost of any additional equipment, training etc as required by the NPRM.

There could be an argument that ETOPS requirements for engineering and maintenance have had an economic benefit due to the increased reliability of equipment. However, that argument has not been considered in the NPRM.

The costs estimated during the analysis are also incorrect. For example, a large airline would need to ensure that all crewmembers are trained for these proposed ETOPS rules.

Most airlines have significantly more that 20 mechanics, 20 pilots, 40 flight attendants and 8 dispatchers. In the case of QANTAS, the numbers are closer to 2,000; 2,400; 8,000 and 50. Using the same number of training hours and cost per hour as in the NPRM page 217, the cost to QANTAS would be USD 159,770,000.

**This is absurd!**

## CONCLUSION

ETOPS rules were introduced in the form of an Advisory Circular to satisfy community concerns regarding twin engine jet operations nearly twenty years ago.

These rules apply to certification, engineering and maintenance and flight operations.

Since ETOPS began, the resulting reduction in in-flight diversions has been dramatic. This is due to both the improvement in manufacturing and the enhanced maintenance requirements for ETOPS aircraft.

The flight operations restrictions of the Advisory Circular basically limited the maximum time from a diversion airfield. This time started at an arbitrary 60 minutes and was extended as required.

## **QANTAS Airways Ltd. Comments on FAA NPRM: ETOPS**

**This maximum time limit highlights the paradox of ETOPS.** The operations are safer, yet more restrictions are placed on them.

The ARAC committee was formed by the FAA to update the rules.

The main issue with the proposed regulations from a QANTAS perspective is that the ARAC committee appears to have accepted that the original ETOPS rules were valid. There appears to have been no validation of the rules, any real statistical analysis or safety case completed.

For example, Australia has operated simplified ETOPS rules since the advent of ETOPS. The safety record is second to none, and the rules have been extremely successful and straightforward. It is disappointing that the ARAC committee did not have an opportunity to assess these rules.

The NPRM also recommends restrictions to aircraft with more than two engines. There is absolutely no safety or scientific reasons for these impositions. There are certainly no economic reasons. The restrictions on aircraft with more than two engines appear to be commercially motivated.

The NPRM also gives some economic examples. These are totally inadequate and non-representative.

## **RECOMMENDATION**

QANTAS AIRWAYS Ltd. recommends that the NPRM should be withdrawn, the ARAC reconvened and that the ETOPS process be re-examined in its entirety.

If this recommendation is not adopted, then QANTAS recommends that the ARAC be reconvened to address the issues highlighted by the majority of responses.

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