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FAA-2003-14715-10

19 June 2003

Docket Management System
U.S. Department of Transportation, Room PL401
400 Seventh Street, SW
Washington, DC 20590-0001

REFERENCES:
1) **DOCKET NUMBER: FAA-2003-14715**
2) *Federal Register* Volume 68, Number 56, 24 March 2003 (Pages 14276 - 14289)

SUBJECT: Proposed rule re noise limitations for aircraft operations in the vicinity of Grand Canyon National Park, noise efficiency standards

INTRODUCTION

Arizona's Grand Canyon Chapter of the Sierra Club, with its more than 12,000 members, respectfully offers the following comments regarding the proposed noise efficiency standards for aircraft operating over Grand Canyon National Park. We thank the FAA for the opportunity to be part of this important process.

Over the years, the chapter has submitted numerous comments on issues related to the charter that Congress gave the FAA and the National Park Service (NPS): substantial restoration of the natural quiet at Grand Canyon National Park (GCNP). Those comments were made in letters solely from the chapter and in letters submitted with other groups (Arizona Raft Adventures, Friends of Grand Canyon, Grand Canyon River Guides, Grand Canyon Trust, et al.). The comments in this letter should be reviewed in the context of the other letters. As noted before, the actions taken to date do not fulfill the Congressional intent. These comments are submitted as part of a larger effort. Although there is no need to repeat the arguments previously submitted, they are still valid.

Similarly, we respect the FAA position, as stated in the *Federal Register* (Ref. 2), that the current proposal simply defines certain technical terms. However, the proposed rule must be viewed in the context that it could lead to rules that will affect the noise level at GCNP.

We hope that future actions will rapidly produce significant progress towards substantial restoration of natural quiet. We again urge that additional actions be taken towards the Congressionally mandated objective. Specifically, we ask when the long-promised Comprehensive Noise Management Plan will be completed.

COMMENTS

The questions from Page 14287 of the *Federal Register* (Ref. 2) are repeated to aid the reader.

QUESTION 1: How reasonable is the noise efficiency approach (larger aircraft with more passengers seats are allowed to generate proportionally more noise) to define quiet technology and how appropriate is the use of certificated noise level as the basis?

This is actually two questions. The first one is: How reasonable is the noise efficiency approach?

Quiet Technology is One of Several Tools - We believe that incentives for quieter aircraft should be part of a plan to reduce noise in the frontcountry and backcountry of GCNP. Quieter aircraft per se will not be the final answer. However, in combination with flight free zones, curfews, and caps on the number of tour rides, quieter aircraft incentives could be an important tool. It is logical to reward operators who put resources into quiet technology. However, technology can not be used as an excuse to not meet the existing law and the existing definition of substantial restoration.

An overall reduction in noise could occur if the number of flights were reduced. This reduction could occur without detrimentally affecting the operators if the number of passengers per flight is increased.

Level of the Criteria - The FAA proposal is that certain aircraft be designated as "quiet technology aircraft" if they do not exceed certain noise level characteristics. We can not comment on the proposed level of allowable noise to be designated quiet technology aircraft. For now, we will leave that to the FAA and the NPS. However, the level should be viewed in the context of what existing technology is and what stretch goals could be for reduced noise. Most importantly, the levels should be established so that they will interact with other regulations to assure that substantial restoration will be achieved in the near future, or in the worst case by 22 April 2008, as the FAA stated would happen (Ref.: Special flight rules, noise limitations and proposed air tour routes in the vicinity of Grand Canyon National Park; final rule, proposed rule and notice. *Federal Register* 61 {252}: 69301-69333, 31 December 1996).

As discussed later in this letter, we question the absolute yes/no nature of the proposal and feel that a sliding scale would be more fair to the operators and would be more productive for the natural quiet resource.

Did the FAA intend to measure sound power level in dB as stated, or in dB(A)? The dB(A) measurement is typically associated with the ability of the human ear to hear a sound, rather than dB. It is assumed that the dB refers to sound power level and not some other metric.

Level of the Criteria vs. Passenger Capacity - The concept of higher allowable noise levels for aircraft that carry more passengers makes some sense. However, to a park visitor on the ground, a higher number of passengers is undetectable and is of no consolation. The only factor that the ground visitor senses is the noise level itself. If the ground visitor is to hear any advantage, the quiet technology incentives allowing larger aircraft to emit more noise must be accompanied by a reduced number of flights.

Helicopters vs. Fixed Wing - It appears that the FAA intends to allow helicopters to have higher allowable noise levels than fixed wing aircraft, and still meet the criteria. This is counterintuitive and not explained by the FAA. The nature of helicopter noise is that it pulses. A pulsing noise is more audible and noticeable to a human than a steady state sound. (Audibility: the sound power level where a typical human can hear a noise. Noticeability: sound power level where a typical human could hear the noise while engaged in an activity other than actively listening.) Even if the pulsating effect is ignored, it appears that the allowable difference between helicopters and fixed wing aircraft is arbitrary. At the least, the FAA provides no logic path to justify the difference.

Noise Level vs. Affected Area - Under Scenario A on Page 14289, the FAA proposes the formula 80 +10 log(# passenger seats/2) dB. This results in a 3 dB increase in allowable noise level for every doubling in the number of passengers, and provides the allowable noise level for other seat numbers above two.

For every 3 dB increase in noise level, the area over which a given noise level will be projected increases by a factor of two. For instance, a 3 dB increase in noise level will double the area over which a noisy aircraft will be audible or noticeable.

Additionally, the noise level within a given radius would increase. Although the NPS definition of substantial restoration does not take into account the noise level in an area designated to be above the audibility limit (it is a simple yes/no decision), higher noise levels obviously result in more annoyance to park visitors. If the rule results in a higher noise level within areas that are above the audibility limit (sacrifice zones), that would not affect the substantial restoration metric but would intensify the noise in the sacrifice zones. This is not a desirable outcome because backcountry use in these areas is already severely impacted.

This Rule in Context of the Bigger Issue - Understanding that this *Federal Register* proposed rule only defines quiet technology aircraft, it is unclear how such a designation would be utilized. While it makes sense to allow aircraft that give more passengers tour rides to make more noise, it certainly is not acceptable that this potential provision be allowed to compromise the restoration of natural quiet.

The FAA does not provide information as to how this rule would affect the number of aircraft operations or how the noise level of the aircraft would change. Would the aircraft be louder or quieter than the existing fleets? If the proposal results in louder aircraft, we assume that less aircraft operations overall would be allowed. If a rule on quiet technology aircraft is implemented, the quiet technology aircraft must be less audible than other aircraft, regardless of the number of passengers, or no progress will have been made. The real question is: Will natural quiet be improved and substantially restored?

The second part of the question is: How appropriate is the use of the certificated noise level as the basis?

Noise Data - Certificated noise levels are the most readily available substantiated data. However, certificated data are values of sound power level, measured in dB or dB(A). These data give an average over the audible frequency range. Unfortunately for those trying to

reduce annoyance from park aircraft, the human ear senses discrete frequencies rather than an average noise level. For instance, the sound of a chirping bird can easily be heard over low frequency background noise such as river rapids because the bird and the background are in a different frequency band. The same hold true for aircraft.

The most effective model used to evaluate audibility of aircraft in GCNP does not use sound power level, but uses third octave band measurements of sound power. Since the most effective method of predicting audibility and the certification data use different systems, it is likely that the certificated data will not accurately predict improvements or degradations in aircraft noise audibility at the park.

It would be better if a method would be developed that would take this into account. Realizing that this is a difficult task, it follows that classifying aircraft as quiet technology aircraft is also a difficult task if the intent is to differentiate between normal aircraft and aircraft that will help natural quiet restoration.

If the sound power level is used to classify aircraft, there should be a large difference in sound power level between quiet technology and normal aircraft.

Retrofitted Aircraft - The rule should make provisions for operators that retrofit aircraft to reduce noise. If there are no provisions for retrofitted aircraft to gain credit, there is no incentive to upgrade existing aircraft. This could be a significant issue considering the high cost of new aircraft.

Any post-certification establishment of new noise levels should be done in a rigorous fashion comparable to certification requirements.

QUESTION 2: What provisions should be made for changes in technology that result in source noise reduction and/or increased noise efficient aircraft designs?

Improved Technology Incentives - Again, this is a two part question. The first part could involve the retrofit of existing aircraft, for instance with new engines or props. In this case, some incentive is appropriate, if it does not compromise the substantial restoration metric. For the second part of the question, new aircraft designs, the comment is the same. Until the FAA writes an overall plan that will bring the park in compliance, there unfortunately is no room to allow more flights.

While we accept that there is an appropriate relationship between the noise of aircraft and the appropriate number of flights, the relationship is not absolute. The intrusion of aircraft is the root issue at the Grand Canyon. Often noise is the way that visitors are annoyed. However, even if the aircraft had no noise, they would still be an inappropriate intrusion to the extent that they are detectable by other means, such as by sight.

QUESTION 3: What economic and operational incentives should be considered in order to achieve the transition to quieter aircraft and how should the quiet technology designation be used in the establishment of the incentives.

Incentives - The chapter supports allocating larger numbers of flights to aircraft that have lower noise signatures; however, this must be in the context of not increasing the overall number of flights, unless the flights are substantially quieter, and within the context of

substantial restoration. If the number of flights were increased more significantly than the significance of lower noise emissions per flight, there would be no progress.

However, the chapter strongly opposes opening incentive routes through existing flight free zones. This would be completely counter-productive to the goal of restoring natural quiet. In its 1994 report to Congress (published in 1995), the NPS suggested that the Dragon Corridor be used as an incentive route. Unfortunately, the Dragon has been used as a non-incentive route for years now. We are on record that the Dragon should be closed, as is the NPS. Nonetheless, the concept of using some existing routes as incentive routes is appropriate as an interim measure. At some point, all the routes should be available only to state of the art quiet technology aircraft, although there would have to be a reasonable transition period. The 1994 NPS report to Congress suggested 2010 for the mandatory transition to quiet aircraft.

The chapter sees no reason to provide economic incentives to the air tour industry beyond the availability of the existing infrastructure (flight control, runways, etc.). No other park users are subsidized. We see no reason that the air tour business should be given advantages that no other user groups enjoy.

QUESTION 4: Should incentives include a "flexible" cap that would permit increasing operations of aircraft based upon the acquisition of leading edge noise efficient technology by operators?

Growth Paradigm - It seems that the FAA paradigm is that growth should continue in the Grand Canyon air tour business forever. This attitude should be viewed in the context of the other aspects of GCNP management.

The number of hotel rooms in the park is limited. The number of parking places in the park is limited; the long range plans for the park include alternate modes of transportation to accommodate the high number of visitors. The number of mule rides is limited. The routes on which mules are allowed are capped at two trails, the Kaibab and Bright Angel Trails. The number of backpacking permits and the number of visitors to any given area of the park backcountry is strictly limited. The number of rooms at Phantom Ranch is capped and there is a multiyear waiting list to go to Phantom Ranch. The number of commercial and private permits to boat the Colorado River through the Grand Canyon is strictly capped; the waiting list for a private boat permit in GCNP is twenty (20) years.

While users of the park do not like the waits, especially the twenty years to get a river permit, there is strong support for these caps to protect the park resources. Most people are willing to wait long periods if they are assured a quality experience. Thus, it is difficult to accept the paradigm that one industry should be allowed to continually expand at the expense of the other commercial and noncommercial users.

Cap on the Number of Operations - Yes, the cap should be flexible. The number of operations should be lowered to the point that natural quiet is substantially restored at the park. After that is completed, it may be appropriate to increase the number of tour rides if the aircraft noise levels are reduced. We suggest that the baseline for the number of flights should be that which prevailed in 1975, the year Congress instructed the FAA and NPS to resolve the park noise levels that were even then considered excessive. Certainly 1986, the year the Overflights Act was passed, should be a possible baseline year if 1975 is rejected. As technology improves the

sound characteristics of aircraft, it may be appropriate to increase the number of aircraft from one of these baseline years, but only if natural quiet is substantially restored.

If the FAA incentives allow growth in the number of flights, these increased numbers of flights must come from somewhere and should not be an absolute increase. Specifically, we suggest that if an operator stops using its allocation, then a portion of the allocation could be used as an incentive number for other operators. The remainder of the allocation should be permanently retired.

QUESTION 5: Should growth be tied to an incentive system for existing operators to convert their fleet to quiet technology?

Yes, growth from a baseline year (e.g., 1975) should be tied to conversions to quieter aircraft. However, the growth should only be in proportion to the actual reduction in noise signature, from the baseline year. The noise signature for designated quite technology aircraft should be significantly less than the aircraft configurations that have prevailed for the last few years.

QUESTION 6: What operational limitations (phase-out, expanded curfews, noise budgets, quota system, etc.) should be considered and how should the quiet technology designation be used in the setting of the limitations?

Sliding Scale Incentives - We question the absolute pass/fail definition of quiet technology aircraft. It would be more beneficial to create a sliding scale. Some existing aircraft are quieter than other existing aircraft. Operators of these quieter aircraft should benefit from the technology that they have already paid for when choosing quieter and most likely more costly aircraft.

There also should be an incentive to make incremental improvements. For instance, if an operator converted from three blade props to lower-speed four-blade props, there would be a noise reduction; the operators should be rewarded for these changes. The changes would have to be significant enough to warrant the cost to re-test and verify the advantage. Such changes might not be significant enough to move them a quantum leap into another category, but would have incremental advantage. The simple pass/fail (standard-tech vs. quiet-tech) designation does not encourage incremental improvements. Moreover, it does not encourage additional improvements after the quiet-tech designation is achieved.

Phase Outs - As discussed under Question 3, Incentives, at some point in time, all the routes should be available only to state of the art quiet technology aircraft.

Expanded Curfews - The chapter does support expanded curfews. For backcountry users, peace and quiet during the camp setup and teardown times, as well as the meal preparation and consumption times, is quite valuable. These times are particularly quiet as compared to times when people are hiking or rafting. It is a time when the natural sounds like the wind and birds are more evident. That makes these times particularly sensitive to noise intrusions.

We recommend that the quite time-curfews be lengthened for aircraft not designated quite technology aircraft. This would be an incentive for operators to convert to quiet technology.

Noise Budget - Noise budgets could be a useful tool to promote quieter aircraft. Quieter aircraft could be allowed more flight time than noisy aircraft. Time above the park should be the criterion, rather than number of flights. A metric could be the area where the aircraft is audible multiplied by the time the aircraft is over the park. This is in effect the criterion that is used to quantify substantial restoration. Again, this approach will only be possible when a comprehensive plan is completed to substantially restore the natural quiet.

Again, thank you for the opportunity to participate in this process.

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cc:
Senator McCain
Superintendent Joe Alston, GCNP