

DEPARTMENT OF TRANSPORTATION**Federal Aviation Administration****14 CFR Part 93**

[Docket No. FAA-2003-14715; Amendment No. 93-83]

RIN 2120-AG34

Noise Limitations for Aircraft Operations in the Vicinity of Grand Canyon National Park

AGENCY: Federal Aviation Administration (FAA), Department of Transportation (DOT).

ACTION: Final rule.

SUMMARY: This action classifies aircraft used in commercial sightseeing flight operations over Grand Canyon National Park (GCNP) by the noise they produce. This amendment of 14 CFR part 93 is necessary to establish reasonably achievable requirements for aircraft operating in the GCNP to be considered as employing quiet aircraft technology. The FAA now refers to the designation as "GCNP quiet aircraft technology" rather than "quiet technology" to clarify that the scope of this rule is limited to aircraft operating in the GCNP. The FAA and NPS will use the GCNP quiet aircraft technology designation to consider establishing routes and corridors and in future actions to achieve substantial restoration of natural quiet and visitor experience in the GCNP. This rule does not require any action by commercial air tour operators, as it simply identifies which aircraft meet or do not meet the GCNP quiet aircraft technology designation. Further, this rule does not relieve GCNP commercial air tour operators of their operational limitations. Section 804(b) of the National Parks Air Tour Management Act directs the FAA, in consultation with the NPS and the Advisory Group (now known as the National Park Overflights Advisory Group Aviation Rulemaking Committee or NPOAG ARC) to consider establishing the GCNP quiet aircraft technology aircraft routes and corridors consistent with certain requirements.

EFFECTIVE DATE: March 29, 2005.

FOR FURTHER INFORMATION CONTACT: Thomas L. Connor; (AEE-100); Office of Environment and Energy; Federal Aviation Administration, 800 Independence Ave., SW., Washington, DC 20591, (202) 267-8933.

SUPPLEMENTARY INFORMATION:**Availability of Rulemaking Documents**

You can get an electronic copy using the Internet by:

(1) Searching the Department of Transportation's electronic Docket Management System (DMS) Web page (<http://dms.dot.gov/search>);

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(3) Accessing the Government Printing Office's Web page at <http://www.gpoaccess.gov/fr/index.html>.

You can also get a copy by submitting a request to the Federal Aviation Administration, Office of Rulemaking, ARM-1, 800 Independence Ave., SW., Washington, DC 20591, or by calling (202) 267-9680. Make sure to identify the amendment number or docket number of this rulemaking.

Anyone is able to search the electronic form of all comments received into any of our dockets by the name of the individual submitting the comment (or signing the comment, if submitted on behalf of an association, business, labor union, etc.). You may review DOT's complete Privacy Act statement in the **Federal Register** published on April 11, 2000 (Volume 65, Number 70; Pages 19477-78) or you may visit <http://dms.dot.gov>.

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Background*Regulatory History*

On December 31, 1996, the FAA published a notice of proposed rulemaking (NPRM) on Noise Limitations for Aircraft Operations in the Vicinity of Grand Canyon National Park (61 FR 69334; Notice 96-15), and a Notice of Availability of Proposed Commercial Air Tour Routes in the **Federal Register** (61 FR 69356). The FAA proposed to establish noise limitations for certain aircraft operating in the vicinity of GCNP. The proposed aircraft noise limitations rule generally would have categorized air tour aircraft according to each aircraft's noise efficiency and mandated a conversion date to aircraft meeting the GCNP quiet aircraft technology designation. Additionally, the FAA proposed an

incentive flight corridor through Grand Canyon for quiet technology/noise efficient aircraft. The NPRM sought to reduce the impact of air tour aircraft noise on GCNP and to make progress in achieving substantial restoration of natural quiet in GCNP. The FAA received many comments in opposition to this NPRM, primarily because of the impact of the mandatory conversion date. After the comment period closed on the 1996 NPRM, the FAA and NPS began reconsidering GCNP quiet aircraft technology requirements and reaching consensus upon other steps that should be initiated to achieve the statutorily mandated goal of substantial restoration of natural quiet and to improve visitor experience in the GCNP. The FAA and NPS agreed to proceed with rulemakings to limit the number of commercial air tours in the GCNP and to modify the airspace and route system in the area. The agencies realized that the achievement of substantial restoration of natural quiet requires a multi-phased regulatory plan to control noise. Implementation of GCNP quiet aircraft technology alone would not suffice.

The agencies concentrated their efforts upon resolving issues presented in comments on the 1996 NPRM and finalizing the GCNP quiet aircraft technology rulemaking, once the FAA issued the airspace and operations limitation final rules in April 2000.

On April 5, 2000, the Wendell H. Ford Aviation Investment and Reform Act for the 21st Century was signed into law as Public Law 106-181. Among other provisions the law enacted the National Parks Air Tour Management Act of 2000 (the Air Tour Act). Section 804(a) of the Air Tour Act directed the FAA Administrator to designate reasonably achievable quiet technology requirements for fixed-wing airplanes and helicopters for purposes of commercial air tour operations over the GCNP. If the FAA determined that it would not be able to make the designation within twelve months of the enactment of the Air Tour Act, then the FAA was required to transmit a report to Congress stating the reasons the FAA would not be able to make such a designation within that period and the expected date of such designation.

Section 804(b) of the Air Tour Act also directed the FAA Administrator, in consultation with the NPS Director and the NPOAG ARC, to establish GCNP quiet aircraft technology routes or corridors for commercial air tour operations at GCNP, provided that such routes or corridors will not negatively impact tribal lands, safety, or the substantial restoration of natural quiet.

Recommendations and requirements for use of GCNP quiet aircraft technology in air tour management plans for national parks other than the GCNP pursuant to other provisions of the Air Tour Act will be subject to separate rulemaking and are not addressed by this final rule for GCNP. For example, Section 805 of the Air Tour Act requires the NPOAG ARC to provide advice, information, and recommendations to the FAA and NPS on commonly accepted quiet aircraft technology for use in commercial air tour operations over a national park or tribal lands, which will receive preferential treatment in air tour management plans. While the NPOAG ARC may consider this final rule in making recommendations on commonly accepted quiet aircraft technology for use at other national parks, pursuant to Section 805 of the Air Tour Act, this final rule is limited to fulfilling the requirements under Section 804 of the Air Tour Act for the GCNP.

In October 2001, the FAA submitted a report to Congress on Quiet Aircraft Technology for the Grand Canyon, as required under Section 804 of the Air Tour Act. The report indicated that, while substantive progress had been made on the GCNP quiet aircraft technology rulemaking, the FAA would not be able to make a designation within the 12 months of enactment of the Air Tour Act because of the need to resolve some key technical issues. These issues included the then-ongoing GCNP Noise Model Validation project, a study regarding the correlation between aircraft certification noise levels and aircraft audibility, and how changes to the GCNP SFRA affected substantial restoration of natural quiet. The report also stated that the FAA planned to issue a supplemental notice of proposed rulemaking (SNPRM) in early 2002. The FAA and the NPS required more time than expected to resolve the technical issues, which delayed the publication of the SNPRM for another year.

On March 24, 2003, the FAA published the SNPRM Notice No. 03-05 entitled "Noise Limitations for Aircraft Operations in the Vicinity of Grand Canyon National Park" (68 FR 14276). The FAA solicited comments on the proposal, which are discussed in the following section. This final rule is based on the SNPRM Notice No. 03-05.

Discussion of Comments

Seventeen commenters responded to the supplemental Notice No. 03-05 regarding the proposed designation for quiet technology aircraft operating in the GCNP (hereinafter GCNP quiet aircraft technology designation). While one commenter believes that the FAA

should scrap the whole project, the other commenters offered a range of opinions and recommendations on the proposal. These comments and the FAA responses are discussed below. The docket also contains 111 comments that had been submitted to the original 1996 NPRM Notice No. 96-15. The FAA responded to these comments on the 1996 NPRM in the 2003 SNPRM.

Noise Efficiency

Lighter than Air Solar International, LLC and an anonymous commenter recommended that the GCNP quiet aircraft technology designation should be based upon an absolute noise limit rather than a noise value as a function of the number of passenger seats. Operators should not be given an "efficiency bonus" for aircraft that are capable of carrying more passengers.

FAA Response

The FAA finds that the noise efficiency concept (larger aircraft with more passenger seats are allowed to generate more noise per aircraft, but less noise per passenger) exhibits all of the desired attributes for the designation of reasonably achievable requirements for aircraft to be considered as employing GCNP quiet aircraft technology for purposes of Section 804(a) of the Air Tour Act. The concept is technically sound, as it takes into account aircraft design, flight configuration, acoustic characteristics, productivity, and economic reasonableness. The FAA believes that this GCNP quiet aircraft technology standard, used in conjunction with other future actions, will contribute towards substantial restoration of natural quiet at GCNP.

Helicopter Noise Annoyance

The Sierra Club contends that helicopter noise is more annoying than noise from fixed-wing aircraft and recommends that such noise effects be considered.

FAA Response

Given that the objective is not to have audible aircraft noise in large areas of the GCNP, the FAA finds the GCNP quiet aircraft technology designation appropriately reflects the audibility of commercial sightseeing operations using the different aircraft types. For example, low frequency pressure pulses created by the spinning motion of the rotor blades characterize helicopter noise. Audibility is the ability of the human observer to detect an acoustic signal in the presence of noise. For the GCNP setting, audibility is quantified by the summation of the signal-to-noise ratios over the entire bandwidth representing

the range of human hearing. Thus, the method used to measure advancement towards the goal of substantial restoration of natural quiet is already very sensitive to the distinctive acoustic characteristics of different aircraft types.

Airships

Lighter than Air Solar International, LLC recommends that the definition for "quiet technology aircraft" be expanded to include airships. An airship is defined in 14 CFR part 1 is "an engine-driven lighter than air aircraft that can be steered." This commenter asks the FAA to afford airship operators the same opportunities as heavier-than-air operators by enacting a more flexible and inclusive definition of GCNP quiet aircraft technology.

FAA Response

The FAA sees no need to expand the definition, since it now simply refers to "aircraft subject to § 93.301", which includes airships. Introducing airships for commercial air tour operations would raise issues related to both noise characterization and operational compatibility.

While there are presently no airship tour operations being conducted over the Grand Canyon, the FAA does not intend to prohibit this category of aircraft from due consideration, provided such operations could be accommodated safely within the SFRA. As a matter of policy, the FAA encourages industry to pursue research and development of newer, innovative technology applications where possible. With regard to this proposal, the FAA acknowledges that the application of certain airship technologies might conceivably contribute toward the goal of restoring natural quiet in the Grand Canyon. Although special operational protocols would have to be developed to integrate airship operations in the GCNP SFRA, it is feasible that such operations could be safely accommodated in much the same manner as in other high-density environments.

The FAA does not have noise certification requirements for airships. Thus, FAA-approved noise data for these aircraft types do not exist. The FAA has provided for this contingency both in the rule and in an Advisory Circular (AC) that will accompany the promulgation of this rule. The draft FAA AC-GCNP-1, "Noise Levels for Aircraft used for Commercial Operations in Grand Canyon National Park Special Flight Rules Areas," states that where noise certification under 14 CFR part 36 was not required due to applicability, the noise level could be provided to the FAA by the operator or

owner and considered to be an estimated noise certification level, as long as the FAA can sufficiently substantiate that the noise level is representative of the subject aircraft.

The scope of this rule does not include issues associated with any potential change to commercial sightseeing flight protocols in the SFRA with the introduction of airships. The FAA would thoroughly investigate those operational issues if and when it receives an application for operational specifications for an airship.

Relationship Between Audibility and Certificated Noise Levels

The NPS recommends that the FAA perform an analysis to ensure that aircraft that the FAA has classified as GCNP quiet aircraft technology based upon certificated noise levels are less audible than aircraft not so classified. The NPS included with its comment a technical memorandum, "Relationship Between Audibility of Tour Aircraft and Certification Data," prepared by the aviation environmental consulting firm, Harris Miller Miller & Hanson, Inc. (HMM&H).

FAA Response

To address the NPS concern, the FAA performed a comprehensive assessment of the subject relationship utilizing the capabilities of the FAA's Integrated Noise Model (INM) Version 6.2. The FAA finds that the designation of reasonably achievable GCNP quiet aircraft technology correlates sufficiently with audibility to assist the FAA and NPS in fulfilling the National Park Overflights Act (Pub. L. 100-91).

INM 6.2 is the latest advancement in the FAA standard tool for the calculation of aircraft noise. The shortcomings of the previous INM version in predicting audibility became the impetus behind its development. These shortcomings were discovered in the joint FAA and NPS GCNP noise model validation study ("Aircraft Noise Validation Study," HMM&H Report No. 295860.29, January 2003). The validation study was described in the SNPRM Notice No. 03-05, and an electronic copy is available through the NPS Web page at <http://www.nps.gov/grca/overflights/documents/anmvs/index.htm>. The model improvements include: (1) More aircraft types that are

used in commercial sightseeing operations; (2) spectral-based method for signal detection prediction; and (3) a high-resolution terrain database to better address the effect of terrain features on sound propagation. All of these improvements are intended to improve the accuracy of the audibility calculations.

Audibility is defined as the ability for an attentive listener to hear aircraft noise. Detectability is based on signal detection theory, and depends on both the actual aircraft sound level ("signal") and the ambient sound level (background or "noise"). As such, audibility is based on many factors, including the listening environment one is in. Conversely, detectability is a theoretical formulation based on a significant body of research. For the purposes of INM modeling the terms "audibility" and "detectability" are used interchangeably. The detectability level (d') calculated in INM 6.2 is based on the signal-to-noise ratio within one-third octave-band spectra for both the signal and noise, using a $10\log(d')$ value of 7 dB. There are three parts to the calculation of audibility in INM 6.2: (1) Calculate the detectability level for each one-third octave band of the signal for a single contributing flight path segment; (2) Calculate the detectability level for the overall signal for a single contributing flight path segment; and (3) Calculate absolute or percentage of time a signal is audible for a flight path.

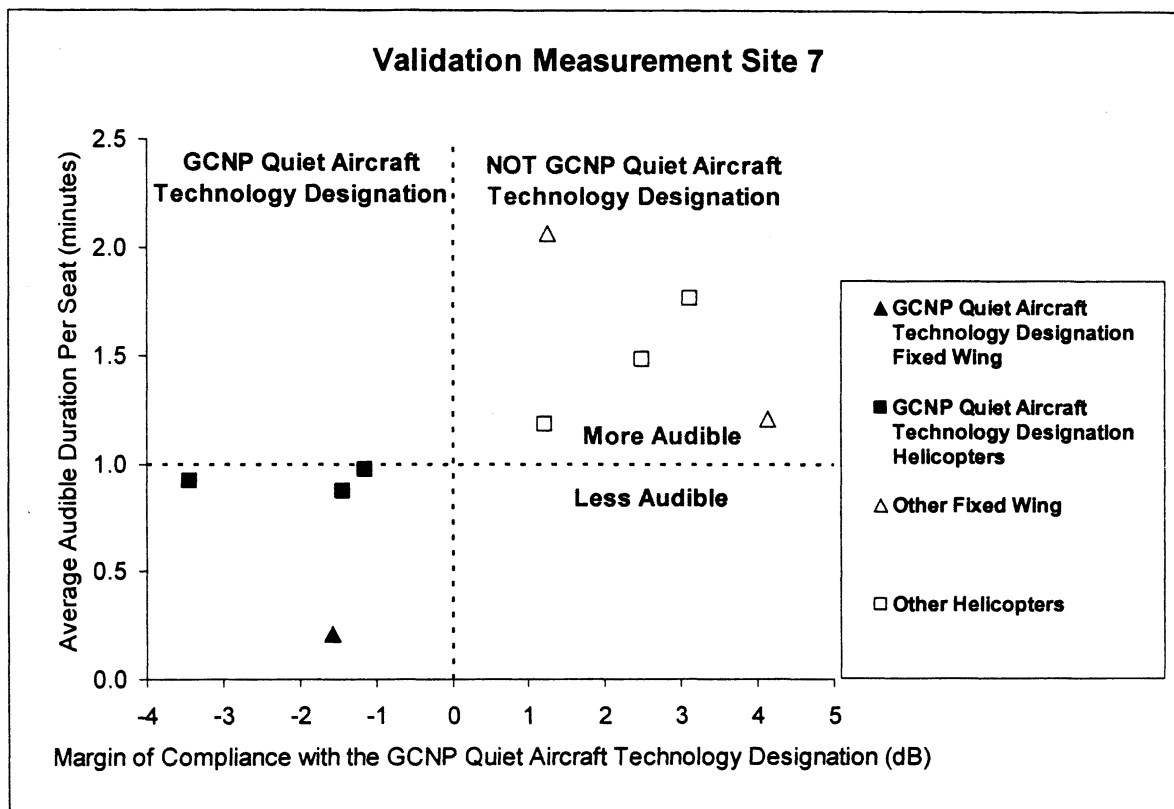
In addition to using the improved INM 6.2, this assessment used the aircraft operations from the aforementioned GCNP aircraft noise model validation study. Time audible predictions were generated for all aircraft types measured during the validation study, using operations and one-third octave band spectral data consistent with the validation study. The aircraft taken from the original validation study include the Aerospatiale AS350, Bell B206B and Bell B206L helicopters, as well as the Cessna C182, Cessna C207, and Vistaliner (DHC-6QP) propeller-driven aircraft. For the purposes of this assessment, operational and acoustic data were added for some GCNP quiet aircraft technology designation helicopters not operating at the time of the model validation study. These include the MD600, MD900 and

Eurocopter EC-130. Predictions were summarized for all validation study measurement sites and relationships between predicted time audible and noise certification levels derived.

Just as was done by the consultant (HMM&H) for the preparation of the NPS comment to the SNPRM Notice No. 03-05, the FAA evaluated the ranking of aircraft audibility duration per available passenger seat against the ranking of the noise certification level in A-weighted decibels per available passenger seat. The FAA performed this evaluation at the 39 measurement sites in the GCNP noise model validation study (labeled as '1A', '2A', * * * to '9F' in the study). Similar to what the NPS's consultant had done, the FAA generated figures that compare the aircraft's margin of compliance with the GCNP quiet aircraft technology designation to the length of time the aircraft is audible, adjusting for the number of available passenger seats.

The margin of compliance is the difference in decibels between the aircraft's certificated noise level and the GCNP quiet aircraft technology designation noise limit, using the appropriate equation in the proposed rule. A negative margin of compliance means that the certificated noise level is below the noise limit designating that aircraft as GCNP quiet aircraft technology. In this evaluation, the Vistaliner, EC-130, MD600 and MD900 all have negative margins of compliance (GCNP quiet aircraft technology designation); while the C182, C207, AS350, B206B, and B206L all have positive margins of compliance (not GCNP quiet aircraft technology designation).

Figure 1 compares the margins of compliance to the average length of time audible for the sample of aircraft at validation measurement Site 7. While Site 7 has been singled out for display, the findings are comparable to the other validation measurement sites. Site 7 included 6 microphone locations along Tanner Trail in the GCNP. The average audibility duration value at the 6 microphone locations is plotted for each of the aircraft types. The helicopters and fixed wing aircraft that meet the GCNP quiet aircraft technology designation are less audible than those aircraft that do not meet the designation.

Figure 1. Comparison of GCNP Quiet Aircraft Technology Designation with Audibility

The FAA analysis found that the GCNP quiet aircraft technology designation aircraft are less audible at all of the other model validation measurements sites. Table 1 summarizes the findings. The column on the far left of Table 1 contains the identity of the site groups used in the model validation study. That study grouped the 39 microphone locations according to common geographic characteristics that

could lead to common levels of aircraft noise exposure. The remaining columns group the average time audible values by aircraft category (fixed wing or helicopter) and by compliance with the GCNP quiet aircraft technology designation. A range of average audible duration values is given when there is more than one aircraft model in that specific category. For example, this analysis includes 2 fixed wing aircraft

that would not meet the GCNP quiet aircraft technology designation (C182 and C207), 3 helicopters that would not meet the designation (AS350, B206B, and B206L), 3 GCNP quiet aircraft technology designation helicopters (EC130, MD600, and MD900), and one GCNP quiet aircraft technology designation fixed wing aircraft (Vistaliner or DHC6QP).

TABLE 1.—COMPARISON OF AVERAGE TIME AUDIBLE PER SEAT (MINUTES, MINIMUM–MAXIMUM)

Site group	Fixed wing		Helicopters	
	GCNP quiet aircraft technology designation	Other	GCNP quiet aircraft technology designation	Other
1All	No aircraft audible			
2All	No aircraft audible			
3North	0.0	0.5–0.8	0.0–0.0	0.0–0.1
3South	0.0	0.3–0.5	0.0–0.1	0.0–0.2
4North	0.1	0.7–1.4	0.5–0.6	0.6–1.0
4South	0.0	0.6–1.1	0.3–0.4	0.4–1.1
5Rim	0.3	1.9–3.6	1.1–1.4	1.4–2.6
5Interior	0.1	1.0–2.0	0.2–0.5	0.2–1.4
6All	0.2	1.2–2.2	0.9–1.0	1.2–1.6
7All	0.2	1.2–2.1	0.9–1.0	1.2–1.8
8Mtn	0.1	1.3–2.3	0.8–0.9	0.9–1.7
8Ridge	0.2	0.9–1.6	0.6–0.6	0.8–1.3

TABLE 1.—COMPARISON OF AVERAGE TIME AUDIBLE PER SEAT (MINUTES, MINIMUM–MAXIMUM)—Continued

Site group	Fixed wing		Helicopters	
	GCNP quiet aircraft technology designation	Other	GCNP quiet aircraft technology designation	Other
9Far	No aircraft audible			
9Near	0.3	1.8–3.2	1.0–1.2	1.4–2.2

The NPS's consultant also expressed concern that the A-weighting used for the certification and the GCNP quiet aircraft technology designation may not correlate with time audible. The FAA examination indicates there is some validity to this concern. In particular, the Cessna 182 aircraft (C182), which has a relatively low certification level but a high audible duration, seems to be an exception to the relationships derived between time audible and certification level. This is especially the case when considering the time audible on a per seat basis. A possible reason for this is that the C182 has a lower Blade Passage Frequency (BPF) than the other fixed wing aircraft. The BPF of the C182 is 80 Hz, the BPF of the C207 is 125 Hz, and the BPF of the DHC-6QP is 100 Hz. These low frequency tones have little influence on the A-weighted levels, but propagate through the atmosphere without significant reduction from atmospheric attenuation.

Since the helicopters in this evaluation have dominant main rotor BPF tones even lower in frequency than does the C182, one would expect to find a lack of correlation between the A-weighted noise levels for these helicopters and their values of audibility duration. However this does not seem the case as shown in the linear relationships derived by the NPS's consultant. The reason is likely the auditory masking of these lower frequency tones by the threshold of human hearing, which slopes up significantly in the lower frequencies. Thus, even though the helicopters generate a substantial amount of energy at the very low frequencies, a large amount of that energy is below the threshold of hearing.

The FAA concludes that while the correlation between ranking of certification noise levels and ranking of audibility duration is inexact, aircraft that meet the GCNP quiet aircraft technology designation are consistently less audible than those that do not. Therefore it is reasonable to expect that replacing non-compliant aircraft with larger, GCNP quiet aircraft technology designation aircraft (e.g., replace a

Cessna 207 with a Vistaliner or replace a B206L with an EC-130) should produce marked improvement toward substantial restoration of natural quiet.

Addressing Selectable Noise Reduction Technologies

The Aerospace Industries Association (AIA) raised concerns that since the FAA first proposed basing the GCNP quiet aircraft technology designation upon noise certification data, manufacturers have introduced new selectable (or automated) helicopter noise reduction technologies. AIA is concerned that exclusive use of only the reference noise conditions will discourage the application of helicopter noise reduction innovations gained through these new selectable technologies.

FAA Response

The FAA envisions that it could accept noise levels derived from selectable noise reduction technologies in the event that the noise certification regulations are amended to accommodate such a concept. The noise certification regulations, 14 CFR part 36, are based on standard reference conditions designed to acquire noise levels representing the noisiest flight configurations. Technical procedures do not currently exist that address selectable noise reduction technologies. A technical working group on aircraft noise under the International Civil Aviation Organization (ICAO) is addressing selectable noise reduction technology. This technical group, which is made up of international regulators, aircraft manufacturers and the airline industry, will explore concepts that may lead to changes in the noise certification scheme. The work program for such an activity under ICAO usually takes 3–6 years to bring to fruition.

Economic Consequences to Indirect Entities

AIA and the Helicopter Association International (HAI) expressed a concern that the proposed rule applies to a very narrow application of commercialized air tour operators in the GCNP, but that

it has broader implications upon helicopter manufacturing and operating industries. AIA and HAI claims that local jurisdictions, both domestic and foreign, could attempt to apply the quiet technology designation as criteria for use restriction. Such restrictions could result in significant costs to aircraft operators not linked in any way to the air tour industry. AIA and HAI recommend that the FAA should assess these costs. Alternatively, AIA and HAI recommend that the FAA adopt terminology that specifically narrows the quiet technology designation to that subset of aircraft for which it is intended. Both recommend replacing "quiet technology designation" with "GCNP aircraft quiet air tour designation." AIA suggests that without this terminology change the potential for economic implications could be "both substantial and adverse to the helicopter manufacturing and operating industries."

FAA Response

The FAA appreciates the concerns expressed by AIA and HAI, but questions the likelihood that non-airport proprietor State and local governments would assert such authority. It is well settled that the FAA has exclusive sovereignty over and authority to regulate use of the navigable air space. Actions by State and local governments to use their police powers to regulate aircraft overflights would be federally preempted. Nonetheless, to minimize any possible unintended adverse consequences that could result from the proposed "quiet technology designation" terminology the FAA has changed the phrase "quiet technology designation" to "GCNP quiet aircraft technology designation" in all places that it is used in the rule. This terminology change will correctly limit the scope of the rule to air tour aircraft operating over GCNP, in accordance with the plain language of Section 804 of the Air Tour Act, and eliminate any need to analyze the costs of possible unintended adverse consequences. This more precise terminology will also help to emphasize the scope of this final rule

and its relationship to quiet technology requirements at other national parks under other provisions of the Air Tour Act.

Helicopter Quiet Air Tour Designation Correspondence to the Flyover Condition

AIA states that the U.S. helicopter industry is disadvantaged by the exclusive use of the flyover certification condition as the flight profile for gauging the GCNP quiet aircraft technology. AIA claims that U.S. noise research has not concentrated on this flight condition for achieving noise reduction and thus makes this approach inappropriate.

FAA Response

The FAA finds the use of the flyover condition from noise certification best matches the primary flight operation by helicopters in commercial sightseeing operations in the Grand Canyon. The flyover condition is the most basic reference flight profile for helicopters as defined in both 14 CFR part 36 Appendix H and Appendix J (equivalent to ICAO Annex 16 Chapters 8 and 11 helicopter noise certification standards, respectively). Since the establishment of the Appendix J (Chapter 11) noise certification procedures for helicopters under 7000 pounds, numerous helicopters have been certificated at only the flyover condition, including most U.S. manufactured small helicopters. Therefore, the FAA believes it is appropriate that such an openly available and highly reliable noise data source be utilized and incorporated into the GCNP quiet aircraft technology designation helicopter limits.

Definition of "Passenger Seat"

AIA and HAI find that the proposed rule does not define "number of passenger seats." These commenters recommend that FAA define the number of passenger seats to mean the maximum number of passenger seats for which the individual aircraft is certified.

FAA Response

The FAA agrees to define the number of passenger seats as the "number of passenger seats for which an individual aircraft is configured."

Helicopter Weight Scaling

AIA, HAI, and AgustaWestland state that the proposed helicopter noise limit does not appropriately reflect the scaling of noise levels with weight when considering helicopter technology that is reasonably achievable. These commenters recommend that the slope

of 12 log should be incorporated rather than the 10 log to account for higher seating capacity and growth versions of existing helicopter designs.

FAA Response

The FAA finds the proposed GCNP quiet aircraft technology designation for helicopters to be appropriate. It was derived from the generally accepted common scaling with maximum gross weight, such that noise level increases 3 decibels for every doubling of aircraft weight (equating to 10 log slope). For example, the ICAO and FAA helicopter noise certification requirements for the takeoff, flyover, and approach noise conditions all use 3 decibels per doubling of weight to define the noise limits. The commenters' proposal to change it to 12 log seems designed to classify a certain helicopter, which is not currently used for commercial sightseeing, as meeting the GCNP quiet aircraft technology designation. Although the AgustaWestland EH-101 helicopter may have been built with some noise reduction technology, there is no evidence to show that it was built with the aim of meeting the rigorous standard needed to assist in the substantial restoration of natural quiet in GCNP. As such, the FAA rejects the recommendation, as it would weaken the effort towards the restoration of natural quiet.

Noise Limits for Fixed Wing Aircraft

AIA noted that the GCNP quiet aircraft technology limits for fixed wing aircraft do not account for changes to the small propeller-driven airplane noise certification scheme as found in the latest amendments to Appendix F and Appendix G of 14 CFR part 36.

FAA Response

The FAA agrees with AIA to update the appropriate rule language to reflect the technical changes made in 14 CFR part 36 amendment 22 (October 13, 1999). Amendment 22 replaced the 4-foot height microphone with a ground plane installation for small propeller-driven airplane noise certification tests. The change in microphone height affects the signal received. As such, the rule language of Part 93, Appendix A should be revised to account for the part 36 amendment noise level and to read as follows (added text is underlined):

"D. In the event that a flyover noise level is not available in accordance with Appendix F of 14 CFR part 36, the noise limit for propeller-driven airplanes with a takeoff noise level obtained in accordance with the measurement procedures prescribed in Appendix G is 74 dB or 77 dB, depending on the 14

CFR part 36 amendment noise level, for airplanes having two or fewer passenger seats, increasing at 3 dB per doubling of the number of passenger seats for airplanes having three or more passenger seats. The noise limit for propeller-driven airplanes with three or more passenger seats can be calculated by the formula:

$$LA_{max}(G) = 74 + 10\log(\# \text{ PAX seats}/2)$$

dB for certifications obtained under 14 CFR part 36 Amendment 21 or earlier;

$$LA_{max}(G) = 77 + 10\log(\# \text{ PAX seats}/2)$$

dB for certifications obtained under 14 CFR part 36 Amendment 22 or later."

Comments on Implementation

Through this action, the FAA designates a standard for GCNP quiet aircraft technology that applies to certain aircraft in commercial air tour operations over GCNP. Under the provisions of Section 804 of the Air Tour Act, the FAA will address the establishment of routes or corridors for commercial air tour operations that employ quiet aircraft technology in subsequent rulemaking in consultation with the NPS and the NPOAG ARC. Since the ultimate objective is to determine the role of the GCNP quiet aircraft technology designation in achieving substantial restoration of natural quiet, the FAA requested specific comments to six questions. This section summarizes the specific comments made in response to each question below. These comments will be considered in subsequent rulemaking in consultation with the NPS and the NPOAG ARC, as provided in Section 804.

1. How reasonable is the noise efficiency approach (larger aircraft with more passenger 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?

The NPS believes that the implementation of noise efficient aircraft alone will not achieve substantial restoration of natural quiet. Achieving the goal will require some type of use restriction. Since audibility is the measure of natural quiet in GCNP, the NPS recommends that the sound levels produced by quiet technology aircraft be analyzed in terms of audibility, rather than certificated noise levels, to ensure that the aircraft is less audible than non-quiet technology aircraft.

Lighter Than Air Solar International, LLC suggests that an absolute noise level be used rather than noise efficiency.

AIA, HAI, and the United States Air Tour Association (USATA) support the proposed noise efficiency approach and the use of certificated noise levels. AIA and HAI also recommended some technical changes to this aspect of the rule. The FAA addressed these technical recommendations in the previous section of this document.

The Sierra Club acknowledges that the noise efficiency approach makes sense, *i.e.* to allow aircraft that give more passengers tour rides to make more noise, as long as larger quieter aircraft lead to fewer flights. The Sierra Club also acknowledges that certificated noise levels are the most readily available substantiated data but questions whether the ranking of certification noise data will give the same results in the rank of audibility.

The Friends of Grand Canyon support the proposed noise efficiency approach only if it will substantially reduce the number of flights.

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

Lighter Than Air Solar International, LLC suggests that the definition of quiet technology aircraft be expanded to include airships to accommodate for future innovations in both noise reduction technology and noise efficient aircraft designs.

AIA, HAI, and USATA recommend that incentives for research and development into source noise reduction technologies be made available to both manufacturers and others for developing Supplemental Type Certificates (STC). The incentives could take the form of research grants or directed appropriations to the National Aeronautics and Space Administration (NASA). As modifications and STCs are developed that reduce source noise and/or increase noise efficient aircraft designs, operators of the modified aircraft would be allowed increased operations within the GCNP.

The Sierra Club comments that some incentive is appropriate for retrofitting existing aircraft if it does not compromise the restoration of natural quiet.

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 incentives?

AIA favors direct U.S. government support for research and development of flyover source noise reduction technologies to assist U.S. manufacturers in developing new

helicopters or modifying current helicopters.

HAI recommends tax incentive to operators who purchased quiet technology equipment, exemption to all caps and curfews, and route expansions for all quiet technology aircraft. Similarly, USATA and Lighter Than Air Solar International, LLC recommend relief from all caps and curfews, incentive routes, low-cost federal loans, over fee rebates or investment tax credits or elimination of overflight fees altogether.

The Sierra Club opposes opening incentive routes through existing flight free zones. This commenter supports operational incentives that allocate larger numbers of flights to aircraft that have lower noise signatures without increasing the overall number of flights, unless the flights are substantially quieter.

The Grand Canyon National Park Service (GCNPS) opposes any increase in the total number of operations as an incentive for conversion to noise-efficient aircraft. Such an incentive would be counterproductive to the efforts to achieve the mandate of substantial restoration of natural quiet.

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?

USATA and Lighter Than Air Solar International, LLC support a "flexible" cap that would include no cap for quiet technology designation aircraft. USATA also suggests that the cap should be raised for operators who use approved noise abatement flight procedures.

The Sierra Club objects to the idea of "flexible" cap that may allow an increase in number of flights with the introduction of quiet technology designation aircraft. This commenter does not believe there is any reason to treat the GCNP overflights differently from other park limits, such as number of rooms, parking places, modes of transportation, access to trails, and boating permits, which are all capped.

The GCNPS endorses noise budgets as one form of "flexible" cap. Under a noise budget, operators would be allocated a quantity of noise ("decibel-minutes") equivalent to the amount and duration of noise each operation created during the 1997–98 base year, which they can use according to their operational needs.

One commenter suggested that rather than phasing out louder aircraft, the FAA should let the operators phase in the quieter ones.

5. Should growth be tied to an incentive system for existing operators

to convert their fleet to quiet technology?

Grand Canyon Trust (The Trust) and Friends of the Grand Canyon do not support the use of incentives, nor do they believe that there should be any allowances for air tour operational growth. The Trust opposes duplicate routes connecting the same two points (with one incentive route and one non-incentive route), as this would spread the noise over a wider area.

Sierra Club supports growth tied to conversion to quiet aircraft as long as aircraft noise continues to fall below the 1975 levels.

HAI and USATA believe that the mechanisms they had suggested in response to Question 4 should provide the affected operators with the necessary incentives to convert to quieter aircraft.

Lighter Than Air Solar International, LLC favors incentives for operators' investment in quiet technology in the form of expanded operational rewards (allocations). The criteria for such rewards should also be based on decreased noise levels and not other, non-related criteria, such as seniority or company size.

The NPS and GCNPS both believe that growth incentives at the expense of substantial restoration of natural quiet are contrary to the mandate. Some limited growth in number of operations might be possible under a system of partial redistribution of reverted allocations.

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?

The Trust and the Sierra Club support phase-out, expanded curfews, and an added noise cap approach for operational limitations. The Trust recommends that the caps for the number of aircraft should also apply to the number of flights. The Trust suggests that the annual number of flights decline until they are stabilized at the 1975 levels. This could be achieved by a 5% decline in flights per year over the next 15 or 20 years in the Dragon Corridor. The Trust supports the quiet technology designation as the noise standard to be applied to all commercial tour aircraft at the Grand Canyon. The Trust wants it instituted for the east end of the GCNP by 2007 and the entire GCNP by 2010. The Trust seeks to abolish the Dragon Corridor and asks that the Zuni Corridor become "quiet aircraft only." In addition, the Sierra Club suggests a sliding scale

incentive to reward incremental noise reduction efforts.

The Friends of the Grand Canyon seek a cap on the number of passengers to assure the noise benefit and gains from reduced flights materialize. Such visitor caps have existed for 3 decades for ground visitors.

HAI and USATA endorse the elimination of all caps and curfews for quiet technology operators. HAI finds that a phase-out is unnecessary, as other operational incentives will cause an increase in quiet technology aircraft. HAI supports tax relief for the development of noise abatement techniques and low noise operational techniques that can be incorporated into the aircraft flight manual.

Lighter Than Air Solar International, LLC (11) support a "gradual" phase-out and continuing periodic FAA noise reviews.

The NPS and GCNPS have concluded that substantial restoration of natural quiet requires supplemental operational limitations, *i.e.*, reduced flights, quieter equipment for the total passenger carrying capability and accountability for number of flights. The NPS and GCNPS support a market-based flight allocation system for the benefit of natural quiet.

Economic Summary

Proposed changes to Federal regulations must undergo several economic analyses. First, Executive Order 12866 directs that each Federal agency shall propose or adopt a regulation only upon a reasoned determination that the benefits of the intended regulation justify its costs. Second, the Regulatory Flexibility Act of 1980 requires agencies to analyze the economic impact of regulatory changes on small entities. Third, the Trade Agreements Act (19 U.S.C. section 2531–2533) prohibits agencies from setting standards that create unnecessary obstacles to the foreign commerce of the United States. In developing U.S. standards, this Trade Act requires agencies to consider international standards and, where appropriate, that they be the basis of U.S. standards. Fourth, the Unfunded Mandates Reform Act of 1995 requires agencies to prepare a written assessment of the costs, benefits and other effects of proposed or final rules that include a Federal mandate likely to result in the expenditure by State, local or tribal governments, in the aggregate, or by the private sector, of \$100 million or more, in any one year (adjusted for inflation).

In conducting these analyses, FAA has determined that this rule: (1) Has benefits that justify its costs, is not

economically significant under Executive Order 12866, and is significant as defined in DOT's Regulatory Policies and Procedures; (2) will not have a significant economic impact on a substantial number of small entities; (3) will not reduce barriers to international trade; and (4) does not impose an unfunded mandate on State, local, or tribal governments, or on the private sector.

However, for regulations with an expected minimal impact the above-specified analyses are not required. The Department of Transportation Order DOT 2100.5 prescribes policies and procedures for simplification, analysis, and review of regulations. If it is determined that the expected impact is so minimal that the proposal does not warrant a full evaluation, a statement to that effect and the basis for it is included in the regulation.

This final rule does not require any action by operators, as it simply identifies which aircraft meet or do not meet the GCNP quiet aircraft technology designation. Further, this rule does not relieve operators of the currently established operational limitations. The expected outcome is to have a minimal impact.

Comments

Two commenters, AIA and HAI, submitted comments on the economic consequences to the proposal that have been discussed earlier in this final rule.

The FAA agrees with AIA and HAI and has changed the phrase "quiet technology designation" to "GCNP quiet aircraft technology designation" in all places that it is used in the rule. This change will eliminate any need to analyze the costs of possible unintended adverse consequences to entities not subject to this action and clarify how this final rule relates to quiet technology requirements under Section 805 and other sections of the Air Tour Act applicable to national parks other than GCNP.

Regulatory Flexibility Determination

The Regulatory Flexibility Act of 1980 (RFA) establishes "as a principle of regulatory issuance that agencies shall endeavor, consistent with the objective of the rule and of applicable statutes, to fit regulatory and informational requirements to the scale of the business, organizations, and governmental jurisdictions subject to regulation." To achieve that principle, the RFA requires agencies to solicit and consider flexible regulatory proposals and to explain the rationale for their actions. The RFA covers a wide-range of small entities, including small

businesses, not-for-profit organizations and small governmental jurisdictions.

Agencies must perform a review to determine whether a proposed or final rule will have a significant economic impact on a substantial number of small entities. If the determination is that it will, the agency must prepare a regulatory flexibility analysis as described in the RFA.

However, if an agency determines that a proposed or final rule is not expected to have a significant economic impact on a substantial number of small entities, Section 605(b) of the RFA provides that the head of the agency may so certify, and a regulatory flexibility analysis is not required. The certification must include a statement providing the factual basis for this determination, and the reasoning should be clear.

This action merely defines quiet technology designation for aircraft use in GCNP air tour operations but does not impose any requirements. This action does not impose any requirements to use aircraft that meet the GCNP quiet aircraft technology designation. This action does not grant any relief from current GCNP air tour requirements if an operator uses aircraft that meets the designation. Therefore, the FAA does not expect this rule to have any cost impact on small entities that provide GCNP air tours. Consequently, the FAA certifies that the rule will not have a significant economic impact on a substantial number of small entity GCNP air tour operators.

International Trade Impact Analysis

The Trade Agreement Act of 1979 prohibits Federal agencies from engaging in any standards or related activities that create unnecessary obstacles to the foreign commerce of the United States. Legitimate domestic objectives, such as safety, are not considered unnecessary obstacles. The statute also requires consideration of international standards and, where appropriate, that they be the basis for U.S. standards.

In accordance with the above statute, the FAA has determined that this action will have a minimal impact and, therefore, has determined that this rule will not result in any unnecessary obstacles to the foreign commerce of the United States.

Unfunded Mandates Reform Act

The Unfunded Mandates Reform Act of 1995 (the Act), enacted as Public Law 104–4 on March 22, 1995, is intended, among other things, to curb the practice of imposing unfunded Federal mandates

on State, local, and tribal governments. Title II of the Act requires each Federal agency to prepare a written statement assessing the effects of any Federal mandate in a proposed or final agency rule that may result in an expenditure of \$100 million or more (adjusted annually for inflation) in any one year by State, local, and tribal governments, in the aggregate, or by the private sector; such a mandate is deemed to be a "significant regulatory action." The FAA currently uses an inflation-adjusted value of \$120.7 million in lieu of \$100 million.

This action does not contain such a mandate. Therefore, the requirements of Title II of the Unfunded Mandates Reform Act of 1995 do not apply.

Federalism Implications

The regulations herein would not have substantial direct effects on the States, on the relationship between the National Government and the States, or on the distribution of power and responsibilities among the various levels of government. Therefore, in accordance with Executive Order 13132, it is determined that this rule does not have sufficient federalism implications to warrant the preparation of a federalism assessment.

Environmental Review

In accordance with FAA Order 1050.1E, the FAA has determined that this action is categorically excluded from environmental review under section 102(2)(C) of the National Environmental Policy Act (NEPA). This action was categorically excluded under FAA Order 1050.1D, Appendix 4, Paragraph 4.j (now Paragraph 312d in FAA Order 1050.1E), which covers regulations "excluding those which if implemented may cause a significant impact on the human environment." This rule establishes quiet technology designations for aircraft operating in GCNP. It does not impose a phase-out or any alteration of any air tour operator's fleet of aircraft. It does not lift the operations limitation, alter any flight corridors through the park, or make any change to the SFRA. Finally, the FAA notes that this action alone has no impact on substantial restoration of natural quiet in the GCNP. Any environmental and economic impacts will depend on other future actions yet to be defined. Accordingly, this action will not individually or cumulatively have a significant effect on the human environment. In addition, the FAA has determined that there are no "extraordinary circumstances" associated with the proposed action that

would otherwise require the preparation of an EA or EIS.

Consultation With Tribal Governments

Executive Order 13084 provides for consultation and coordination with Indian tribal governments in certain circumstances that are set forth in the executive order. The SNPRM Notice No. 03-05 described consultations with Indian tribal governments about this rule and taken their concerns into account. The FAA determined that additional consultations were not necessary because this action is required by statute and would not impose any substantial direct compliance costs on the communities of Indian tribal governments.

Paperwork Reduction Act

In accordance with the Paperwork Reduction Act of 1995 (Pub. L. 104-13), there are no requirements for information collection associated with this action. An agency may not conduct or sponsor and a person is not required to respond to a collection of information unless it displays a currently valid Office of Management and Budget (OMB) control number.

List of Subjects in 14 CFR Part 93

Air traffic control, Airports, Navigation (Air), Reporting and recordkeeping requirements.

The Amendment

■ For reasons set forth above, the Federal Aviation Administration amends part 93, in chapter I of Title 14, Code of Federal Regulations, as follows:

PART 93—SPECIAL AIR TRAFFIC RULES AND AIRPORT TRAFFIC PATTERNS

■ 1. The authority citation for part 93 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40103, 40106, 40109, 40113, 44502, 44514, 44701, 44719, 46301.

■ 2. Section 93.303 is amended to add the definitions in alphabetical order to read as follows:

§ 93.303 Definitions.

* * * * *

GCNP quiet aircraft technology designation means an aircraft that is subject to § 93.301 and has been shown to comply with the noise limit specified in appendix A of this part.

Number of passenger seats means the number of passenger seats for which an individual aircraft is configured.

* * * * *

■ 3. Appendix A is added to read as follows:

Appendix A to Subpart U of Part 93—GCNP Quiet Aircraft Technology Designation

This appendix contains procedures for determining the GCNP quiet aircraft technology designation status for each aircraft subject to § 93.301 determined during the noise certification process as prescribed under part 36 of this chapter. Where no certificated noise level is available, the Administrator may approve an alternative measurement procedure.

Aircraft Noise Limit for GCNP Quiet Aircraft Technology Designation

A. For helicopters with a flyover noise level obtained in accordance with the measurement procedures prescribed in Appendix H of 14 CFR part 36, the limit is 80 dB for helicopters having a seating configuration of two or fewer passenger seats, increasing at 3 dB per doubling of the number of passenger seats for helicopters having a seating configuration of three or more passenger seats. The noise limit for helicopters with three or more passenger seats can be calculated by the formula:

$$EPNL(H) = 80 + 10\log(\# \text{ PAX seats}/2) \text{ dB}$$

B. For helicopters with a flyover noise level obtained in accordance with the measurement procedures prescribed in Appendix J of 14 CFR part 36, the limit is 77 dB for helicopters having a seating configuration of two or fewer passenger seats, increasing at 3 dB per doubling of the number of passenger seats for helicopters having a seating configuration of three or more passenger seats. The noise limit for helicopters with three or more passenger seats can be calculated by the formula:

$$SEL(J) = 77 + 10\log(\# \text{ PAX seats}/2) \text{ dB}$$

C. For propeller-driven airplanes with a measured flyover noise level obtained in accordance with the measurement procedures prescribed in Appendix F of 14 CFR part 36 without the performance correction defined in Sec. F35.201(c), the limit is 69 dB for airplanes having a seating configuration of two or fewer passenger seats, increasing at 3 dB per doubling of the number of passenger seats for airplanes having a seating configuration of three or more passenger seats. The noise limit for propeller-driven airplanes with three or more passenger seats can be calculated by the formula:

$$LA_{max}(F) = 69 + 10\log(\# \text{ PAX seats}/2) \text{ dB}$$

D. In the event that a flyover noise level is not available in accordance with Appendix F of 14 CFR part 36, the noise limit for propeller-driven airplanes with a takeoff noise level obtained in accordance with the measurement procedures prescribed in Appendix G is 74 dB or 77 dB, depending on 14 CFR part 36 amendment level, for airplanes having a seating configuration of two or fewer passenger seats, increasing at 3 dB per doubling of the number of passenger seats for airplanes having a seating configuration of three or more passenger seats. The noise limit for propeller-driven airplanes with three or more passenger seats can be calculated by the formula:

$L_{Amax}(G) = 74 + 10\log(\# \text{ PAX seats}/2)$ dB for
certifications obtained under 14 CFR part
36, Amendment 21 or earlier;

$L_{Amax}(G) = 77 + 10\log(\# \text{ PAX seats}/2)$ dB for
certifications obtained under 14 CFR part
36, Amendment 22 or later.

Issued in Washington, DC on March 22,
2005.

Marion C. Blakey,
Administrator.

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