



U.S. Department
of Transportation
**Federal Aviation
Administration**

Office of the Administrator

800 Independence Ave., S.W.
Washington, DC 20591

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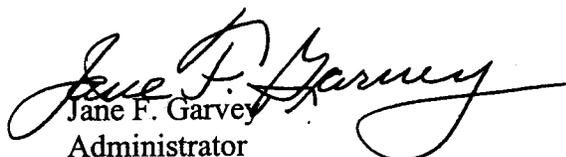
The Honorable Richard B. Cheney
President of the Senate
Washington, DC 20510

Dear Mr. President:

It is with pleasure that I enclose the Federal Aviation Administration's Report to Congress on Quiet Aircraft Technology for Grand Canyon as required by Section 804 of the Wendell H. Ford Aviation Investment and Reform Act for the 21st Century (49 U.S.C. 40128).

A copy of this report also has been sent to the Speaker of the House of Representatives.

Sincerely,


Jane F. Garvey
Administrator

Enclosure



**U.S. Department of
Transportation**

Federal Aviation
Administration

REPORT TO CONGRESS

Quiet Aircraft Technology for Grand Canyon

Washington, DC 20591

August 2001

Report to the United States Congress
Pursuant to Section 804 of the
Wendell H. Ford Aviation Investment
and Reform Act for the 21st Century
(AIR-21)

EXECUTIVE SUMMARY

This Federal Aviation Administration (FAA) report is submitted in response to the direction provided in Section 804, Quiet Aircraft Technology for Grand Canyon, of the Wendell H. Ford Aviation Investment and Reform Act for the 21st Century (Public Law 106-181, commonly known as “AIR-21”). As specified by that section of the act, within 12 months after the date of the enactment of AIR-21, the FAA Administrator shall designate reasonably achievable requirements for fixed-wing and helicopter aircraft necessary for such aircraft to be considered as employing quiet aircraft technology for purposes of this section. If the Administrator determines that the agency will not be able to make the designation before the last day of the 12-month period, the Administrator shall transmit to Congress a report on the reasons for not meeting the time period and the expected date of the designation. Additionally, Congress mandated that once a designation had been made, those commercial air tour aircraft that employ quiet aircraft technology and replace existing aircraft shall not be subject to the operational flight allocations at Grand Canyon National Park (GCNP), “...provided that the cumulative impact of such operations does not increase noise at Grand Canyon.” Finally, AIR-21 also directed that “...the Administrator shall establish, by rule, routes or corridors for commercial air tour operations...by fixed-wing or helicopter aircraft that employ quiet aircraft technology...” at GCNP, “...provided that such routes or corridors can be located in areas that will not negatively impact the substantial restoration of natural quiet, tribal lands, or safety.”

The Quiet Technology rulemaking team, made up of representatives from the FAA and the National Park Service (NPS), reconvened and has met regularly since June 2000. The team began by evaluating how intervening events have affected the original proposal to designate quiet technology aircraft using a noise efficiency concept. New circumstances considered included the requirements of Section 804 of AIR-21, the dual noise standard adopted by the NPS, and the FAA final rules establishing commercial air tour limitations. The team also spent considerable effort on the determination of what are “reasonably achievable” quiet technology requirements. The team agreed that the criteria for “reasonably achievable” include what is technologically practicable, economically reasonable, appropriate to the aircraft type design, and, in the final analysis, environmentally beneficial.

Building upon the concept contained in the December 1996 Notice of Proposed Rulemaking, Noise Limitations for Aircraft Operations in the Vicinity of Grand Canyon National Park (Notice No. 96-15), the team has been conducting in-depth investigations into the determination of quiet technology touching upon the current state of aircraft source noise reduction technology, recent advancement in aircraft noise predictions and simulations, and economic viability for the air tour operators, which are all small businesses. The investigations have discovered the following key technical issues that the team had to resolve before formalizing a proposal:

- Given the mandates of Section 804, the team is evaluating whether the designation of quiet technology requirements, as currently envisioned, will offer commercial air tour operators immediate relief from the present commercial air tour operation allocations. More specifically, in refining the new proposal, the team has been conducting studies to determine the extent to which quiet technology could possibly enable air tour operators to increase operations without increasing cumulative noise levels at GCNP.

- Preliminary results of the GCNP Noise Model Validation study indicate that it may be necessary to refine the model further. This study is ongoing and is designed to determine the degree of accuracy and precision in the existing computer models for measurements of tour aircraft sound exposures in GCNP. The final results of this study will provide a more complete picture of the extent of natural quiet that has been restored to GCNP. Additionally, this study will help the agency to determine if the use of quiet technology aircraft will significantly reduce noise so as to allow commercial air tour allocations to be reduced or removed.
- The team is studying whether there is a reasonable correlation between aircraft certification noise levels in decibels (the criteria that FAA plans to use to define quiet technology aircraft) and aircraft audibility (the methodology being used to determine substantial restoration of natural quiet). Preliminary results from aircraft noise simulations have raised questions as to whether the current proposal for quiet technology designation would actually reduce aircraft audibility in the park. The implication requires an indepth examination.

The rulemaking team has substantially resolved most of the above issues and is proceeding with the development of a Supplemental Notice of Proposed Rulemaking for publication in early 2002, followed by a 90-day comment period. The FAA would then review the comments and determine how to proceed on the final rule.

REPORT TO CONGRESS

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QUIET AIRCRAFT TECHNOLOGY FOR GRAND CANYON

This Federal Aviation Administration (FAA) report is submitted in response to the direction provided in Section 804, Quiet Aircraft Technology for Grand Canyon, of the Wendell H. Ford Aviation Investment and Reform Act for the 21st Century (Public Law 106-181 commonly known as “AIR-21”). As specified by that section of the act, within 12 months after the date of the enactment of AIR-21, the FAA Administrator shall designate reasonably achievable requirements for fixed-wing and helicopter aircraft necessary for such aircraft to be considered as employing quiet aircraft technology for purposes of this section. If the Administrator determines that the agency will not be able to make the designation before the last day of the 12-month period, the Administrator shall transmit to Congress a report on the reasons for not meeting the time period and the expected date of the designation. Additionally, Congress mandated that once a designation had been made, those commercial air tour aircraft that employ quiet aircraft technology and replace existing aircraft shall not be subject to the operational flight allocations at Grand Canyon National Park (GCNP), “...provided that the cumulative impact of such operations does not increase noise at Grand Canyon.” Finally, AIR-21 also directed that “...the Administrator shall establish, by rule, routes or corridors for commercial air tour operations...by fixed-wing or helicopter aircraft that employ quiet aircraft technology...” at GCNP, “...provided that such routes or corridors can be located in areas that will not negatively impact the substantial restoration of natural quiet, tribal lands, or safety.” This document reports on the progress made and the expected date of the designation.

BACKGROUND

History

Beginning in the summer of 1986, the FAA initiated regulatory action to address the increasing air traffic over GCNP. On March 26, 1987, the FAA issued Special Federal Aviation Regulation (SFAR) No. 50 (subsequently amended on June 15, 1987; 52 FR 22734) establishing flight regulations in the vicinity of the Grand Canyon. The purpose of the SFAR was to reduce the risk of midair collision, reduce the risk of terrain contact accidents below the rim level, and reduce the impact of aircraft noise on the park environment.

In 1987, Congress enacted Public Law 100-91, commonly known as the National Parks Overflights Act (the Overflights Act). This act stated, in part, that noise associated with aircraft overflights at GCNP was causing “a significant adverse effect on the natural quiet and experience of the park and current aircraft operations at the Grand Canyon National Park have raised serious concerns regarding public safety, including concerns regarding the safety of park users.”

Section 3 of the Overflights Act required the Department of the Interior (DOI) to submit to the FAA recommendations to protect resources in the Grand Canyon from adverse impacts associated with aircraft overflights. The act mandated that the recommendations: (1) provide for

substantial restoration of the natural quiet and experience of the park and protection of public health and safety from adverse effects associated with aircraft overflight; (2) with limited exceptions, prohibit the flight of aircraft below the rim of the canyon; and (3) designate flight-free zones except for purposes of administration and emergency operations.

In December 1987, the DOI transmitted its “Grand Canyon Aircraft Management Recommendation” to the FAA, which included both rulemaking and nonrulemaking actions. The Overflights Act required the FAA to prepare and issue a final plan for the management of air traffic above the Grand Canyon, implementing the recommendations of the DOI without change unless the FAA determined that executing the recommendations would adversely affect aviation safety. After the FAA determined that some of the DOI recommendations would adversely affect aviation safety, the recommendations were modified to resolve those concerns.

On May 27, 1988, the FAA issued SFAR No. 50-2 revising the procedures for operation of aircraft in the airspace above the Grand Canyon (53 FR 20264, June 2, 1988). SFAR No. 50-2 established a Special Flight Rules Area (SFRA) from the surface to 14,499 feet above mean sea level (m.s.l.) in the area of the Grand Canyon. The SFAR included: (1) prohibition of flight below a certain altitude in each of five sectors of this area, with certain exceptions; (2) establishment of four flight-free zones from the surface to 14,499 feet m.s.l. covering certain areas of the park; and (3) provision for special routes for commercial sightseeing operators. These operators are required to conduct sightseeing operations under either part 121 or part 135 of the Code of Federal Regulations (CFR) as specified in their operations specifications. Finally, the SFAR contained certain terrain avoidance and communications requirements for flights in the area.

A second major provision of section 3 of the Overflights Act required the DOI to submit a report to Congress discussing whether the SFAR “has succeeded in substantially restoring the natural quiet in the park; and such other matters, including possible revisions in the plan, as may be of interest.” The report was to include comments by the FAA “regarding the effect of the plan's implementation on aircraft safety.” The Overflights Act mandated a number of studies related to the effect of overflights on parks.

On September 12, 1994, the DOI submitted its final report and recommendations to Congress. This report, titled “Report on Effects of Aircraft Overflights on the National Park System (Report to Congress),” recommended numerous revisions to SFAR No. 50-2 in order to substantially restore the natural quiet in GCNP. Recommendation No. 10 stated: “Improve SFAR 50-2 to Effect and Maintain the Substantial Restoration of Natural Quiet at Grand Canyon National Park.” This recommendation incorporated the following general concepts: (1) simplification of the commercial sightseeing route structure; (2) expansion of flight-free zones; (3) accommodation of the forecast growth in the air tour industry; (4) phased-in use of quieter aircraft technology; (5) temporal restrictions (“flight-free” time periods); (6) use of the full range of methods and tools for problem solving; and (7) institution of changes in approaches to park management, including the establishment of an acoustic monitoring program by the National Park Service (NPS) in coordination with the FAA. On June 15, 1995, the FAA published a final rule that extended the provisions of SFAR No. 50-2 to June 15, 1997 (60 FR 31608). This action

allowed the FAA sufficient time to review the NPS recommendations and to initiate and complete appropriate rulemaking action.

In the meantime, March 1994, the FAA and NPS jointly issued an advance notice of proposed rulemaking (ANPRM) seeking public comment on policy recommendations addressing the effects of aircraft overflights on national parks, including GCNP (59 FR 12740). The recommendations presented for comment included: (1) voluntary measures; (2) altitude restrictions; (3) flight-free periods; (4) flight-free zones; (5) allocation of noise equivalencies; and (6) incentives to encourage use of quiet aircraft technology. In response to the ANPRM, the FAA received 644 comments that specifically addressed GCNP. These comments were summarized in the notice of proposed rulemaking (NPRM) published on July 31, 1996 (61 FR 40120; Notice No. 96-11).

On April 22, 1996, the President issued a Memorandum for the Heads of Executive Departments and Agencies to address the significant impacts on visitor experience in national parks. Specifically, the President directed the Secretary of Transportation to issue proposed regulations for GCNP that would place appropriate limits on sightseeing aircraft to reduce the noise immediately and make further substantial progress towards restoration of natural quiet, as defined by the Secretary of the Interior, while maintaining aviation safety in accordance with the Overflights Act.

On July 31, 1996, the FAA published an NPRM (61 FR 40120; Notice No. 96-11) to reduce the impact of aircraft noise on GCNP and to assist the NPS in achieving the substantial restoration of natural quiet and experience in the park. A final rule was issued on December 31, 1996, (61 FR 69302) to amend 14 CFR part 93 with a new subpart U (Sections 93.301 to 93.317). The amendment adopted the following: (1) modification of the dimensions of the Grand Canyon National Park Special Flight Rules Area; (2) establishment of new flight-free zones and flight corridors, as well as modification of existing flight-free zones and flight corridors; (3) establishment of flight-free periods (curfews) in the Dragon and Zuni Point Corridors; and (4) establishment of reporting requirements for commercial sightseeing companies operating in the SFRA. In addition to these areas, the FAA sought comment on a number of questions and alternatives regarding curfews and caps, as well as quiet aircraft technology. This final rule also placed a temporary limit on the number of aircraft that could be used for commercial sightseeing operations in the GCNP SFRA. These provisions were to become effective on May 1, 1997. Only the reporting requirements and aircraft cap were actually implemented. Implementation of the remaining provisions was delayed.

Additionally, on December 31, 1996, the FAA published an NPRM on Noise Limitations for Aircraft Operations in the Vicinity of Grand Canyon National Park, and a Notice of Availability of Proposed Commercial Air Tour Routes in the Federal Register (62 FR 69301). These two documents were part of an overall strategy to reduce the impact of aircraft noise on the park environment and to assist the NPS in achieving its statutory mandate imposed by the Overflights Act.

1996 Proposal for Quiet Technology Designation

In the 1996 NPRM, Noise Limitations for Aircraft Operations in the Vicinity of Grand Canyon National Park (Notice No. 96-15), FAA proposed to establish noise limitations for certain aircraft operating in the vicinity of GCNP. The proposed aircraft noise limitations rule generally would have required air tour aircraft to be categorized according to each aircraft's noise efficiency quotient. Notice No. 96-15 had three parts.

The first element was to provide incentives for the use of quieter aircraft within GCNP. The proposed rule would have implemented incentives for conversion to the most noise efficient category of air tour aircraft. The NPRM also provided an incentive route for the use of noise efficient aircraft within GCNP by establishing, with the National Canyon Corridor, a route within the newly expanded Toroweap/Shinumo Flight-Free Zone.

The second element was to establish additional aircraft noise limitations to reduce the impact of aircraft noise on the GCNP environment. The NPRM proposed to divide air tour aircraft into three categories according to their level of noise efficiency, as measured by the relationship between the certificated noise level of the aircraft and the number of passenger seats on the typical configuration of that aircraft type. In addition to commonality with the FAA's historic approach to aircraft noise standards, the noise efficiency concept supported the theme that the use of quieter, larger aircraft would provide a two-fold benefit. For example, the replacement of a tour aircraft with a larger, quiet noise efficient aircraft would both reduce the noise of each operation and reduce the number of air tour operations while still accommodating the same number of passengers. This theme is in accord with the FAA's general policy of using cumulative aircraft noise as an appropriate measure of potential impacts accounting for the number of flights and intensity of their noise. The FAA began to explore noise efficiency approach as an incentive for operators to utilize aircraft equipped with the best available noise abatement technology in GCNP. Additionally, the NPRM would have phased out the use of the least noise efficient aircraft. The NPRM defined the three categories of noise efficiency as Category A, the least noise efficient; Category B, more noise efficient than Category A; and Category C, the most noise efficient.

The third element was to minimize or eliminate the affect of the aircraft cap on operators using the quietest aircraft in GCNP. The NPRM called for lifting the temporary cap placed on the number of Category C (the most noise efficient) aircraft permitted to be used for commercial sightseeing operations in the park.

The intended goal of the NPRM Notice No. 96-15 was to reduce the impact of air tour aircraft noise in GCNP and to assist the NPS in achieving the statutory mandate imposed by the Overflights Act to provide for the substantial restoration of natural quiet and experience in GCNP.

The FAA's findings and recommendations were presented in full detail in the publication of NPRM Notice No. 96-15. Following the publication of this NPRM, as well as a number of other related rulemakings at the end of December 1996, it was clear that there were still long-term significant issues yet to resolve before the quiet technology rulemaking could be finalized. Thus, the FAA and NPS jointly agreed that the best approach to restore substantially the natural quiet

to GCNP was to devote resources to the development of final rules that addressed critical near-term needs. The agencies determined that considerable steps in reaching the substantial restoration of natural quiet in GCNP could be achieved by modifying the airspace over GCNP to create larger flight-free zones, changing the route structure through GCNP, and establishing limits on the numbers of commercial air tours that could be flown in the park. Once these rulemakings were complete, the agencies once again began working on the quiet technology rulemaking immediately following publication of the final rules in April 2000.

Related Federal Rulemaking and Policies since 1996

On February 26, 1997, the FAA published a final rule (62 FR 8862) that amended the effective date of modifications to the GCNP SFRA that were codified in an earlier final rule published on December 31, 1996. This action delayed the effective date for 14 CFR Sections 93.301, 93.305, and 93.307 of the final rule and reinstated portions of and amended the expiration date of SFAR No. 50–2. This action did not affect or delay the implementation of the curfew, aircraft restrictions, reporting requirements, or the other portions of the rule. The effective date of May 1, 1997, for 14 CFR Sections 93.301, 93.305, and 93.307 was delayed until 0901 UTC (Universal Time Coordinated) January 31, 1998. On December 19, 1997, the FAA published a final rule (62 FR 66248) that further delayed the effective date for the flight-free zones, SFRA modification, and corridors portions of the December 31, 1996, final rule until January 31, 1999, and extended the expiration date of SFAR 50–2 until 0900 UTC January 31, 1999. This action was necessary to allow the FAA time to establish a route structure for GCNP. On December 7, 1998, the FAA proposed amending the effective date (63 FR 67544). This proposal delayed the effective date for 14 CFR Sections 93.301, 93.305, and 93.307 of the December 31, 1996, final rule until January 31, 2000. Additionally, this proposal amended the expiration date of those portions of SFAR No. 50–2 that were reinstated in the February 21, 1997, final rule and extended in the rule published on December 17, 1997. On December 28, 2000, the FAA further delayed the airspace modifications final rule until April 1, 2001. The route configuration went into effect on April 19, 2001. Because the prior agency stay ended on April 1, 2001, it was necessary to further delay the airspace until April 19, 2001. This additional extension was necessary to correlate the routes and airspace for the westend of GCNP.

On May 15, 1997, the FAA published an NPRM (62 FR 26902), which proposed to amend two of the flight-free zones within GCNP by establishing two corridors through the flight-free zones (Notice No. 97–6). The first corridor through the Bright Angel Flight-Free Zone would have been an incentive corridor to be used only by the most noise efficient aircraft. The second corridor in the Toroweap/Shinumo Flight-Free Zone through the National Canyon area would create a marketable air tour route in the central section of the park while addressing some concerns of Native Americans. On July 15, 1998, the FAA, in consultation with the NPS, withdrew this NPRM because the agencies had determined not to proceed with an air tour route in the vicinity of National Canyon and wished to consider alternatives to this route. Comments submitted by air tour operators, environmentalists, and Native Americans led the agencies to conclude that the National Canyon air tour route was not a viable option.

On October 31, 1997, the FAA published a notice of clarification (62 FR 58898) to set forth its reevaluation of the economic and environmental impacts associated with the Special Flight Rules in the Vicinity of Grand Canyon National Park (GCNP) Final Rule that was published on

December 31, 1996. After implementation of certain provisions of the final rule, the FAA discovered that it had significantly underestimated the number of commercial air tour aircraft operating in GCNP in 1995. The FAA reevaluated the economic and environmental analyses completed for the final rule in light of this new information. The FAA determined that the changes were not of such magnitude as to affect the agency's position on the implementation of the final rule.

On July 15, 1998, the FAA published a supplemental amendment (63 FR 38232) to the NPRM that was published on December 31, 1996 (61 FR 69334), which proposed to establish noise limitations for certain aircraft operating in the vicinity of GCNP. Specifically, the FAA removed two sections from the NPRM that proposed to establish a corridor in the Toroweap/Shinumo Flight-Free Zone through the National Canyon area as an incentive route for quiet technology aircraft. Again the NPRM noted that the FAA, in consultation with the NPS, removed these two sections from the NPRM because the agencies decided not to proceed with an air tour route in the vicinity of National Canyon and instead were considering alternatives to this route. The supplemental amendment did not affect any other provisions contained in the NPRM.

On January 26, 1999, the NPS published a public notice of agency policy (64 FR 3969–3972) titled “Evaluation Methodology for Air Tour Operations Over Grand Canyon National Park.” This methodology became effective on July 14, 1999 (64 FR 38006). This notice set forth several refinements to the NPS noise evaluation methodology. Specifically, the notice refined the current noise assessment methodology by adopting a two-zone system for assessing impacts related to substantial restoration of natural quiet at GCNP. In Zone One, which encompasses about one-third of the park's area, the threshold of noticeability previously used in noise modeling for environmental analyses related to GCNP air tours continues to be used (i.e., the average A-weighted natural ambient level plus 3 decibels). In Zone Two, which encompasses about two-thirds of the park's area, the threshold for the onset of impact would be audibility (i.e., the level at which aircraft can begin to be heard by people with normal hearing, determined to be 8 decibels below the average A-weighted natural ambient level at GCNP).

On July 9, 1999, the FAA proposed a rulemaking (64 FR 37304) to limit the number of commercial air tours that may be conducted in the GCNP SFRA and to revise the reporting requirements for commercial air tours in the SFRA. This proposal was finalized on April 4, 2000, and became effective on May 4, 2000. These changes allow the FAA and the NPS to limit and further assess the impact of aircraft noise on GCNP. In addition, several nonsubstantive changes to 14 CFR part 93, subpart U, were adopted to improve the organization and clarity of the rule. The rule limits commercial air tours in the SFRA at the level reported to the FAA by the operators for the year May 1, 1997–April 30, 1998, (the base year), pending implementation of the Comprehensive Noise Management Plan. The rule also adopts several information-gathering provisions. The FAA and the NPS intend on using the information collected to monitor the extent of “substantial restoration of natural quiet” that has been achieved at GCNP.

On April 4, 2000, the FAA also published a final rule modifying the airspace in the GCNP SFRA. The airspace modification final rule was scheduled to become effective December 1, 2000. On November 20, 2000, the FAA published a final rule delaying the effective date of the

airspace modification final rule until December 28, 2000, so that the FAA could adequately evaluate new safety issues that had been raised by air tour operators. On December 28, 2000, the FAA delayed the airspace modifications until April 1, 2001. The FAA has since decided to delay implementing changes to the airspace, including two flight-free zones in the east end of GCNP, pending resolution of new safety issues in that part of GCNP. On April 19, 2001, the new airspace and route structure for the western two-thirds of GCNP (all areas west of the Dragon Corridor), as adopted in April 2000, went into effect.

The above chronology of Federal actions outlines the steps taken to restore substantially the natural quiet to GCNP, including modifying the GCNP SFRA, adopting the commercial air tour operations limitations, and refining the methodology for evaluating GCNP air tour operations aircraft noise. These actions have occurred in the 4 years since FAA proposed noise limitations for commercial air tour aircraft. All of these changes bear upon the FAA decision as to how to proceed with rulemaking for quiet technology designation as described below in the Current Status section of this report.

Grand Canyon Air Tour Coalition v. FAA

In early 1997, seven environmental groups, led by the Grand Canyon Trust, air tour operators, local government entities, and the Hualapai Tribe, filed a lawsuit in the U.S. Circuit Court for the District of Columbia challenging the December 1996 final rule. The case was argued on November 6, 1997. In a decision dated September 4, 1998, the Circuit Court of Appeals deferred to the judgment and technical expertise of the FAA in certain areas and determined that the challenges in other areas were not ripe in light of the phased nature of the FAA's proposed solution to aircraft noise at GCNP (*Grand Canyon Air Tour Coalition v. FAA*, 154 F.3d 455 (D.C. Cir. 1998)). The court held that the FAA/NPS definition of the terms “natural quiet” and “substantial restoration of natural quiet” satisfied the National Park Overflights Act.

GCNP Aircraft Noise Model Validation Study

In 1999, the NPS and the FAA jointly funded a study to determine the degree of accuracy and precision that existing computer models provide, in comparison with field measurements, in calculating sound exposures produced by tour aircraft in national parks. Additionally, the study evaluated the calibration of these models to provide a tool for computation of sound exposures in GCNP. Based upon experiences in applying the aircraft noise evaluation methodology at GCNP, the two agencies agreed that further refinement of existing models would likely be necessary to take into account the specific characteristics of the park. The ongoing noise model validation effort is part of the FAA and NPS commitment to work cooperatively to meet the mandated goal of substantial restoration of natural quiet in GCNP. The noise modeling used in all of the GCNP environmental documents to date remains the best science currently available and produces results consistent with available data. However, as noise modeling is a constantly evolving technology, both agencies are committed to making appropriate adjustments to the approaches and methodologies as new knowledge or science becomes available.

The first part of the study goal is the validation of existing computer models by determining accuracy and precision. This effort should show how well the models, when used with a basic set of input variables, produce results that agree with actual noise measurements. The candidate models to be validated are:

1. The FAA's Integrated Noise Model, which has been modified to address air tour aircraft noise exposure in GCNP and referred to as Grand Canyon Integrated Noise Model (GCINM).
2. The NPS's National Park Service Overflight Decision Support System, designed and programmed specifically for park applications where audibility, significant changes in terrain elevation, and shielding due to terrain must be addressed.
3. The NOISEMAP Simulation Model, developed by the U.S. Air Force and NASA to simulate aircraft single event noise levels.

As part of the Noise Model Validation Study efforts, the FAA and NPS formed a group of experts, called the Technical Review Committee (TRC), to review and comment on various technical issues that may arise related to the measurement, quantification, and analysis of soundscapes. Appendix A to this report contains the TRC membership list. The TRC first met in August 1999 to review the study plan and the details of the pilot study at GCNP. The pilot study was designed to provide the most direct and efficient path to determining the accuracy and precision of the models. Once completed, the study will demonstrate how well the model results compare with the measured sound exposure at GCNP. The measurement phase of the pilot study was conducted at GCNP in early September 1999.

The GCNP Noise Model Validation TRC met on March 29, 2001, for a preliminary review of the data collected at the park in September 1999. At this meeting, the TRC examined and discussed a series of graphs that showed measured percent time audible for tour aircraft in GCNP during the 3-day test in September 1999 and compared that preliminary data with predictions of the three models described above. The TRC made some initial general observations about each of the computer models. Preliminary results indicate the possible need to refine the noise models further. The final results of this project, when they become available, could have an effect on both the determination of substantial restoration of natural quiet already achieved and the evaluation of implementing quiet technology designations without negatively impacting substantial restoration. The TRC agreed that the next steps in the ongoing model validation study should be to apply a variety of statistical analysis techniques, such as multiple regression and Monte Carlo simulations, to understand the factors that contribute to aircraft audibility in GCNP.

At the March 2001 meeting, TRC members also discussed their initial review of model validation study data in relation to the earlier predictions of aircraft noise exposure at GCNP. The earlier predictions were used by the FAA to assess impacts and choose among alternative courses of action under the National Environmental Policy Act of 1969 (NEPA). It was pointed out that the preliminary comparison of the study's measurements and predictions does not demonstrate any calculation bias in the GCINM, the computer noise model used in previous environmental assessments for GCNP. In fact, it was agreed that the GCINM provided reasonable and appropriate predictions of aircraft noise exposure for the purpose of assessing impact and choosing among alternative courses of action under NEPA.

National Parks Overflights Advisory Group (NPOAG)

AIR-21 required the establishment of an advisory group within 1 year after its enactment. The advisory group is to be comprised of a balanced group of representatives of general aviation, commercial air tour operations, environmental concerns, and Indian Tribes. On March 12, 2000,

the NPS and FAA, in accordance with the National Parks Air Tour Management Act of 2000, announced (66 FR 14429) the establishment of the NPOAG. The NPOAG was formed to provide continuing advice and counsel with respect to commercial air tours. AIR-21 directed the advisory group to provide advice, information, and recommendations to the FAA Administrator and the NPS Director on commonly accepted quiet aircraft technology for use in commercial air tour operations over a national park or tribal lands (defined as Indian country that is within or abutting a national park), which may receive preferential treatment in a given air tour management plan.

On June 19, 2001, the FAA and the NPS announced the NPOAG membership (66 FR 32974). The FAA and the NPS had invited members of the public who are interested in serving on the advisory group, and 11 requests were received. The FAA and the NPS have selected the following persons to serve initially on the Advisory Group: Joseph Corrao, Helicopter Association International; Andrew Cebula, Aircraft Owners and Pilots Association; David Kennedy, National Air Transportation Association; Chip Dennerlein, National Parks Conservation Association; Charles Maynard, Friends of the Great Smoky Mountain National Park; Boyd Evison, former National Park Superintendent and Regional Director; and Ms. Germane White, representing the Confederated Salish and Kootani.

CURRENT STATUS

Soon after the enactment of AIR-21, the FAA reconvened the rulemaking team, which included representatives from the DOI (including the NPS), to address the designation of quiet technology for air tour aircraft operating in GCNP. The rulemaking team was assigned the task of designating “reasonably achievable” requirements for aircraft to be considered as employing quiet aircraft technology, while still pursuing the statutory mandate to achieve substantial restoration of natural quiet at GCNP. The team agreed that the proposed quiet technology designation would be based upon the noise efficiency concept proposed in the December 1996 rulemaking (Notice No. 96-15). The noise efficiency concept, which is summarized in the “1996 Proposal for Quiet Technology Designation” section of this report, is consistent with the FAA’s philosophy for aircraft noise certification. The noise standard gives credit for the productivity of the aircraft; i.e., maximum weight in the case of noise certification and number of passengers in the quiet technology designation for GCNP air tour aircraft.

Once deciding to base the quiet technology designation upon the noise efficiency concept, the team reviewed the December 1996 NPRM, examined the relationship with other Federal rules and policies since December 1996, and conducted some preliminary evaluations of the potential effect upon GCNP. As a result of these activities, the team decided that the most appropriate course of action was to proceed with the preparation of a supplemental NPRM (SNPRM) rather than to proceed to a final rule. This would allow the public the opportunity to review and comment on the quiet technology proposal given the changes in the regulatory environment at GCNP.

The decision to proceed with an SNPRM was made after a thorough examination of other non-rulemaking alternatives in attempt to meet the 12-month deadline of the AIR-21 mandate. The

other mechanisms, such as an FAA notice or an advisory circular, were found not to be legally viable to establish noise requirements for air tour operations.

The SNPRM decision is based upon the following factors:

1. The new proposal considers the statutory mandate to provide relief from commercial air tour limitations for operators using quiet technology aircraft if the cumulative impact of such operations does not increase noise at GCNP. The team has been conducting studies to determine the extent to which operators using quiet technology aircraft would receive at least some relief from the commercial air tour limitations. The analysis suggests that the operational cap can only be lifted through a mechanism in which an air tour operator replaces current aircraft with quiet technology aircraft. That is, the reduction in noise gained through the conversion to quiet technology aircraft might allow for a limited number of additional operations should this reduction exceed the amount needed to reach the goal of substantial restoration of natural quiet. Such a mechanism must ensure fair and equitable treatment of current and future operators under the condition that the cumulative effect of any change in the operations must not increase noise in the park. Thus, removal of the operational limitation will be addressed in subsequent FAA rulemaking in consultation with the NPS and the NPOAG as directed by the National Air Tours Management Act of 2000.
2. Other Federal actions since December 1996, such as changes to the GCNP SFRA, adoption and implementation of the air tour limitations rule, and refinements to the NPS's evaluation methodology (i.e., the two-zone system and the noise thresholds to be applied to the zones) warrant allowing the public an opportunity to review and comment on the quiet technology designation within the changed context.
3. The ongoing GCNP Noise Model Validation project is beginning to yield preliminary data that indicate the possible need to refine the noise model used by the FAA and NPS. The final results of this project, when they become available, could have an effect on both the determination of substantial restoration of natural quiet already achieved and the evaluation of implementing quiet technology designations without negatively impacting substantial restoration at the park. This also warrants affording the public an opportunity to review and comment.
4. The rulemaking team is studying whether there is a reasonable correlation between aircraft certification noise levels in decibels (the criteria that FAA has considered using to define quiet technology aircraft) and aircraft audibility (the methodology being used to determine substantial restoration of natural quiet). Recent preliminary simulations of aircraft audibility have raised questions as to whether the proposal for quiet technology designation would actually reduce aircraft audibility in the park. Further examination of the preliminary audibility simulation is necessary to resolve this issue before the agencies can move forward with the proposed quiet technology concept.

An earlier section of this report, titled "Related Federal Rulemaking and Policies since 1996," summarized the related Federal rulemaking and policies since the 1996 NPRM on noise limitations. Each of these intervening actions has some implication on the current effort to propose a quiet technology designation. The changes to the GCNP SFRA have relocated various routes/corridors in which air tour aircraft can operate. This has resulted in a change in the size and shape of the aircraft noise exposure in the park. The SFRA changes could also affect the gains or reduction in noise exposure that could be expected under a quiet technology

requirement. The revised number of air tour aircraft has a similar effect on the cumulative noise impact. Also the NPS's refinements to the evaluation methodology; i.e., the two-zone system and the noise thresholds to be applied to the zones, have an effect on measuring the benefits of quiet technology in achieving the goal of substantial restoration of natural quiet.

Section 804(c) of AIR-21 directs that any commercial air tour operation by an aircraft that employs quiet technology and that replaces an existing aircraft shall not be subject to commercial air tour allocations, provided that there is no cumulative impact in noise. While the noise modeling (GCINM) used in all of the GCNP remains the best science currently available and produces results consistent with available data, preliminary data from the ongoing noise studies indicate that the GCINM may not be fully assessing the impact of aircraft noise exposure in numerous portions of the park. The GCINM provided reasonable and appropriate predictions of aircraft noise exposure for the purpose of assessing impact and choosing among alternative courses of action under NEPA. However, the preliminary noise model validation study data give preliminary signals that the model may require further refinement and that the end result could be that less of the park has been substantially restored to natural quiet than had been calculated in earlier environmental assessments. These preliminary findings are the result of recent advancements in the science and technology involved in aircraft noise modeling, however, and the GCINM remains the best science currently available. Therefore, the FAA and the NPS believe that it is prudent that the quiet technology rulemaking project should take into account the findings that will come out of the validation project and incorporate any further refinement to the model into the assessment of the costs and benefits of a quiet technology requirement.

CONCLUSION

AIR-21 directs the FAA to designate "reasonably achievable" quiet aircraft technology for use at Grand Canyon. Implementation of this designation is delegated, under this same law, to the NPOAG, which is composed of a balanced group of representatives of general aviation, commercial air tour operations, environmental concerns, and Indian Tribes.

There are a number of remaining complex and key technical issues facing the FAA and the NPS in the formulation of quiet technology designation for air tour aircraft. The goal of this effort is to use quiet technology as the final increment for achieving substantial restoration of natural quiet at GCNP. Thus, it is absolutely imperative to prove that the proposal under consideration is reasonable, appropriate, and will achieve the goal.

The FAA has decided, in coordination with the NPS and the DOI, that the appropriate course of action is to prepare an SNPRM on quiet technology designation for air tour aircraft. This will ensure the right information is provided and proper discussion occurs given the number of technical issues that have arisen on this matter. The FAA rulemaking team has substantially resolved the major remaining technical issues and is proceeding with the development of an SNPRM. The FAA anticipates publication in the beginning of 2002 with a probable 90-day comment period. Then the agency must review the comments and determine from the comments the best method of implementing the quiet technology designation while adhering to the statutory requirements of AIR-21.

APPENDIX A

GCNP Noise Model Validation Technical Review Committee

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