Federal Aviation Administration
Aviation Rulemaking Advisory Committee

Air Carrier Operations Issue Area
Reserve Duty/Rest Requirements Working Group

Task 1 – Reserve Duty for Flight Crewmembers

Task Assignment

[Federal Register: July 9, 1998 (Volume 63, Number 131)]
[Notices]
[Page 37167-37168]
From the Federal Register Online via GPO Access [wais.access.gpo.gov]
[DOCID:fr09jy98-136]

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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

Aviation Rulemaking Advisory Committee; Air Carrier Operations Issues--New Task

AGENCY: Federal Aviation Administration (**FAA**), DOT.

ACTION: Notice of new task assignment for the Aviation Rulemaking Advisory Committee (ARAC).

SUMMARY: Notice is given of a new task assigned to and accepted by the Aviation Rulemaking Advisory Committee (ARAC). This notice informs the public of the activities of ARAC.

FOR FURTHER INFORMATION CONTACT:
Quentin Smith, Flight Standards Service, AFS-200, Federal Aviation Administration, 800 Independence Avenue, SW., Washington, DC 20591.

SUPPLEMENTARY INFORMATION:

Background

The **FAA** has established an Aviation Rulemaking Advisory Committee to provide advice and recommendations to the **FAA** Administrator, through the Associate Administrator for Regulation and Certification, on the full range of the **FAA**'s rulemaking activities with respect to aviation-related issues. This includes obtaining advice and recommendations on the **FAA**'s commitment to harmonize its Federal Aviation Regulations (FAR) and practices with its trading partners in Europe and Canada.

One area ARAC deals with is air carrier operations issues. These issues involve the operational requirements for air carriers, including crewmember requirements, airplane operating performance and limitations, and equipment requirements.

The Task

This notice is to inform the public that the **FAA** has asked ARAC to provide advice and recommendation on the following task, applicable to both Part 121 and 135 operations:

Provide a review and analysis of industry practice with regard to

reserve duty for flight crewmembers. Recommend to the **FAA** a performance-based or other regulatory scheme whereby the public is ensured that each flight crewmember is provided with sufficient rest to safely perform flight deck duties at a minimal cost to certificate holders and operators. The task will be segmented by the working group according to the types of operations under Part 119, such as domestic, flag, etc.

The product expected as a result of this task is a report to the **FAA** that provides specific recommendations and proposed regulatory text, if appropriate, that will resolve the issue of reserve duty. Specifically, these recommendations must ensure that pilots are sufficiently rested for flight deck duty. These recommendations should also ensure that flight crewmember resources are utilized so that the economic burden for the certificate holder is minimized. The report will include the following:

1. A review of the current scientific data on the effects of fatigue in reserve duty. Consider conflicting opinions.
2. An analysis of the current reserve schemes and operational situations. This analysis should include each of the types of operations under Part 119 and, if appropriate, different operations within those types.
3. A recommendation of the standards and criteria to be used.
4. The recommendation must outline how the **FAA** will measure compliance.
5. The report must include industry-provided data for an **FAA** economic analysis. This data should include the effects on small operators and small businesses.
6. The report should include industry-provided data regarding the record-keeping burden on the public.

The Reserve Duty/Rest Requirements Working Group is expected to complete its work by December 1, 1998. The **FAA** anticipates that the ARAC on air carrier operations issues will meet on December 1 to receive the recommendation of the working group and that ARAC will submit its recommendation to the **FAA** within 30 days. Participants of the working group should be prepared to participate on a full-time basis for the 4-month duration of the task completion.

ARAC Acceptance of Task

ARAC has accepted the task and has chosen to establish a new Reserve Duty/Rest Requirements Working Group. The working group will serve as to staff ARAC to assist ARAC in the analysis of the assigned task. Working group recommendations must be reviewed and approved by ARAC. If ARAC accepts the working group's recommendations, it forwards them to the **FAA** as ARAC recommendations.

Working Group Activity

The Reserve Duty/Rest Requirements Working Group is expected to comply with the procedures adopted by ARAC. As part of the procedures, the working group is expected to:

1. Recommend a work plan for completion of the task, including the rationale supporting such a plan, for consideration at the meeting of ARAC to consider air carrier operations issues held following publication of this notice.
2. Give a detailed conceptual presentation of the proposed recommendations, prior to proceeding with the work stated in item 3

below.

3. Draft a report containing information and data identified previously.

4. Provide a status report if needed, at each meeting of ARAC held to consider air carrier operations issues. Interim status reports may also be required.

Participation in the Working Group

The Reserve Duty/Rest Requirements Working Group will be composed of experts having an interest in the assigned task. A working group member need not be a representative of a member of the full committee.

An individual who has expertise in the subject matter and wishes to become a member of the working group should write to the person listed under the caption FOR FURTHER INFORMATION CONTACT expressing that desire, describing his or her interest in the task, and stating the expertise he or she would bring to the working group. The **FAA** is specifically seeking expertise from all kinds of operations under Part 119, including Part 135 on-demand operations and helicopter operations. All requests to participate must be received no later than July 24, 1998. The requests will be reviewed by the assistant chair and the assistant executive director, and the individuals will be advised whether or not the request can be accommodated.

Individuals chosen for membership on the working group will be expected to represent their aviation community segment and participate actively in the working group (e.g., attend all meetings, provide written comments when requested to do so, etc.). They also will be expected to devote the resources necessary to ensure the ability of the working group to meet any assigned deadline(s). Members are expected to keep their management chain advised of working group activities and decisions to ensure that the agreed technical solutions do not conflict with their sponsoring organization's position when the subject being negotiated is presented to ARAC for a vote.

Once the working group has begun deliberations, members will not be added or substituted without the approval of the assistant chair, the

assistant executive director, and the working group chair.

The Secretary of Transportation has determined that the formation and use of ARAC are necessary and in the public interest in connection with the performance of duties imposed on the **FAA** by law.

Meetings of ARAC will be open to the public. Meetings of the Reserve Duty/Rest Requirements Working Group will not be open to the public, except to the extent that individuals with an interest and expertise are selected to participate. No public announcement of working group meetings will be made.

Issued in Washington, DC, on July 2, 1998.

Quentin Smith,

Assistant Executive Director for Air Carrier Operations Issues, Aviation Rulemaking Advisory Committee.

[FR Doc. 98-18209 Filed 7-8-98; 8:45 am]
BILLING CODE 4910-13-M

Recommendation Letter

AIR LINE PILOTS ASSOCIATION, INTERNATIONAL
535 HERNDON PARKWAY □ P.O. BOX 1169 □ HERNDON, VIRGINIA 20172-1169 □ 703-689-2270
FAX 703-689-4370

February 9, 1999

Mr. Thomas E. McSweeny
Associate Administrator for Regulation and Certification
Federal Aviation Administration
800 Independence Avenue, S.W.
Washington, D.C. 20591

Dear Mr. McSweeny:

The Air Carrier Operations Issues Group of the FAA's Aviation Rulemaking Advisory Committee (ARAC) received a task to recommend to the FAA a performance-based or other regulatory scheme whereby the public is ensured that each flight crewmember is provided with sufficient rest to safely perform flight deck duties at a minimal cost to certificate holders and operators. The Reserve Duty/Rest Requirements Working Group was established to perform this task.

Two co-chairmen were appointed to this working group: H. Clayton Foushee, Ph.D., with Northwest Airlines, and Donald E. Hudson, M.D., with Aviation Medicine Advisory Service. Realizing the difficult and contentious nature of the task, the services of Mr. Phil Harter, with The Mediation Consortium, were enlisted as moderator. We want to thank the FAA for graciously making Mr. Harter available.

The task was to address all commercial aviation operations under both Part 121 and 135 rules. The great majority of the time was spent developing proposals for Part 121 scheduled operations.

Scientific Literature

The working group did not conduct a detailed review of the scientific literature available on fatigue. The working group was able to agree on two broad scientific principles in regard to fatigue:

- Humans generally need the opportunity to acquire approximately eight hours of sleep per 24 hour period, and
- Fatigue is more probable during the time encompassing approximately 0200 to 0600, which roughly corresponds to the low point in an average human's circadian cycle.

The working group agreed that reserve duty is neither rest nor duty.

The industry/labor representatives include detailed scientific citations in their submission.

Reserve Scheduling

There are a wide variety of reserve rest schemes currently in use in the industry. The industry/management representatives prefer a flexible scheduling approach with approval given

by the FAA at individual airlines for individual operations. The industry/labor representatives prefer a more structured approach.

After several public meetings, two basic scheduling schemes were proposed for providing reserve pilots the opportunity for rest or limiting the duty day based upon the amount of advance notice of flight assignment:

- A scheduled protected time period for all reserve pilots with the use of advance notification to either cancel a scheduled protected time period or to utilize a reserve on a sliding scale where the length of the duty day would be dependent on the amount of advance notification, and
- Limiting the duty day based upon the amount of advance notification for a flight assignment.

Consensus

ARAC proposals are based on developing consensus within the working group. The services of Mr. Harter were used to assist in this regard. After a great deal of discussion and give-and-take on the part of all concerned, the working group realized that consensus would not be possible. At that point, the labor and management representatives were asked to develop proposals that would address their individual concerns and issues.

These proposals are presented to provide the FAA the various industry concerns and the rationale for their respective positions.

Industry Proposals

The industry/management representatives final proposal for Part 121 scheduled operations provides a minimum eight hour rest period or 10 hours of advance notification, under most circumstances, prior to a flight assignment.

Industry/management representatives (Helicopter Association International) propose a scheme for Part 135 on-demand air charter operations which include scheduled reserve and extended reserve, with provisions for operational delays.

Industry/management representatives (National Air Transport Association and National Business Aircraft Association) also address such reserve-related issues as rest, opportunity time, duty, and standby in Part 135 unscheduled operations.

Industry/labor representatives propose a minimum prospective protected time period of 10 hours during a 24-consecutive hour period for all Part 121 operations. The protected time period may be rescheduled only under specific circumstances and an available duty assignment is limited in relation to the preceding protected time period.

Industry/labor representatives (International Brotherhood of Teamsters, et al.) propose that protected time period and reserve availability period methodologies apply to all commercial air carriers. They proposed that non-scheduled and Part 135 carriers be provided an alternative method for reserve assignments where it can be validated that the previous methodology cannot be applied.

This summary of industry proposals is necessarily very abbreviated and may miss some essential concerns and elements. It is provided only to give a flavor for the detailed proposals.

Economic Impact

Industry/management representatives compiled economic data pertaining to the cost of their proposal for Part 121 scheduled operations. They estimate there would be approximately $100 million in incremental costs to the major operators that provided economic data, primarily Air Transport Association member airlines.

No economic data were provided by smaller Part 121 or Part 135 operators.

The working group was unable to provide additional economic analyses comparing the various proposals.

Summary

A great deal of honest effort and serious consideration went into developing these proposals. The working group engaged in an intense meeting schedule, essentially monthly, and much work was performed preparing for meetings. The working group is to be commended for this dedication.

Special thanks are due to Dr. Foushee and Dr. Hudson for their dedication and sincere efforts on behalf of bringing this task to fruition.

While the casual observer may see great differences among these proposals, it is essential to concentrate on the common elements. They can serve as a basis for action by the FAA in the rulemaking arena.

Thank you for the opportunity to be of service.

Sincerely,

William W. Edmunds, Jr.

William W. Edmunds, Jr., Chairman
ARAC Air Carrier Operations Issues Group

Enclosure

Acknowledgement Letter

FEB 16 1999

Mr. William W. Edmunds, Jr.
Air line Pilots Association
535 Herndon Parkway
Herndon, VA 22070

Dear Mr. Edmunds:

Thank you for your February 9 letter forwarding the Aviation Rulemaking Advisory Committee (ARAC) proposals for flight crewmember flight/duty/rest requirements as they relate to reserve duty.

I appreciate the detail of your report on the very dedicated efforts of this working group. The extensive research, consideration of options, and sincere efforts to understand each other's perspective are very evident here.

The various proposals are a valuable resource for the Federal Aviation Administration (FAA) as we begin to develop a supplemental notice of proposed rulemaking. I agree that we need to focus on the common elements of the various proposals.

Please convey my special thanks to Dr. Hudson and Dr. Foushee for their contributions as co-chairs and to all members of the working group for tackling a difficult task. The working group has provided the FAA the opportunity to listen to both pilots and operators as well as a set of options for future rulemaking.

I appreciate your leadership role in this important effort.

Sincerely,

/S/

Thomas E. McSweeny
Associate Administrator for
Regulation and Certification

Mr. William W. Edmunds, Jr.
Human Performance Specialist
Air Line Pilots Association
535 Herndon Parkway
Herndon, VA 22170

Dear Mr. Edmunds:

In an effort to clean up pending Aviation Rulemaking Advisory Committee (ARAC) recommendations on Air Carrier Operations Issues, the recommendations from the following working groups have been forwarded to the proper Federal Aviation Administration offices for review and decision. We consider your submittal of these recommendations as completion of the ARAC tasks. Therefore, we have closed the tasks and placed the recommendations on the ARAC website at http://www.faa.gov/avr/arm/arac/index.cfm

Date	**Task**	**Working Group**
February 1999	Reserve Duty/Rest Requirements	Reserve Duty/Rest Requirements Working Group
April 1999	Fatigue Countermeasures	Fatigue Countermeasures and Alertness Management Techniques Working Group

I wish to thank the ARAC and the working groups for the resources they spent in developing these recommendations. We will continue to keep you apprised of our efforts on the ARAC recommendations at the regular ARAC meetings.

Sincerely,

Anthony F. Fazio
Executive Director, Aviation Rulemaking
Advisory Committee

Recommendation

ARAC Reserve Duty Time Working Group
Industry/Management Report

Background and Introduction

The assignment of the Aviation Rulemaking Advisory Group (ARAC) Reserve Duty/Rest Working Group (RDWG) was announced by the Federal Aviation Administration (FAA) in the Federal Register on July 9, 1998. The task assigned and accepted by the RDWG was to provide a review and analysis of industry practice with regard to reserve pilot duty assignments and to provide recommendations to the ARAC and ultimately to the FAA on revisions to applicable Federal Aviation Regulations (FARs) governing reserve pilot flight and duty time assignments.

The RDWG was asked to report on six specific tasks and to complete the report by December 1, 1998. That date was subsequently extended to January 15, 1999.

When FAA issued the latest Notice of Proposed Rulemaking on Flight and Duty Time (NPRM 95-18), which included proposals for reserve rest rules in December, 1995, a large volume of comments were provided to the FAA that underscored the difficulty of crafting a rule which could reasonably allow for the wide array of differences between various types of operations (e.g. labor contracts, international vs. domestic, scheduled vs. non-scheduled, FAR Part 121 vs. 135, on-demand, supplemental, etc.). Thus, the task assignment drafted by the FAA also included a provision for the RDWG to provide recommendations that accommodated these differences in a reasonable fashion.

The first public meeting was held on August 12-13, 1998, and subsequent public meetings were held on September 1-2, October 1-2, October 29-30, and December 2-3. Numerous additional sub-group meetings were held at various times between the public meetings, which were all announced in the Federal Register. The RDWG was constituted by the ARAC with members representing a broad array of constituencies from various industry and labor groups. In addition, approximately 25-30 other stakeholders, government representatives, and other interested parties were present at one or more meetings during the RDWG deliberations.

Many different viewpoints were presented during the course of the RDWG discussions, and unfortunately, no overall consensus emerged. There were major differences between final labor and management proposals. In fact, by the end of the October 29-30 meeting, two distinctly different labor positions had emerged, and it is not clear that these differences were resolved by the final public meeting.

A single industry/management proposal covering FAR Part 121, scheduled operations was developed and agreed to by those members. That proposal is included in Attachment 1, a December 30, 1998 letter from the Air Transport Association (ATA) representative to me as industry/management co-chairman of the RDWG. Although it is referred to in Attachment 1 as the "ATA position," the proposal therein was developed by the entire RDWG industry/management group.

In addition, a consensus industry/management proposal was reached for Part 121, non-scheduled operations, which recognized that certain types of operations could not function

under the same types of reserve rules appropriate to scheduled operations. At least several RDWG labor representatives also agreed to this proposal, despite the lack of an overall consensus. This proposal is included in Attachment 2.

It was also generally agreed by the industry/management group that the Part 121, scheduled reserve rest proposal should not apply to Part 135 operations for many of the same reasons. Two proposals were submitted for Part 135 operations, one by the Helicopter Association International (Attachment 3) and one for Part 135, non-scheduled operations by the National Air Tranportation Association and the National Business Aircraft Association (Attachment 4).

This report is organized below according to the six primary tasks as published in the Federal Register RDWG assignment. This industry/management report includes a summary of the views of the Air Transport Association of America, Helicopter Association International, National Air Carrier Association, National Air Transportation Association, National Business Aviation Association, and the Regional Airline Association, as well as the members of these organizations.

Industry/Management Responses to Specific Tasks

Task 1: Review of current scientific data on the effects of fatigue in reserve duty. Consider conflicting opinions.

The first public meeting included an extensive discussion of the relevant scientific literature, and whether any new data pertaining to this issue had emerged since the issuance of NPRM 95-18. It was generally agreed that there were no significant new scientific studies relevant to the reserve duty question published since that time.

It was frequently pointed out by the industry/management group that there have been no known accidents where the probable cause was deemed to be pilot fatigue associated with reserve duty assignments. In the minds of many RDWG members, this was relevant to the question of whether changes to the existing rules should be a regulatory priority.

Extensive discussions ensued that illustrated the fact that the scientific literature pertaining to this issue can be interpreted in a variety of ways. As a result, many different and sometimes inconsistent conclusions can be drawn, and thus, there are no clear answers from the body of scientific literature as to appropriate regulatory policy.

The RDWG did agree that there are two very broad scientific principles specifically relevant to reserve duty. First, it was agreed that humans generally need the opportunity to acquire approximately 8 hours of sleep per 24 hour period. Second, it was agreed that fatigue is more probable during the period of time encompassing approximately 0200 to 0600, which roughly corresponds to the low point in an "average" (across the population) human circadian cycle.

However, it was also noted that the scientific literature demonstrates that humans, in general and pilots in particular, are highly variable in their sleep habits, lifestyles, and circadian cycles. This phenomenon poses significant and difficult complications for FAA regulatory policy on flight and duty time. An appropriate rest opportunity (no matter how long) cannot guarantee that a particular reserve pilot will obtain appropriate sleep. In addition, because of the high degree of variability in individual sleep habits and lifestyles, it is difficult to know the nature and timing of a particular individual's circadian cycle. For example, since a large percentage of pilots commute across multiple time-zones to both

reserve and scheduled duty assignments, it is difficult to assess the particular timing of an individual's circadian cycle vis a vis a particular flight assignment.

Thus, the rationale underlying the industry/management proposal is that, at best, reserve rest rules can only reasonably provide for an appropriate rest opportunity. They cannot guarantee that every individual pilot is "appropriately rested" prior to a flight assignment. It is incumbent upon each individual pilot to accept personal responsibility for obtaining adequate rest, given reasonable opportunities provided for rest.

The majority of RDWG members agreed that the ideal method for providing this opportunity is through the provision of a "protected time period" (PTP) of approximately 8 hours during which time a reserve would be undisturbed for the purpose of rest. It was also acknowledged that the PTP should not change more than a few hours from one day to the next. Consensus was reached that this is the most effective method in "normal," scheduled operations. However, because of the need for flexibility to recover from routine weather-related and other types of frequent disruptions, an alternative, acceptable method is to provide appropriate advance notification so that an individual has the opportunity to obtain rest.

In addition, it was recognized by most that a PTP-based reserve rest scheme would be difficult, if not impossible, to implement by many Part 121, non-scheduled operators and/or Part 135 operations (scheduled and non-scheduled) because of the small numbers of crews involved in such operations. Thus, an alternative was deemed to be necessary for non-scheduled and other Part 135 operations.

At the first public meeting, the RDWG reached a consensus that reserve duty is neither duty nor is it rest. It is also important to recognize that a reserve duty day is a work day, and should not be treated as a day off, regardless of whether a reserve pilot is called for a flight assignment. These observations point to the fact that there are often opportunities for rest during reserve availability periods (RAPs), since reserves are frequently not called for flight assignments until later in an availability period, due to the nature of network operations, if at all. Schedule disruptions are more common later in the day due to the "snowball effect," as various schedule discrepancies are compounded throughout the course of a normal operational day. It is incumbent upon those serving in reserve assignments to utilize all available opportunities for rest.

RDWG discussions of the scientific literature also included research by the National Aeronautics and Space Administration (NASA) which demonstrated that even brief naps (approximately 45 minutes) can significantly enhance alertness and serve as an effective countermeasure to fatigue. This underscores the responsibility reserve pilots have to utilize all available rest opportunities during RAPs.

Task 2: Analysis of current reserve schemes and operational situations

Extensive discussions of current practices illustrated that there is a wide variety of reserve schemes currently in place. This is due to the almost infinite differences in types of operations, negotiated contract-imposed work-rules, equipment types, areas served, etc. These discussions illustrated the difficulty of developing a single rule that would not impose a disproportionate impact upon a particular type of operation, and leads to the conclusion that a single rule would not be in the public interest.

It was further demonstrated by the management group that the majority of major airlines (affecting the vast majority of U.S. professional pilots) had negotiated work-rules governing reserve assignments that had factored in the characteristics of a particular

organization's operation. Thus, it was asserted that any rule change must be broad and flexible enough to take these negotiated work-rules and operational differences into account without disproportionate impact on a particular carrier.

As a result of these discussions, industry/management members proposed that the best alternative for reserve flight and duty time rulemaking would be to allow individual operators to develop detailed, individually-tailored operations specifications governing reserve duty that would be approved by each organization's FAA Certificate Management Office. This approach is identical to the way FAA currently manages other operations specifications governing flight operations, training programs, and approved maintenance programs. It is also similar to FAA's program for approving advanced training programs, the advanced qualification program (AQP). While many RDWG members, representing all interests, understood the merits of this approach, consensus could not be reached. All industry/management representatives preferred this approach.

Task 3: Recommendations on standards and criteria

After several public meetings, two basic schemes were proposed for providing reserve pilots opportunities for rest or limiting the duty day based upon the amount of advance notice of a flight assignment. The first scheme involved providing a scheduled PTP for all reserve pilots, but also allowed the use of advance notification to either cancel a scheduled PTP or to utilize a reserve on a "sliding scale" where the length of the duty day would be dependent upon the amount of advance notification. It was generally recognized that these provisions were necessary to provide for the flexibility needed by operators to recover from disruptions to normal operations. It would be fair to say that the full RDWG reached a consensus on this conceptual approach. The second scheme simply limited the duty day based upon the amount of advance notification. The latter is very similar to regulations proposed in NPRM 95-18.

After extensive discussions, the RDWG agreed to attempt to reach a consensus for Part 121, scheduled operations on the first scheme, where most pilots would receive a PTP, with an appropriate mechanism for the utilization of advance notification in lieu of PTPs under circumstances associated with deviations from normal operations. The second scheme was proposed as an alternative for Part 121, non-scheduled, and Part 135 operations.

The industry/management proposal for Part 121, scheduled operations is presented in Attachment 1. Attachment 2 contains the Part 121, non-scheduled proposal. As previously mentioned, it was difficult to ascertain whether there was a single agreed upon labor proposal by the end of the last public meeting. The basic differences between the final positions of various labor proposals and the industry/management proposal were associated with the amount of time devoted to PTPs, length of RAPs, and the amount of advance notification necessary to cancel PTPs, modify RAPs, as well as how advance notification should affect the amount of allowable duty time.

Industry/management RDWG members firmly maintain that their final proposal for 121, scheduled operations to provide a minimum 8 hour rest period or 10 hours of advance notification, under most circumstances, prior to a flight assignment is consistent with the state of scientific knowledge and provides more than adequate protection for reserve pilots to complete a flight assignment safely and legally. It is significant that the final RDWG industry/management proposal is far more restrictive with respect to rules governing reserve assignments than either those proposed by the FAA in NPRM 95-18 or current rules, neither of which have provisions for PTPs covering the vast majority of reserve pilots in U.S. domestic service.

The final labor proposal(s) included longer PTPs, longer and more extensive advance notification requirements, shorter RAPs, and restrictions on allowable duty time based upon time of day. The industry/management RDWG members maintain that the benefits which might possibly be derived from the labor proposal(s)' more restrictive parameters are suspect, at best, and not supported either by the scientific literature or by the safety record, in light of the substantial additional burden that would be placed up the industry and the U.S. air transportation system (see task 5 below).

Task 4: Recommendations on how FAA will measure compliance

With regard to the industry/management proposals, there was no disagreement within the RDWG that the FAA would be able to measure compliance in the same way it currently assesses flight and duty time regulatory compliance. It was noted that most automated record keeping systems could be modified to accommodate the proposed changes within 6 to 12 months from the date of publication, depending upon the complexity of a new rule.

Task 5: Economic Impact

Industry/management representatives compiled the available economic data pertaining to the costs of the proposal provided in Attachment 1. It was estimated that the cost of that rule change would be approximately $100 million in incremental costs to the major operators that provided economic data (primarily ATA member airlines). Most of these costs are necessitated by the requirement to hire additional reserve pilots and the associated costs of training both the additional new pilots required and part of the existing pilot population because of the "upward bumping" phenomenon created by most contract-imposed seniority systems during periods when new pilots are being hired.

No economic data were provided by smaller Part 121 operators, Part 135 operations, or other types of operations, but it is probable that the total cost to industry would be significantly greater than $100 million. In addition, it was maintained that some smaller unscheduled operators might have to cease operations under some of the labor proposals. It was also asserted that these proposals would substantially alter the nature of many collective bargaining agreements.

The RDWG was unable to perform additional detailed economic analyses comparing the various proposals. This was due to the fact that: 1) these analyses are very complex and time-consuming, and 2) it was difficult to ascertain how to conduct comparative analyses of competing labor proposals, because a single labor proposal had not emerged by the deadline associated with the final public meeting and the task assignment.

However, exploratory analyses did indicate that very small increases in PTPs, advance notification requirements, and corresponding decreases in RAPs (as outlined in the labor proposal closest to the industry/management proposal) caused significant increases in the number of reserves required to cover current operations. As an illustration of why this dramatic increase occurs, one major air carrier currently staffs about 45 different reserve positions because it operates many different types of aircraft and has multiple crew bases. These circumstances are common to most major airlines (e.g. the number of reserve positions equals the number of crew bases times the number of seat positions in each base--captain vs. first officer vs. second officer--times the number of aircraft types operating in each base). In most cases, there are only a handful of reserves in each category (often as few as 1). One major carrier has estimated that it costs approximately $1 million in salary, benefits, and training costs (initial and upward bumping) for every 7 pilots it initially hires. For this carrier, a one or two hour increase in PTP duration and corresponding reductions

in RAPs from the industry/management proposal would require it to add at least one reserve to every category. As a result, the minimum incremental cost for this single airline would be $6-7 million, assuming only one reserve is necessary in each category. These incremental costs over and above the final industry/management proposal are expected to be similar for each major airline. Thus, the potential incremental costs of competing labor proposal(s) could be perhaps double (in the "best" case) or significantly more (in the "worst" case) than the cost estimates associated with the industry/management proposal.

Alternatively, a carrier could choose not to staff the additional reserves that would be required to cover contingencies imposed by more stringent reserve rest requirements. Of course, this would cause significantly more flight cancellations than are common under current rules and a resulting negative impact on the U.S. air transportation system.

In summary, even small (1 or 2 hr.) increases in advance notification requirements, PTPs, or corresponding reductions in RAP, or duty day would cause an operator to add additional reserves in each reserve category to provide at least minimal coverage. The associated incremental costs would be substantial over and above the final RDWG industry/ management proposal.

Reserve pilots, by definition, are necessary because an operator never knows when or if they will be required. In normal operations many, if not most, reserve pilots are never called for an assignment. In short, the economic consequences of the industry/management proposal are significant, but all competing labor proposals are significantly more costly. Thus, the arguably questionable benefits of any rule change must be carefully considered in light of the large additional economic burden imposed upon air transportation providers.

Task 6: Assessment of record-keeping burden

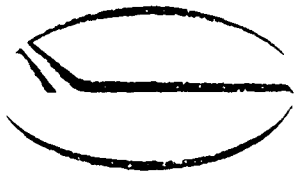
The RDWG was unable to assess the specific additional record-keeping burden since a consensus was not reached on a proposed rule. However, as previously reported, any rule change would require each operator to make changes to it's record-keeping system, which would result in some incremental cost.

In addition, it is expected that FAA would need to either add additional inspectors to monitor compliance with more complex rules than those presently in place, or alternatively, FAA would be required to reduce surveillance in other areas. The RDWG was not in a position to advise the ARAC or the FAA on this internal policy matter.

Respectfully submitted,

H. Clayton Foushee
ARAC RDWG Industry/Management Co-Chairman

Attachment 1



Air Transport Association

December 30, 1998

Mr. H. Clayton Foushee
Vice President-Regulatory Affairs
Northwest Airlines
901 15th Street, N.W. Suite 310
Washington, DC 20005

Dear Clay:

As co-chairman of the Aviation Rulemaking Advisory Committee (ARAC) Working Group on Pilot Reserve Rest, you are aware that the final meeting of that group was held on December 2, 1998. The working group was originally given a task deadline of October, but that date was extended until December. Notwithstanding the extension and despite a good-faith effort from all who participated, a consensus position was not reached.

The ATA reserve rest proposal, discussed at length during the ARAC Working Group meetings, effectively addresses the issue of prospective rest for pilots in reserve status. Attached is the final ATA proposal, which represents the collective position of our member airlines. Our proposal calls for a Protected Time Period (PTP) for each reserve pilot of a minimum of eight consecutive hours. This period of pre-scheduled rest is time when a pilot is free from all duty and has no present responsibility for work. ATA operators anticipate that the majority of reserve pilots will fall into this category.

By definition, reserve pilots are needed to protect schedule integrity when unpredictable events occur. To account for these irregularities, ATA operators require greater flexibility than is afforded by simply scheduling reserve pilots with protected rest periods. Therefore, a system is needed that provides both the flexibility necessary to maintain a reliable operation that meets consumer needs, and that also provides reserve pilots an opportunity for rest.

FAA interpretations have consistently stated that if the time between notification for a flight assignment and reporting for duty were of sufficient length to meet existing rest requirements, then that period would qualify as an opportunity for rest. The ATA

proposal includes a provision that provides the pilot with a minimum ten-hour advance notification. Once notified, the pilot would be free from reserve status and all responsibility for work. Notification under the advance notice concept would permit the pilot to be utilized for any legal flight assignment because the pilot has an opportunity for full rest prior to reporting for the assignment.

It is worth noting that the advance notice proposal is not without additional complexity or cost. As stated earlier, our members have indicated that that most reserve pilots will be provided with pre-scheduled or protected rest periods (PTP). A review of historical reserve utilization appears to support this hypothesis.

In order to provide a limit to the time, in which a pilot may be utilized in a specific reserve or duty assignment, a concept called Reserve Availability Period (RAP) is included in the ATA proposal. This limits the pilot's assignment to nineteen hours from the end of the previous protected rest period.

> *Note: The 19 hour proposed maximum Reserve Availability Period (RAP) is consistent with the 16 hour period between consecutive Protected Time Periods (PTP) plus the ability to reschedule the subsequent PTP by 3 hours. Any maximum PAP of less than 19 hours cannot be justified and will have considerable economic impact on operators.*

In summary, the ATA Reserve Rest proposal satisfies the ARAC task assignment as it appeared in the July 9, Federal Register. Reserve pilots are provided with an opportunity for prospective rest that is not available to them under the current rule. This proposal also provides a solution to reserve rest that is consistent with a long list of FAA interpretations. In developing this proposal, ATA member airlines considered many factors including safety, effectiveness, flexibility, cost, administration, compliance and FAA enforcement.

Sincerely,

for

Captain Paul Railsback
Chairman, ATA Reserve Rest
Task Force

Encl.

DEFINITIONS

The following definitions for ***rest*** and ***duty*** apply to Subparts Q, R, and S and are identical to existing definitions in Subpart P.

Duty Period - The period of elapsed time between reporting for an assignment involving flight time and release from that assignment by the certificate holder conducting domestic, flag or supplemental operations. The time is calculated using either Coordinated Universal Time or local time to reflect the total elapsed time.

Protected Time Period (PTP) - A period of time during a reserve assignment that provides a flight crewmember with an opportunity to rest. A certificate holder may not contact a flight crewmember during his or her PTP, and a crewmember may not have responsibility for work during his/her PTP.

Reserve Availability Period (RAP) - The period of time from the end of one protected time period to the time that the reserve flight crewmember must complete reserve or flight duty and start his/her next PTP.

Reserve Flight Crewmember - A flight crewmember that does not have a flight duty assignment and has a present responsibility for flight duty if called, but who is not on standby duty

Rest Period - The period free of all restraint or duty for a certificate holder conducting domestic, flag or supplemental operations and free of all responsibility for work or duty should the occasion arise.

Standby Duty – A period of time when a flight crewmember is required to report for a flight assignment in less than 1 hour from the time of notification. It also includes time when a flight crewmember is required to report to and remain at a specific facility (e.g. airport, crew lounge) designated by the certificate holder. Standby duty is considered part of a duty period. Standby duty ends when the flight crewmember is relieved from duty associated with an actual flight, or is otherwise relieved from duty.

RESERVE REST PROPOSAL

PART 121, SCHEDULED

Rest Period:

Each flight crewmember assigned to reserve duty will be provided with a scheduled rest period of at least eight consecutive hours during each reserve day, free of all duty with the carrier, so that the flight crewmember will have an opportunity to rest.

- The carrier may reschedule the rest period by as much as three hours earlier or later than the beginning time of the preceding rest period provided that notice is given prior to commencement of the next scheduled rest period.
- The carrier may reschedule the rest period with at least ten hours advance notice prior to the commencement of the next scheduled rest period.

Advance Notice:

Advance notice to a reserve flight crewmember of a flight assignment by the air carrier provides the flight crewmember an opportunity for rest.

- If the reserve flight crewmember is provided with 10 or more hours advance notice, that flight crewmember may be assigned any legal flight assignment.
- Contact may not be made with the reserve flight crewmember during a scheduled rest period for the purpose of providing advance notice.

Reserve Availability Period:

The Reserve Availability Period is the period of time from the end of the rest period to the time that the reserve flight crewmember must complete reserve or flight duty.

The reserve flight crewmember's reserve availability period may not exceed 19 hours except as permitted below. Actual flight duty time may be extended an additional two hours for reasons beyond the control of the air carrier such as weather, ATC, or mechanical delays. With advance notice of less than ten hours, the reserve availability period may be adjusted as follows, allowing for an opportunity for rest in preparation for the assignment:

- If at least 8 hours notice is given, the scheduled reserve availability period may not exceed 24 hours, except that the actual reserve availability period may be extended an additional 2 hours due to operational circumstances beyond the control of the operator.

- If at least 6 hours notice is given, the scheduled reserve availability period may not exceed 22 hours, except that the actual reserve availability period may be extended an additional 2 hours due to operational circumstances beyond the control of the operator.

- If at least 4 hours notice is given, the scheduled reserve availability period may not exceed 20 hours, except that the actual reserve availability period may be extended an additional 2 hours due to operational circumstances beyond the control of the operator.

The above reserve Availability Rules apply to international flights except where the reserve flight crewmember is assigned to an augmented crew, in which case, the flight and duty time rules of §121.483 and §121.485 apply for the entire flight duty assignment.

* * *

Attachment 2

Alternative Reserve Duty and Rest Proposal for Non-Scheduled Operations

(a) A certificate holder may apply the following reserve scheme for non-scheduled operations in lieu of the protected time reserve scheduling requirements for domestic or flag operations.

(b) Each flight crewmember must be given a 10-hour rest period before any reserve time assignment.

(c) If the reserve flight crewmember is provided with 10 or more hours advance notice, that flight crewmember may be assigned any legal flight assignment.

(d) The certificate holder may provide advance notice of an assignment to duty involving flight and provide an additional time of not less than one hour to report with the following limitations.

(1) If at least 8 hours advance notice is given, the scheduled duty period is limited to 12 hours, but may be extended to 14 hours for operational delays.

(2) If at least 6 hours notice is given, the scheduled duty period is limited to 10 hours, but may be extended to 12 for operational delays.

(3) If at least 4 hours notice is given, the scheduled duty period is limited to 8 hours, but may be extended to 10 for operational delays.

(4) If less than 4 hours notice is given, the scheduled duty period is limited to 7 hours, but may be extended to 8 for operational delays.

(e) The certificate holder must relieve the crewmember from all further responsibilities between advance notice and report time. [End]

Helicopter Association International
1635 Prince Street, Alexandria, Virginia 22314-2818 Telephone: (703) 683-4646 Fax: (703) 683-4745

January 14, 1999

Dr. H. Clayton Foushee
Vice President-Regulatory Affairs
Northwest Airlines
901 15th Street, NW, Suite 310
Washington, DC 20005

Re: *ARAC Flight Crew Reserve Time Working Group:*
HAI Proposal for a Rule Applicable to Part 135 On-Demand Air Charter

Dear Clay:

On August 5, 1998, FAA invited Helicopter Association International (HAI) to serve on a working group of the Aviation Rulemaking Advisory Committee (ARAC) to consider flight crew reserve time requirements. HAI herewith tenders its proposal for the structure and content of a Flight Crew Reserve Time regulation applicable to on-demand air charter operations conducted under 14 CFR Part 135.

HAI's proposal reflects many hours of thought, discussion and negotiation focused on optimizing flight safety, flight crew lifestyle concerns and operational flexibility in the context of the unique demands of Part 135 air charter operations. As you know, HAI fully supports the proposal for scheduled domestic operations conducted under 14 CFR Part 121 described elsewhere in your report. HAI believes that proposal is an appropriate balancing of concerns in Part 121 domestic scheduled air carrier operations. However, HAI also believes that the proposed Part 121 solution will not work in the Part 135 context, in particular because the advance notice provisions of the Part 121 proposal are inconsistent with the on-demand nature of part 135 air charter operations.

HAI also supports the substance of the "Special Provisions for Air Ambulance Operations" proposed by the National Air Transportation Association (NATA) and National Business Aviation Association (NBAA). However, we believe that the approach outlined there is appropriate for all part 135 on-demand air charter operations.

Finally, HAI thanks you and Dr. Don Hudson for your very capable, even-handed, and very patient leadership of the Working Group. Your efforts as co-chairs have been greatly appreciated.

Sincerely,

Roy Resavage
President

ARAC Flight Crew Reserve Time Working Group
HAI Proposal for a Rule Applicable to Part 135 On-Demand Air Charter

HAI proposes a rule on Part 135 Flight Crew Reserve Time structured in three parts:

1. **Scheduled Reserve**

Under 14 CFR part 135, an on-demand air charter operator may assign a pilot to "scheduled reserve."

- No period of scheduled reserve may exceed 14 hours in any 24 hour period.
- Each period of scheduled reserve must be preceded by a "protected time period" of at least 10 consecutive hours in length.
- No combination of "scheduled reserve" and assigned duty may exceed 20 consecutive hours.
- Under "scheduled reserve," the pilot's duty period begins when the pilot receives a call from the operator to report for work.

2. **Extended Reserve**

An operator may assign a qualifying pilot to a period of "extended reserve." Under extended reserve, a pilot may be assigned to hold herself:

- Able to be contacted by the operator;
- Remain fit to fly (to the extent that this is within the control of the pilot); and
- Remain within a reasonable response time of the aircraft,

all without triggering the start of any period of "duty" under the Part 135 flight crew duty time regulations.

a. <u>Duty under Extended Reserve</u>

- Under "extended reserve," the pilot's duty period begins when the pilot receives a call from the operator to report for work.
- When a pilot completes a period of duty under extended reserve, that pilot shall enter a protected time period of at least 10 consecutive hours before next being available for contact by the operator.

b. Limitation on Extended Reserve

- Assignment to extended reserve may not exceed 15 consecutive days.

- If assignment to extended reserve is for a period of not more than six consecutive days, the flight crew member shall enter a protected time period of at least 24 consecutive hours before next being available for contact by the operator.

- If assignment to extended reserve is for a period of more than six consecutive days, one additional period of 24 consecutive hours shall be added to the protected time period for each 3 days, or any portion of three days, of extended reserve assignment over six days.

3. **Operational Delay**

- The limitations stated in paragraphs 1 and 2 above may be extended by a maximum of 2 hours to meet operational delays.

- The limitations stated in paragraphs 1 and 2 above may be extended by air medical service operators as reasonable and necessary to complete a medical transport operation.

Attachment 1

NATIONAL AIR
TRANSPORTATION
ASSOCIATION

4226 King Street
Alexandria, Virginia 22302
(703) 845-9000 FAX (703) 845-8176

January 15, 1999

Mr. H. Clayton Foushee
Vice President, Regulatory Affairs
Northwest Airlines
901 15th Street, NW
Suite 310
Washington, DC 20005

Dear Clay,

Enclosed, you will find the National Air Transportation Association (NATA) and National Business Aviation Association (NBAA) proposal for the Aviation Rulemaking Advisory Committee Reserve Duty/Rest Working Group.

This concept paper reflects the issues unique to the on-demand air charter industry and explains the operator and pilot relationship where reserve concepts are concerned. While the proposal articulates the manner in which both NATA and NBAA believe reserve-related issues for Part 135 unscheduled operators should be handled, this proposal should not be viewed as suggested regulatory language. Please forward this proposal to the ARAC Executive Committee for submission to the Federal Aviation Administration.

Thank you for all your hard work as we addressed this complex issue.

Sincerely,

Andy Cebula

Andrew V. Cebula
Vice President

Enclosure
cc: Phil Harter, The Mediation Consortium

January 15, 1999

NATIONAL AIR TRANSPORTATION ASSOCIATION
&
NATIONAL BUSINESS AVIATION ASSOCIATION
PROPOSAL FOR RESERVE-RELATED ISSUES IN FAR PART 135
UNSCHEDULED OPERATORS

THE CONCEPT:

Under FAR Part 135, a flight crewmember's reserve issues consist of:

1. Rest
   - required rest (per current regulations)
2. Opportunity Time
   - can be contacted for a possible duty assignment
3. Duty
   - flying time
   - time required to prepare/conclude a flight
4. Standby
   - time required to wait for duty assignments

The purpose of this proposal is to define the elements of 'Standby' and 'Opportunity Time.' This clarification will provide the Part 135 certificate holder with the versatility to comply with the on-demand nature of unscheduled FAR Part 135 operations by having a pool of crewmembers who are on their own time, and free of all present duties of a certificate holder, unless the crewmember is contacted and the crewmember accepts a duty assignment. At the same time, this clarifies the crewmember's responsibilities to the Part 135 certificate holder and ensures adequate rest and fitness for duty assignments.

	OPPORTUNITY TIME	**STANDBY**	**DUTY**
What was the Previous Rest?	10 consecutive hours after a duty assignment	10 consecutive hours after a duty assignment	10 consecutive hours after a duty assignment
Is this Rest?	no	no	no
Is this Duty?	no	yes	yes
Can the Certificate Holder Contact Crewmember?	yes	yes	n/a
Is This Part of 14HR Duty Period?*	no	yes	yes

*SPECIAL PROVISIONS APPLY FOR AIR AMBULANCE FLIGHT OPERATIONS,
SEE PAGE 3

PREVIOUS REST

Following a duty assignment, the crewmember must have received at least 10 consecutive hours of Rest before assignment to 'Opportunity,' 'Standby,' or 'Duty' can occur.

REST OR DUTY?

Opportunity Time: Opportunity time is not to be considered a duty assignment and does not fall under the duty time limitations. However, Opportunity Time is not Rest as defined by the regulations. It is an assignment unique to Part 135 unscheduled operators. When in Opportunity Time, the crewmember has no specific duties to the certificate holder until a duty assignment is accepted. Example of Opportunity Time: The certificate holder has no current duty or Standby assignment for the crewmember; however, should one arise, the certificate holder can contact the crewmember to determine if the crewmember can report for that duty.

Standby: Standby is considered a duty assignment. Upon being assigned to Standby, the 14-hour duty clock begins. This duty period ends when the crewmember is released by the certificate holder or the 14-hour duty period expires, whichever occurs first. Example of a Standby assignment: Crewmember is directed to wait at the airport for contact for a duty assignment and must report to that assignment within a reasonable time period.

Duty: Duty is the time a certificate holder has assigned a crewmember to specific duties and responsibilities. Duty time begins when a crewmember reports and ends when released or the duty period expires. Examples of duty are: flying, pre-flight and post-flight activities, training for the certificate holder.

OBLIGATION TO REPORT

Opportunity Time: During Opportunity Time, the flight crewmember has no specific duties to the certificate holder; however, the certificate holder can contact the flight crewmember for a duty assignment should one arise. There is a responsibility on the crewmember to be fit for a duty assignment unless the flight crewmember is not capable of accepting a duty assignment based on an inability to meet the following, for example:

- Adequately rested for the planned duty assignment,
- No immediate physical impediments that would affect ability to perform the duty assignment, i.e., sprained ankle or broken arm, etc.,
- Not being detrimentally affected by a major life stress, i.e. death in the family, or divorce, etc., that would affect ability to perform the duty assignment, and
- Ability to report for duty within a reasonable amount of time as defined by the certificate holder.

Standby: The duty period begins when Standby is assigned. A crewmember in Standby must be able to complete any duty assignment within the original duty period.

Duty: Reporting is not applicable as the crewmember is presently on duty.

PART OF DUTY PERIOD?

Opportunity Time: Opportunity Time is not considered part of the duty period and, therefore, does not count against the 14-hour duty clock.

Standby: This assignment is part of duty and can only continue for the duration of the normal duty period.

SPECIAL PROVISIONS FOR AIR AMBULANCE OPERATIONS

To accommodate the unique and critical flight operations conducted by Air Ambulance operators, these Part 135 on-demand air charter operators could operate under the following standby provisions without triggering duty time:

- an operator may contact the pilot for a duty assignment
- the pilot may be expected to remain fit for flight (to the extent that this is within the control of the pilot)
- the pilot may be expected to remain within a reasonable response time to the aircraft
- when operating under these provisions a duty period begins when the pilot is contacted and accepts an assignment

Such operations would be subject to the following constraints:

- following completion of a duty assigned during a period of extended reserve, the pilot will be provided at least 10 consecutive hours of rest before next being available for contact by the operator
- assignment to extended standby can consist of up to six consecutive days which shall be followed by a period of at least 24 hours of consecutive rest before next being available for contact by the operator
- Extension Provisions:
  The six-day period may be extended by the operator under the following conditions:
  1. Three additional days of extended standby may be assigned with the addition of another 24-hour period of rest.
  2. The maximum amount of extended standby will be 15 days followed by a mandatory 4 days of consecutive rest during which the operator may not contact the pilot.
- The duty period may be extended by Air Ambulance operators as reasonable and necessary to complete a medical transport operation.

Date: February 1, 1999

To: Air Carrier Operations Group

From: Donald E. Hudson, M.D.
Labor Co-Chairman ARAC Reserve Duty Working Group

It was my privilege to again serve as Co-Chairman of another ARAC Working Group, this time dealing with reserve rest issues for professional pilots. It was also rewarding to again work with Dr. Clay Foushee, with whom I shared office space at NASA Ames Research Center in the mid-1980's. In addition, Phil Harter did an admirable job moderating this sometimes contentious gathering.

The diversity of today's aviation environment was reflected in the representatives of the group and it was clear from the outset that there were a great variety of operational schemes in use for scheduling reserve pilots. Most of the meeting time was spent in attempting to reach agreement on a general scheme for Part 121 Scheduled Operators, it being felt that consensus was more probable in that arena. However, I was disappointed and dismayed that, once again, a general consensus in the ARAC between labor and management representatives proved elusive despite good faith efforts by many talented people on both sides of these issues.

At the first meeting, it was decided not to do a comprehensive review of the scientific literature on fatigue, despite the specific direction to do so in the Federal Register. The rationale at the time being that a detailed review of the scientific literature was unnecessary and, indeed, might be an actual impediment to reaching consensus recommendations. It was felt by both Dr. Foushee and myself that the two sides were not that far apart and a discussion of the operational fatigue research, especially that conducted over the last 15 years, would lead to disagreements over relatively minor points. In retrospect, that was a serious error. As the discussions continued into the fall of 1998, it became clear there were *fundamental* misunderstandings and differences of opinion about the research data and it's applicability to flight time/duty time regulations for pilots. This led to assertions that the scientific literature can be interpreted in a variety of equally plausible ways and was thus not very useful in providing guidance for drafting practical regulations. That conclusion is not shared by any of the reputable scientists who have conducted the operational research and it is not the view of the labor representatives nor the Battelle Group in their recent recommendations to FAA.

To their credit, the management group did acknowledge the need to provide an opportunity for a pilot to obtain 8 hours of sleep in a 24 four period but had great difficulty coming to terms with the physiological fact that *where* that opportunity occurs in the circadian cycle is as vital a parameter as the number of hours available. The research data indicates that humans show significant decrements in performance after prolonged periods of wakefulness. As we all know, commercial aviation can be a very unforgiving environment and this puts a heavy burden on FAA regulators who must try to ensure that safety is not unduly compromised.

The labor submission to ARAC is based on the available scientific data and research in this field – which continues in countries around the world. It is designed to make every effort to ensure that, as much as possible, only crewmembers with opportunity to receive adequate rest are available for duty. It is also designed to prohibit operations that have the real potential to push the human operators to fly when physiologically impaired. The scientific basis for these recommendations is referenced and included in the proposal. I would suggest the management side challenge themselves to similarly measure their proposal by the yardstick of the scientific data as well.

Any new regulations written to address the pressing issue of pilot fatigue *must* be based on our knowledge of the deleterious effects of fatigue on human physiology. The only constant in this discussion is the physiology of the human operator – the pilot. All other considerations, including economics and efficiency are important but not decisive.

It is discouraging to note that it is now 5 years to the day since the last ARAC Fatigue Working Group submitted it's proposals to FAA – and we still do not have a final rule on Flight Time Duty Time. New regulations dealing with Reserve Rest are a vital part of any new rulemaking process and I urge FAA to consider the various proposals and the available scientific data – and act swiftly to address this pressing problem.

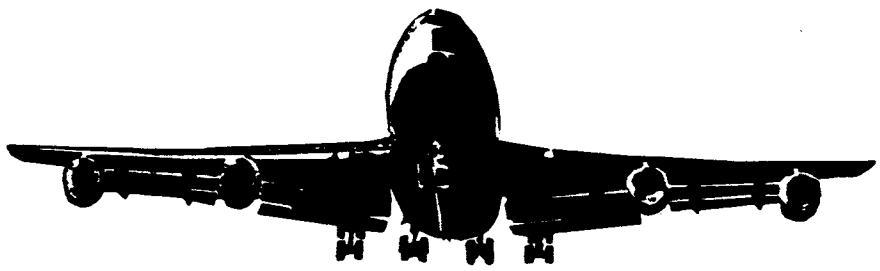
Donald P. Hudson

Donald E. Hudson, M.D.
ARAC RDWG Labor Co-Chairman

Aviation Rulemaking Advisory Committee
Reserve Rest Working Group

Proposal of 77,955 Airline Pilots
January 8, 1999

Airline	***Pilots***	***Airline***	***Pilots***
Air Wisconsin	240	Mesa	1095
Alaska	1153	Mesaba	804
Allegheny	354	Midway	174
Aloha	192	Midwest Express	262
Aloha Island Air	64	Northwest	6103
America West	1532	Piedmont	368
American	9508	Polar Air Cargo	186
American Eagle	2055	PSA	254
Atlantic Coast	694	Reeve	33
Atlantic Southeast	763	Reno	302
Business Express	372	Ross	19
Carnival	219	Ryan International	257
CCAir	172	Skyway	132
Comair	1000	Southwest	2735
Continental	4769	Spirit	154
Continental Express	1010	Sun Country	213
Delta	9188	Tower Air	206
DHL	395	Trans States	806
Emery Worldwide	451	TWA	2516
Express	329	United	9621
Federal Express	3611	UPS	2100
Hawaiian	285	USAirways	5092
IBT	6000	USAirways Shuttle	167



January 8, 1999

ARAC WORKING GROUP
PILOT MEMBERS SUBMISSION

VIA OVERNIGHT DELIVERY

Dr. Donald E. Hudson
Aviation Medicine Advisory Group
14707 East 2nd Avenue
Suite 200
Aurora, CO 80011

Dr. Clay Foushee
Northwest Airlines
901 15th Street, N.W.
Suite 310
Washington, DC 20005

Gentlemen:

The 78,000 airline pilots who were represented at the ARAC Working Group welcome the opportunity to provide their unified position regarding a reserve rest regulation. We are pleased that the Working Group was able to reach a consensus that pilots who are assigned reserve duty should have a protected rest period during every 24 hours. However, we are very disappointed that we were unable to reach a consensus as to the "scheme" that would best provide the required rest.

We believe that the efforts of the Working Group will prove helpful to the FAA in formulating a final regulation. The differing positions of the parties have been narrowed and clearly identified. It is now up to the FAA to timely promulgate a final regulation.

Respectfully submitted,

Captain Rich Rubin
Allied Pilots Association (APA)

Captain Frank Williamson
Air Line Pilots Association (ALPA)

Captain Robert Landa
Southwest Pilots Association (SWAPA)

Captain Don Kingery
Independent Association of Continental Pilots (IACP)

Captain Dave Wells
Fedex Pilots Association (FPA)

Lauri Esposito
Independent Pilots Association (IPA)

Don Treichler
International Brotherhood of Teamsters (IBT)

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AVIATION RULEMAKING ADVISORY COMMITTEE
RESERVE REST WORKING GROUP

PROPOSAL OF 77,955 AIRLINE PILOTS
January 8, 1999

PREAMBLE

This document is submitted on behalf of approximately 78,000 commercial airline pilots. The proposal that follows contains our recommendations for Federal Aviation Regulations concerning rest requirements and duty limitations for reserve pilots. It is applicable to all Domestic and International Part 121 operations under FAR Subparts Q, R, and S. Part 135 regulations should be revised to provide a level of safety equivalent to this proposal.

Our proposal is presented in two parts. Part I is the proposed regulatory language. Part II provides our intent, examples, and rationale. The scientific support for our proposal is included in the endnotes.

We are pleased that both pilots and air carriers were able to agree on the following elements of a proposed reserve rest rule:

1. A pilot should be scheduled by the operator to receive a protected time period as an opportunity to sleep for every day of reserve duty. The operator may not contact the pilot during this period.
2. An operator should limit the movement of a pilot's protected time period during consecutive days of reserve duty to ensure circadian stability.
3. A reserve pilot's availability for duty should be limited to prevent pilot fatigue as a result of lengthy periods of time-since-awake.

4. Sufficient advance notice of a flight assignment can provide a reserve pilot with a sleep opportunity.

We believe that it is incumbent upon the Federal Aviation Administration (FAA) to include time-of-day as a factor in designing duty and rest limitations. A substantial body of research and pilot reports shows that a decrease in performance frequently occurs during "back-side-of-the-clock" operations due to circadian factors. To address this issue, our proposal provides for a reduction in the reserve availability period when scheduled duty touches the 0200 – 0600 time period, or what the scientists refer to as the "window of circadian low."

Our submission refers to several documents that have provided us with a foundation of scientific support. Prominent among them is NASA Technical Memorandum 110404, *Principles and Guidelines for Duty and Rest Scheduling in Commercial Aviation,* (May 1996). This document, herein referred to as NASA TM, offers NASA's specific recommendations on duty and rest limitations based on more than 20 years of extensive research into the cause and prevention of pilot fatigue. It is attached hereto as Appendix A.

Another reference is *An Overview of the Scientific Literature Concerning Fatigue, Sleep, and the Circadian Cycle,* Battelle Memorial Institute Study (January 1998). This study, herein referred to as the Battelle Study, commissioned by the FAA's Office of the Chief Scientific and Technical Advisor for Human Factors, provides an in-depth review of scientific research concerning sleep and fatigue. Drawing upon 165 scientific references, the Battelle Report identifies major trends in the scientific literature, and has provided valuable information and conclusions. This study is attached as Appendix B.

Another reference is *A Scientific Review of Proposed Regulations Regarding Flight Crewmember Duty Period Limitations*, Docket #28081, The Flight Duty Regulation scientific Study Group. This study was sponsored by the Independent Pilots Association to provide a scientific review of NPRM 95-18. It is referred to as the Scientific Study Group and is attached as Appendix C.

The pilots met with sleep expert, Dr. William Dement, Director of Sleep Research and Clinical Programs at Stanford University. The transcript of that meeting appears in Appendix D.

We have attached an article titled *Fatigue, Alcohol, and Performance Impairment* that summarizes a study conducted by The Centre for Sleep Research at the Queen Elizabeth Hospital in South Australia in Appendix E. This study quantifies the performance impairment associated with sustained wakefulness in terms of equivalent percent blood alcohol impairment. A subsequent study, titled *Quantifying the Performance Impairment associated with Sustained Wakefulness,* by Lamond and Dawson replicates this study and extends the initial findings. It is attached as Appendix F.

The NTSB requested that the FAA conduct an expedited review of the FARs after pilot fatigue and continuous hours of wakefulness were found to be key findings in the crash of a DC-8 at Guantanamo Bay, Cuba in 1993. A NASA/NTSB report titled *Crew fatigue factors in the Guantanamo Bay aviation accident* is attached as Appendix G.

Several airlines have switched to reserve pilot schemes very similar to the one we propose. These carriers include Continental Airlines, UPS, America West, Alaska Airlines, and British Airways. The reserve pilots at these airlines have protected time periods of 8 to 12 hours with reserve availability periods of 14 to 18 hours.

We owe a debt of gratitude to the many pilots who provided us with reports of their encounters with pilot fatigue. These reports reveal that pilot fatigue typically occurs during back-side-of-the-clock operations and after long periods of time-since-awake.

The pilots would like to thank the FAA for providing this forum and the air carriers for contributing to the debate. We hope that this ARAC has demonstrated to all interested parties how unregulated scheduling can lead to dangerously high levels of pilot fatigue for reserve pilots. We urge the FAA to quickly remedy this very serious safety problem.

PART I: PROPOSED REGULATORY LANGUAGE

121.xxx Reserve Rest

(a) Except as provided in paragraphs (b) and (d), no certificate holder may schedule any flight crewmember and no flight crewmember may accept an assignment to reserve status unless a minimum prospective Protected Time Period (PTP) of 10 hours during a 24-consecutive hour period is scheduled. The Protected Time Period must begin at the same time during any scheduled period of consecutive days of reserve status and the flight crewmember must be given no less than 24 hours notice of the Protected Time Period.

(b) A certificate holder may reschedule a specific Protected Time Period during any scheduled period of consecutive days of reserve by the following:

(1) Rescheduling the beginning of a Protected Time Period a maximum of three hours later without prior notification.

(2) Rescheduling the beginning of a Protected Time Period a maximum of three hours earlier if the flight crewmember is provided 6 hours notice prior to the beginning of the originally scheduled Protected Time Period.

(3) Rescheduling the Protected Time Period by more than 3 hours once during any 7 consecutive days by providing the flight crewmember 10 hours notice.

(c) A certificate holder may assign a flight crewmember and a flight crewmember may accept an assignment for flight time in scheduled air transportation or other commercial flying if such assignment is permitted by this subpart;

(1) If the assignment is scheduled to be completed within 16 hours after the end of the preceding Protected Time Period; however,

(2) If the flight crewmember is given a flight assignment for any part of the period of 0200 to 0600 hours, any such flight assignment must be scheduled to be completed within 14 hours after the end of the preceding Protected Time Period. The operator with the concurrence of the administrator and the pilot group may designate any 4-hour period for all operations between 0000-0600 hours in place of 0200-0600 hours.

These limitations may be extended up to 2 hours for operational delays.

(d) When there are no other reserve pilots who have sufficient reserve availability periods to complete an assignment, the certificate holder may schedule a flight crew member for an assignment for flight time in scheduled air transportation or other flying permitted by this subpart, provided that the crew member is given a minimum of 14 hours of advance notice and is released to protected time at the time of the notice.

(e) Each certificate holder shall prospectively relieve each flight crewmember assigned to reserve for at least 24 consecutive hours during any 7 consecutive days.

(f) For augmented International operations, a certificate holder may assign a flight crewmember and a flight crewmember may accept an assignment for flight time in scheduled air transportation or other commercial flying as follows:

(1) For single augmentation, the assignment must be scheduled to be completed within 18 hours after the end of the preceding Protected Time Period; or

(2) For double augmentation, the assignment must be scheduled to be completed within 22 hours after the end of the preceding Protected Time Period.

These limitations may be extended up to 2 hours for operational delays.

DEFINITIONS

Operational Delay – Any delay that would cause the Reserve Crewmember to be extended beyond the applicable duty limit for up to two hours; except a delay caused by changing the Reserve's original flight assignment.

Protected Time Period (PTP) – Same as 121.471(b)(6), NPRM 95-18, except "has no responsibility for work" replaced by "has no responsibility for duty."

Reserve Availability Period (RAP) – The period of time from the end of the PTP to the time that the reserve crewmember must complete flight duty.

Reserve Time – Same as 121.471(b)(7), NPRM 95-18, except "two hours" for report time versus "one hour."

Standby Duty – Same as 121.47(b)(9), NPRM 95-18, except "less than two hours" to report versus "one hour."

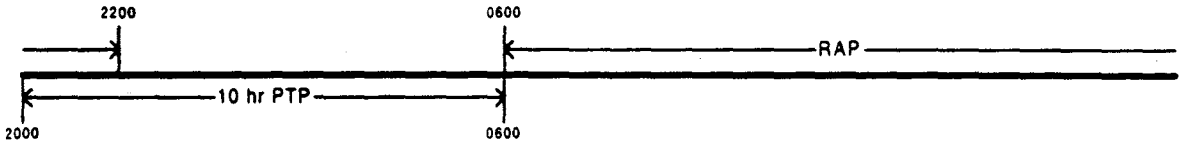
Part II: Pilots' Proposal with Intent, Examples, and Rationale

121.xxx Reserve Rest

*(a) **Except as provided in paragraphs (b) and (d), no certificate holder may schedule any flight crewmember and no flight crewmember may accept an assignment to reserve status unless a minimum prospective Protected Time Period (PTP) of 10 hours during a 24-consecutive hour period is scheduled. The Protected Time Period must begin at the same time during any scheduled period of consecutive days of reserve status and the flight crewmember must be given no less than 24 hours notice of the Protected Time Period.***

Intent: To ensure that all reserve pilots are scheduled for and receive a prospective, and predictable, 10-hour opportunity every reserve day to obtain 8 hours of sleep and to maintain circadian stability.

Example:
Pilot - PTP 2000-0600



Rationale: The human body requires an average of 8 hours of uninterrupted, restorative sleep in a 24 hour period when sleeping during normal sleeping hours. When attempting to sleep outside of normal sleeping hours, 8 hours of sleep is still required. However, scientific data indicates additional time is needed to obtain the required 8 hours of sleep. The 10 hour Protected Time Period (PTP) would, therefore, include an opportunity to prepare for and actually receive 8 hours of restorative sleep in all circumstances. Additionally, a 10-hour PTP was selected with the assumption that the minimum required rest for all pilots would be 10 hours (See NPRM 95-18). A 10-hour PTP would maintain consistency of rest for all pilots. Starting consecutive PTPs at the same time is imperative to maintaining circadian stability. The desired method of assigning PTP would be when the crewmember is assigned reserve. A minimum of 24 hours notification of a Protected Time Period will provide an opportunity to prepare for impending reserve days. [1]

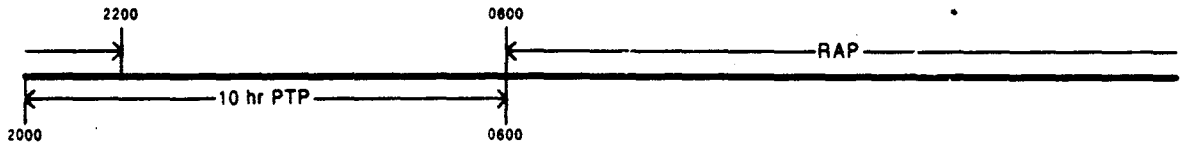
(b) ***A certificate holder may reschedule a Protected Time Period during any scheduled period of consecutive days of reserve by the following:***

Intent: To provide the reserve pilot with a predictable, prospective rest period and also give the operator scheduling flexibility to accommodate unforeseen circumstances. Rescheduling a PTP +/- 3 hours is only applicable to that PTP. Remaining reserve days in a block would begin at the original start time. Shifting of a PTP does not extend a Reserve Availability Period (RAP).

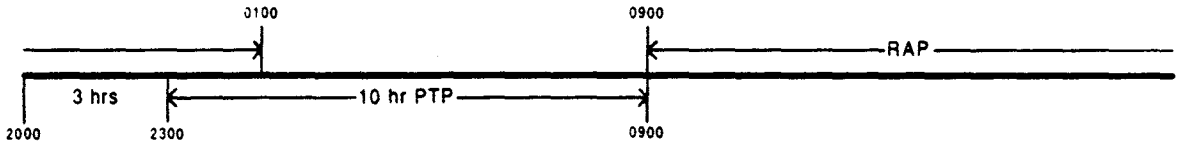
(1) ***Rescheduling the beginning of a Protected Time Period a maximum of three hours later without prior notification.***

Example:
(In this example, under no circumstances may a PTP start time be later than 2300)

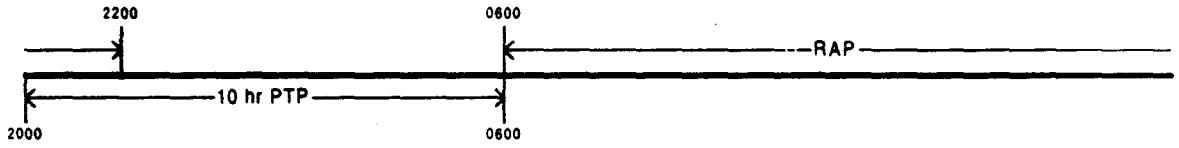
Day 1
PTP 2000 to 0600 (original PTP)



Day 2
PTP 2300 to 0900



Day 3
PTP 2000 to 0600

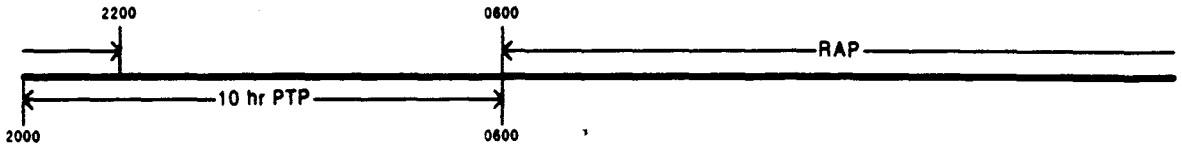


Rationale: Delaying a sleep opportunity, up to three hours, is not excessively disruptive to circadian stability. In this case, no prior notification is required.

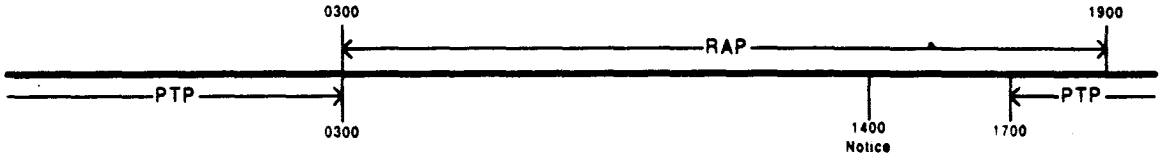
(2) ***Rescheduling the beginning of a Protected Time Period a maximum of 3 hours earlier if the flight crewmember is provided 6 hours notice prior to the beginning of the originally scheduled Protected Time Period.***

Example:
(In this example, under no circumstances may a PTP start time be earlier than 1700)

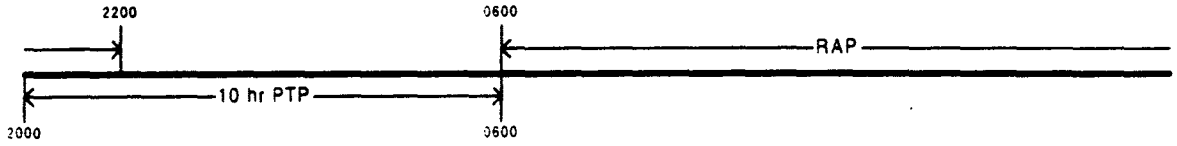
Day 1
PTP 2000 to 0600 (original PTP)



Day 2
PTP 1700 to 0300



Day 3
PTP 2000 to 0600



Rationale: Moving a sleep opportunity earlier, up to three hours, is disruptive to circadian stability. To accommodate and prepare for this rescheduled sleep opportunity additional notice is required.

(3) ***Rescheduling the Protected Time Period by more than 3 hours once during any 7 consecutive days by providing the flight crewmember 10 hours notice.***

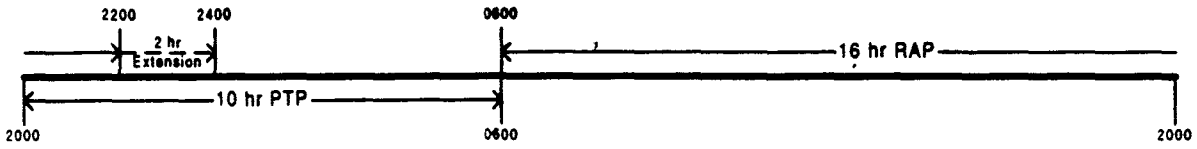
Rationale: Changing a sleep opportunity more than +/- 3 hours is very disruptive to circadian stability. For extreme circumstances beyond the control of the operator (i.e., inclement weather, closed airports, etc.) an operator has the ability to reschedule a PTP more than 3 hours from the original start time. A minimum of 10 hours prior notification of the new PTP is required to allow the pilot a period of time to adjust for the rescheduled sleep opportunity. This provision is restricted to once in every 7 days because it is so detrimental to circadian stability. This restriction also would preclude the operator from arbitrarily utilizing this provision and yet allows the certificate holder the flexibility to operate under extreme circumstances.[2]

(c) ***A certificate holder may assign a flight crewmember and a flight crewmember may accept an assignment for flight time in scheduled air transportation or other commercial flying if such assignment is permitted by this subpart;***

(1) ***If the assignment is scheduled to be completed within 16 hours after the end of the preceding Protected Time Period;***

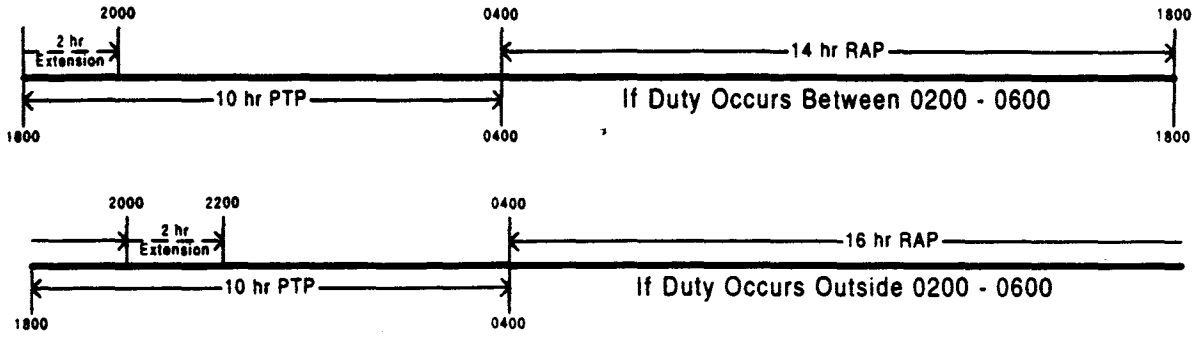
Intent: To establish a "Reserve Availability Period" (RAP).[3]

Example:



(2) ***If the flight crewmember is given a flight assignment for any part of the period of 0200 to 0600 hours, any such flight assignment must be scheduled to be completed within 14 hours after the end of the preceding Protected Time Period. The operator with the concurrence of the administrator and the pilot group may designate any 4-hour period for all operations between 0000-0600 hours in place of 0200-0600 hours.***

Examples:



These limitations may be extended up to 2 hours for operational delays.

Rationale: Time-since-awake contributes to fatigue. This section acknowledges time-since-awake by limiting the RAP to 16 hours if the pilot is afforded the opportunity to sleep during a normal sleep period. The science further indicates fatigue occurs sooner when given a sleep opportunity at a time other than normal sleeping hours. This section addresses that fact by reducing the RAP to 14 hours should duty occur during this normal sleep period.[4]

(d) ***When there are no other reserve pilots who have sufficient reserve availability periods to complete an assignment, the certificate holder may schedule a flight crew member for an assignment for flight time in scheduled air transportation or other flying permitted by this subpart, provided that the crew member is given a minimum of 14 hours of advance notice and is released to protected time at the time of the notice.***

Intent: All pilots are originally scheduled in a PTP system. Circadian stability is ensured by all pilots having a definitive, prospective sleep opportunity. When all such pilots have been utilized, 14 hours notice may be used by the operator to assign a pilot to a flight. Once notified of a flight assignment a crewmember is released from further responsibility until he reports for duty. While this method of assigning reserve is less than desirable, it enables the certificate holder to continue operations as necessary.

Rationale: While advance notice can present a sleep opportunity, scientific research is very clear that circadian factors make it very difficult and sometimes impossible to take advantage of it. For example, consider a pilot who finishes his PTP at 0800 and is then contacted by the carrier for an assignment that reports at 2200. This would be an application of 14 hours advance notice. Circadian factors make it very difficult, if not impossible, for the pilot to sleep again until later, typically during the afternoon circadian low point (1500 – 1800) or earlier if possible. However, by receiving the notice early, he can schedule his morning activity accordingly to best prepare himself for the afternoon sleep opportunity (like a line-holder does). Typically, he would go to bed around 1500 – 1600 and set the alarm clock for 1900 – 2000 to provide enough time to shower, dress, eat, and report for duty. Even with 14 hours of advance notice, this pilot could only expect to sleep 4 – 5 hours prior to reporting for a back-side-of-the-clock assignment that could last until 1200 the following day. It should be apparent that less than 14 hours notice could result in less than 4- 5 hours of sleep and raise the probability of serious pilot fatigue during the assignment.

The above example was discussed during the Denver ARAC meeting. At one point, Dr. Don Hudson was asked for his expert opinion regarding what should be required for a minimum amount of advance notice. Dr. Hudson's response was 13 to 14 hours.[5]

(e) ***Each certificate holder shall prospectively relieve each flight crewmember assigned to reserve for at least 24 consecutive hours during any 7 consecutive days.***

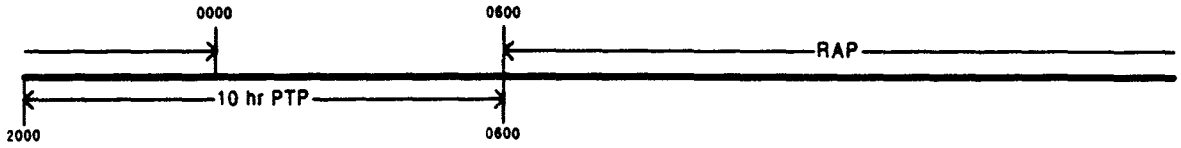
Intent: All reserve pilots must receive a prospective 24 hour period free from duty during any 7 consecutive days.

Rationale: Pilots assigned to reserve status must be continually prepared for any flight duty. These pilots should be relieved from this obligation for 24 hours during any 7 consecutive days. The pilot must be notified prior to the beginning of that off duty period.

(f) ***For augmented International operations, a certificate holder may assign a flight crewmember and a flight crewmember may accept an assignment for flight time in scheduled air transportation or other commercial flying as follows:***

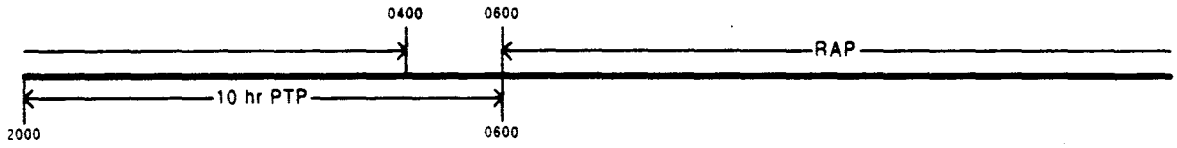
(1) ***For single augmentation, the assignment must be scheduled to be completed within 18 hours after the end of the preceding Protected Time Period; or***

Example:



(2) ***For double augmentation, the assignment must be scheduled to be completed within 22 hours after the end of the preceding Protected Time Period.***

Example:



These limitations may be extended up to 2 hours for operational delays.

Intent: To establish a Reserve Availability Period (RAP) for long-haul international reserve pilots.

Rationale: Long-haul international flights necessarily involve back-side-of-the-clock flying. Therefore, for a single pilot augmentation, we added 4 hours to the 14-hour back-side-of-the-clock duty period and 8 hours for double augmentation. This is in accord with the NASA TM. [6]

Scientific Support

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[1] *121.xxx Reserve Rest*

(a) Except as provided in paragraphs (b) and (d), no certificate holder may schedule any flight crewmember and no flight crewmember may accept an assignment to reserve status unless a minimum prospective Protected Time Period (PTP) of 10 hours during a 24-consecutive hour period is scheduled. The Protected Time Period must begin at the same time during any scheduled period of consecutive days of reserve status and the flight crewmember must be given no less than 24 hours notice of the Protected Time Period.

Scientific support:

(a) 10 hour Protected Time Period to provide an opportunity to obtain 8 hours of sleep.

> Each individual has a basic sleep requirement that provides for optimal levels of performance and physiological alertness during wakefulness. On average, this is 8 hours of sleep in a 24-hour period, with a range of sleep needs greater than and less than this amount. Losing as little as 2 hours of sleep will result in acute sleep loss, which will induce fatigue and degrade subsequent waking performance and alertness.

NASA TM, ¶1.1.1, p.2.

> **Off-duty period (acute sleep and awake-time-off requirements)** - Therefore, the off-duty period should be a minimum of 10 hours uninterrupted within any 24-hour period, to include an 8-hour sleep opportunity[.]

NASA TM, ¶2.1.2, p. 5

> Standard Sleep Requirements and Off-Duty Period - Research by Drs. Carskadon & Dement, 1982 and Wehr et al., 1993 support a minimum of 8 hours of sleep based upon a range of studies that use several approaches including:
>
> - Historical levels of sleep
> - Measures of daytime alertness
> - Sleep levels achieved when given the opportunity to sleep as long as desired

Battelle Report, p. 15.

> . . . There appears to be substantial evidence that a minimum of eight hours of sleep is required for most people to achieve effective levels of alertness and performance.

Battelle Report, p. 21.

. . . It is important to realize that an individual working nights is at risk for significant sleepiness for two distinct reasons: . . . an individual working successive nights is forced to obtain sleep during the daylight hours at a time when the circadian pre-disposition to sleep is minimal. . . . As mentioned, sleep under these circumstances is typically fragmented, sleep state architecture is distorted, and the restorative nature of sleep . . . is reduced.

A Scientific Review of Proposed Regulations Regarding Flight Crewmember Duty period Limitations, The Flight Duty Regulation Scientific Study Group, ¶2.6, p. 5-6.

Minimum rest periods should be adjusted upward for sleep periods that include the time of peak circadian alertness (4 – 6 PM.).

Reserve time arrangements should be adjusted so that protected windows during the time of peak circadian alertness are extended to compensate for decreased efficiency of sleep during that time. (Emphasis added.)

Scientific Study Group, ¶¶ 5.1.2, 5.1.4, p. 11.

Remarks of Dr. Dement:

Q: . . . One of the most basic tasks is for us to agree on a recommendation for a sleep opportunity . . . to afford every reserve pilot the opportunity of a protected time period so that he or she is absolutely insulated from contact from the operator. How many hours do you recommend for a minimum fixed sleep opportunity?

A: I will start out by assuming that we would take 8 hours of sleep as the most common requirement. Then you need to add to that in order to be able to get the proper amount of sleep. In your situation, I would think it would be a little larger than it might be for someone who really wasn't doing anything. So, I'd add a couple of hours to get the proper amount of sleep.

Appendix D, p. 4.

Q: Dr. Dement, . . . we're really at the point now where we're going beyond the philosophy and we're trying to put our finger on numeric values. Our position at least from the pilots' standpoint, is that we see the need for a 10-hour sleep opportunity knowing that the opportunity may not always be at the best time of the day. We're facing an industry position that is looking for 8 hours as the minimum. Our position is predicated on the fact that 8 hours may be adequate if it overlaps the WOCL. But since we don't know for sure when we're going to have that opportunity, we believe that, or we think that having that extra 2 hours is going to give us a little more of a buffer, especially when it comes during the daytime. Would you consider that to be a conservative and a justified position?

A: Absolutely. I don't think you could possibly assume someone is going to fall asleep instantly and then sleep continuously for 8 hours, not even under the most ideal circumstances. Maybe it should be longer.

Appendix D, pp. 5-6.

Scientific support:
(a) Scheduling the Protected Time Period for the same time each day

> **Time-of-day / Circadian Physiology Affects Sleep and Waking Performance** - . . . Time-of-day or circadian effects are important considerations in addressing 24 hour operational requirements because circadian rhythms do not adjust rapidly to change.
>
> . . . Thus, circadian disruption can lead to acute sleep deficits, cumulative sleep loss, decreases in performance and alertness, and various health problems . . . Therefore, circadian stability is another consideration in duty and rest scheduling.

NASA recommends a sleep opportunity that is predictable (24 hours notice recommended), does not vary more than 3 hours on subsequent days to ensure circadian stability, and is protected from interruption. (Emphasis added.)
NASA TM, ¶1.3, p. 3-4; ¶2.6.2, p. 8.

> **Conclusion** – Reserve assignments should attempt to maintain a consistent 24 hour cycle.

Battelle Report, p. 28.

Remarks of Dr. Dement

Q: Dr. Dement, there's one area that we really haven't touched upon at this point and I don't want to miss. These are questions regarding the maintenance of circadian stability. In your opinion, why is maintaining circadian stability so important?

A: Well because usually... and by that you mean your sleep opportunities and your wake opportunities are in that period of stability, then you have the best sleep and the best wake. If you get out of that cycle, then both sleep and wake will be impaired.

Q: What happens to the body as you change a person's cycle?

A: All sorts of things happen, but the major thing of course is that you are now trying to sleep when the body wants to be awake and you're trying to be awake when the body wants to be asleep because you left the circadian stability that you talked about.

Appendix D, pp. 16-17.

2 *(3) **Rescheduling the Protected Time Period by more than 3 hours once during any 7 consecutive days by providing the flight crewmember 10 hours notice.***

Scientific support:

(b) Limiting the movement of the Protected Time Period to Plus or Minus 3 hours

> . . . the 8-hour sleep opportunity should not vary by more than 3 hours on subsequent days to ensure circadian stability. . . .

NASA TM, ¶2.6.2, p. 8.

Remarks of Dr. Dement

Q: . . . we're trying to insure that the protected time period, the rest period, stayed the same from day to day, assuming the reserve crewmember is not called. Or for that matter when he is called, he goes back into his cycle. We're attempting to try to snap him back to as close to that original cycle and maintain that same rhythm from day to day. NASA has findings on that. Their recommendation was to maintain that circadian stability plus or minus 3 hours. Do you agree or disagree?

A: I absolutely agree that's better than no stability. Obviously the smaller that number, the better. I think practically it couldn't be zero, but I think we tend to feel there's kind of a daily flexibility within that range, like 0 to 3 hours, 0 to 2 hours. To go outside of that is, again, inviting a condition of sleep deprivation. So deliberately creating a bad situation.

Appendix D, pp. 16-17.

3 *(c) A certificate holder may assign a flight crewmember and a flight crewmember may accept an assignment for flight time in scheduled air transportation or other commercial flying if such assignment is permitted by this subpart;*

(1) If the assignment is scheduled to be completed within 16 hours after the end of the preceding Protected Time Period;

Scientific support:

(c) 16 hour Reserve Availability Period Limitation

> **Continuous Hours of Wakefulness/Duty Can Affect Alertness and Performance** - Extended wakefulness and prolonged periods of continuous performance or vigilance will engender sleepiness and fatigue.
>
> **Extended flight duty period** – An extended flight duty period should be limited to 12 hours within a 24-hour period to be accompanied by additional restrictions and compensatory off-duty periods. This limit is based on scientific findings from a variety of sources, including data from aviation, that demonstrate a significant increased vulnerability to performance-impairing fatigue after 12 hours. It is readily acknowledged that in current practice, flight duty periods extend to 14 hours in regular operations. However, the available scientific data support a guideline different from current operational practice. The data indicate that performance-impairing fatigue does increase beyond the 12-hour limit and could reduce the safety margin.

NASA TM, ¶¶ 1.4, 2.3.4, pp. 4, 6.

NASA does not provide a specific recommendation for the duration of a Reserve Availability Period. However, it follows that NASA's recommended maximum duty limit of 12 hours plus 2 hours for operational delays (total - 14 hours) obviously requires a pilot to be awake at least that much time. By adding report time to NASA's recommended maximum duty limit, it is apparent that NASA's duty limit is commensurate with our proposed 16-hour reserve availability period limit for un-augmented flying.

> The results of an NTSB analysis of domestic air carrier accidents occurring from 1978 to 1990 suggest that time since awake (TSA) was the dominant fatigue-related factor in these accidents (NTSB, 1994). Performance decrements of high time-since-awake crews tended to result from ineffective decision-making rather than deterioration of aircraft handling skills. . . . There did appear to be two peaks in accidents: in the morning when time since awake is low and the crew has been on duty for about three to four hours, and when time-since-awake was high, above 13 hours. Similar accident peaks in other modes of transportation and industry have also been reported (Folkard, 1997). Akerstedt & Kecklund (1989) studied prior time awake (four to 12 hours) and found a strong correlation of accidents

> with time since awake for all times of the day. Belenky et al. (1994) found that flight time hours (workload) greatly increase and add to the linear decline in performance associated with time since awake.

Battelle Report, p. 13.

> Some symptoms of fatigue are similar to other physiological conditions. For example, with fatigue one's ability to attend to auxiliary tasks becomes more narrow, very much analogous to the effects of alcohol (Huntley et al., 1973; Moskowitz, 1973), hypoxia (McFarland 1953), and heat stress (Bursill, 1958).

Battelle Report, p. 5.

Australian researchers Drew Dawson and Kathryn Reid (1997) evaluated performance after 17 hours of wakefulness and found performance degraded to a level equal to that caused by a blood alcohol concentration (BAC) of 0.05 percent. At 24 hours, performance decrements were equivalent to that of a 0.10 BAC. After ten hours of sleeplessness, the decline in performance averaged .74 percent per hour. Their study titled *Fatigue, Alcohol and Performance Impairment* appeared in Nature, Vol. 338, July-August 1997. (See Appendix E). These findings were replicated and extended by Nichole Lamond and Drew Dawson in 1998. (See Appendix F).

> If an individual has been awake for 16 to 18 hours, decrements in alertness and performance are intensified. If time awake is extended to 20 to 24 hours, alertness can drop more than 40 percent (WRAIR, 1997; Morgan et al., 1974; Wehr, 1996).
>
> . . .

Battelle Report, p. 25.

The NTSB cited pilot fatigue as the probable cause of the crash of a DC-8 at Guantanamo Bay in 1993. The individual crewmembers were continuously awake for 19, 21, and 23.5 hours prior to the accident.
Mark R. Rosekind, et al., *Crew fatigue factors in the Guantanamo Bay aviation accident.* (See Appendix G).

Remarks of Dr. Dement

Q: Dr. Dement, after our reserve pilots receive their sleep opportunity, they become available for duty. We call the availability period the "reserve availability period" and that's basically the time they are available for work, for flying. After the sleep opportunity, what would you consider to be a safe limit of time since awake for a crewmember?

For the 10-hour (sleep opportunity) period?

Yes.

A: Fourteen hours. And I wouldn't say that's 100% safe but if you have a number, that adds up to the 24-hour day. It ought to be reasonably safe.

Q: Where do you get your number from?

A: Well, it comes mainly in my head from circadian type 24-hour studies to see the pattern of the manifestation of the drive to sleep versus the awakening effect of the biological clock. If you're getting outside the 24-hour cycle, then you're going to have periods of greater risk. . . .

Q: That assumes that the individual wakes up as soon as his protected time period is over. So in other words, you see a complimentary factor: 9 hours of rest should dictate a 15-hour availability period?

A: Yes. I think most people would agree that would be the ideal.

Q: Going beyond that, what is probably the most greatest points of contention right now – the debate between the pilots and the industry operators – is the fact that the operators would like to extend this reserve availability period in excess of what you say is 14 or 15 or 16 hours, whatever the case may be, to a larger increment, extending that reserve availability period based upon an advance notice of a nap opportunity. In other words, a pilot comes on call at 8:00 a.m. He is then told at 9:00 a.m. that he is to report for duty 5 hours later. The industry's position is that the notice constitutes an opportunity for additional rest which then would be utilized to add more restorative energy or analogous to putting more charge into a battery, and then carry that pilot into more of an extended duty period with an additional amount of time.... up to in certain cases 24 hours of duty. What is your feeling on that type of scenario?

A: To me, that's a recipe for disaster because if you have a responsible, professional pilot -- who has a reasonable schedule, - who is not horribly sleep deprived, and who has a fairly stable circadian rhythm, then the likelihood that he can get adequate sleep by trying to nap I think is relatively small. I would not depend on it at all. I would think also to have to do it sort of unexpectedly like this....Oh! Take a nap....Only people who are very sleep deprived....

Q: Let's say I have a 10-hour sleep opportunity: 10 p.m. to 8 a.m. That means I'm available for 14 hours unless they fly me into the next 10 p.m. slot tonight. Could I not get a call say at noon and say instead of you being off tonight at 10 p.m., we want you to work until seven tomorrow morning but you aren't going to go to work until 10:00 that night. So they call me at noon, they give a 10-hour notice that I'm not going to have to go to work until 10 hours from noon, so at 2200 I report for work, and they want me to fly until 0800. So that would be a total of 24 hours from the time I theoretically woke up and I've had a 10-hour notice that I was going to be flying this fatiguing schedule. Would that be safe?

A: Well, I wouldn't be on your plane. No. I think that's almost insanity in the sense of saying that is safe. First of all, naps can't be depended on – even under ideal circumstances – to get you through this period when the biological clock

alerting is gone, when you're alone with your sleep debt so to speak, during the WOCL. There's no way that isn't going to be dangerous. . . .

Appendix D, pp. 8-9.

(2) ***If the flight crewmember is given a flight assignment for any part of the period of 0200 to 0600 hours, any such flight assignment must be scheduled to be completed within 14 hours after the end of the preceding Protected Time Period. The operator with the concurrence of the administrator and the pilot group may designate any 4-hour period for all operations between 0000-0600 hours in place of 0200-0600 hours.***

<u>Scientific support:</u>
(c) Reducing the Reserve Availability Period by two hours during Back-Side-Of-The-Clock Operations (0200 – 0600)

> **Off-duty period (following standard flight duty periods during window of circadian low)** - Extensive scientific research, including aviation data, demonstrate that maintaining wakefulness during the window of circadian low is associated with higher levels of performance-impairing fatigue than during daytime wakefulness. . . .
>
> **Definition: "window of circadian low"** - The window of circadian low is best estimated by the hours between 0200 and 0600 for individuals adapted to a usual day-wake/night-sleep schedule. This estimate of the widow is calculated from scientific data on the circadian low of performance, alertness, subjective report (i.e. peak fatigue), and body temperature. . . .

NASA TM, ¶¶ 2.1.4, 2.3.2, pp. 5-6.

> The ingredient of day versus night long-haul flights raises a second concern, the time-of-day departure. Because sleepiness and fatigue are strongly related to circadian rhythmicity, they should not be controlled by regulations, which ignore time-of-day in favor of elapsed time. . . . For the sake of efficiency and safety, it is incumbent upon regulatory authorities to include time-of-day as a factor in designing flight crew duty and rest limitations.

R. Curtis Graeber, et al., *Aircrew Sleep and Fatigue in Long-Haul Flight Operations*, Tokyo, Japan (October 26-29, 1987), p. 13.

> **Back of the Clock Operations, Circadian Rhythm and Performance**
> There is a substantial body of research that shows decreased performance during night shifts as compared with day shifts. The reasons for this decreased performance include:
>
> - Circadian pressure to sleep when the individual is attempting to work.
> - Circadian pressure to be awake when the individual is attempting to sleep.
> - Time since awake may be substantial if the individual is up all day before reporting for the night shift.
> - Cumulative sleep debt increase throughout the shift.
>
> Research conducted by Monk et al. (1989) indicates that subjective alertness is under the control of the endogenous circadian pacemaker and one's sleep-wake cycle (time since awake). When time since awake is long and coincides with the

circadian low there is a very sharp drop in alertness, a strong tendency to sleep and a significant drop in performance (Perelli, 1980). Alertness is relatively high when the circadian rhythm is near the acrophase and time since awake is small. Monk (1996) argues that this cycle is consistent with the NTSB (1994) finding of a peak accident rate occurring in the evening. . . .

Battelle Report, p. 23.

Microsleeps have been shown to be a useful approach to assessing the effects of time of day on sleepiness levels. EEG brain wave changes confirm that pilots experience greater sleepiness and decreased alertness between 2:00 to 4:00 a.m. (Gundel, 1995). . . .

Battelle Report, p. 9.

. . . In determining maximum limits for extended duty periods, consideration also needs to be given to other fatigue-related factors that could contribute to excessive fatigue levels during extended duty periods, including number of legs, whether the flight impinges on the window of circadian low (WOCL), and time since awake. (Emphasis added.)

Battelle Report, p. 14.

Night operations are physiologically different than day operations due to circadian trough and sleep loss. This carries a higher physiological cost and imposes greater risks of accidents. One of the most established safety issues is working in the circadian trough between 0200 and 0600. During this period workers experience considerable sleepiness, slower response times, increased errors and accidents (Mitler, 1991; Pack, 1994). Many recent accidents from various transportation modes have been associated with this circadian trough (Lauber & Kayten, 1988). Lyman and Orlady (1981), in their analysis of the Aviation Safety Reporting System researcher state that 31 percent of incidents occurring between 2400 to 0600 hours were fatigue related.

In Japan, 82.4 percent of drowsiness-related near accidents in electric motor locomotive drivers (Kogi & Ohta, 1975) occur at night. Other landmark studies over the past several decades have documented the increase in accidents and error making. Klein et al. (1970) argue that their research with simulators proves that night flights are a greater risk than day flights. Their research found 75- to 100-percent mean performance efficiency decrements in simulator flights during the early morning hours, regardless of external factor such as darkness or increasing night traffic or possible weather conditions.

. . . A study of naval watch keepers found that between 0400 to 0600, response rates drop 33 percent, false reports rates 31 percent, and response speed eight percent, compared with rates between 2000 to 2200 hours (Smiley, 1996).

Samel et al. (1996) determined that many pilots begin night flights already having been awake more than 15 hours. The study confirms the occurrence of as many as five micro-sleeps per hour per pilot after five hours into a night flight. . . . The authors concluded that "During day time, fatigue-dependent vigilance decreases

with task duration, and fatigue becomes critical after 12 hours of constant work. During night hours fatigue increases faster with ongoing duty. This led to the conclusion that 10 hours of work should be the maximum for night flying."

[Note Samel's conclusion - Reduce the duty period from 12 to 10 hours.]

Gander et al. (1991) found in an air carrier setting that at least 11 percent of pilots studied fell asleep for an average of 46 minutes. Similarly, Luna et al. (1997) found that U.S. Air Force air traffic controller [sic] fell asleep an average of 55 minutes on night shift. A possible explanation for these sleep occurrences, in addition to circadian nadir, is the finding of Samel et al. that many pilots begin their night flights after being awake for as long as 15 hours.

Battelle Report, pp. 24-25.

Duty periods conducted during the WOCL already carry a fatigue penalty due to the circadian cycle. Consequently, duty periods involving WOCL should be reduced. (Emphasis added.)

Battelle Report, p. 28.

. . . flight duty regulations that adequately account for circadian modulation in the capacity of sleep and in human performance have been used in the United Kingdom for 6 years . . . and by account appear to be working well. The Study Group is aware of no qualitative reason why adjustments such as those incorporated in the UK regulations could not be used in the US as well.

Scientific Study Group, ¶4.2, p. 10.

Flight duty periods during window of circadian low.
. . . Therefore, it is recommended that in a 7-day period, there be no extended flight duty period that encroaches on any portion of the window of circadian low.

[Note: a standard flight duty period should not exceed 10 hours within a 24-hour period.]
NASA TM, ¶¶ 2.3.5.B.; 2.3.3.

5 ***(d) When there are no other reserve pilots who have sufficient reserve availability periods to complete an assignment, the certificate holder may schedule a flight crew member for an assignment for flight time in scheduled air transportation or other flying permitted by this subpart, provided that the crew member is given a minimum of 14 hours of advance notice and is released to protected time at the time of the notice.***

Scientific support:

(d) Minimum of 14 Hours Advance notice

> Considerable research into other arenas has taught us that individuals are better able to cope with unusual or extended duty schedules when they can plan for them in advance. This forewarning allows them to develop time-linked performance goals and to schedule their rest and activity optimally before reporting for duty.

R. Curtis Graeber, et al., *Aircrew Sleep and Fatigue in Long-Haul Flight Operations*, Tokyo, Japan (October 26-29, 1987), p. 12.

> ... In other words, simply being off duty was not a sufficient condition for crew members to be able to fall asleep. . . .

Philippa N. Gander, et al., *Crew Factors in Flight Operations: VIII. Factors Influencing Sleep Timing and Subjective Sleep Quality in Commercial Long-Haul Flight Crews* (December 1991), p. 29.

> . . . In the limited time remaining, he attempts to sleep irrespective of his physiological readiness to sleep (circadian phase) and the local time, both of which may compromise the quality and quantity of sleep he is able to obtain.

Philippa N. Gander, et al., *Crew Factors in Flight Operations: VIII. Factors Influencing Sleep Timing and Subjective Sleep Quality in Commercial Long-Haul Flight Crews* (December 1991), p. 31.

This reinforces the importance of ensuring that adequate time is available for sleep.

> **Conclusions – . . .** Flight and duty time regulations can be interpreted as a means of ensuring that reasonable minimum rest periods are respected. However, the perspective highlighted by this study is that the time available for sleep is less than the scheduled time off duty. . . .

Philippa N. Gander, et al., *Crew Factors in Flight Operations: VIII. Factors Influencing Sleep Timing and Subjective Sleep Quality in Commercial Long-Haul Flight Crews* (December 1991), p. 33.

Remarks of Dr. Dement

Q: How about that the flight is going to happen. There is going to be every day in America, pilots that report to work at 2300 or whatever and fly until 0800 the next morning. Now, what's different about the man who knows a week, a month in advance that this is going to be his schedule and the reserve pilot who finds out at noon after having woken up at 8 a.m.? What would be the difference?

A: You know that the time you do all of the things you can to move toward a better situation . . . You can never get to perfection, but the more practice, the more warning, the better you'll be able to handle it. Some people learn that there is a time when it's quiet and if I do this, I can pretty much depend that I will fall asleep. It's not 100% but you kind of learn that or you practice or whatever. But if it's without warning, all bets are off.

Q: Dr. Dement, you've kind of led the discussion into another area of this rulemaking that has to do with an alternative method. Assuming that the pilots in this protected time period method were depleted, the carriers then want to give pilots advance notice to cover any mission or any assignment. They are looking at 10 hours as the criteria. We don't believe that to be adequate based upon . . .

Are you talking 10-hour warning?

Ten-hour warning, yes. To do anything.

A: That would be 100% wrong.

Q: Why?

A: Well, because the 10 hours could fall sort of toward the beginning of what we call "clock dependent learning." There's no way you could sleep. And then you go into your duty period at the worse possible time you could have in that situation.

Q: What sort of time would you think would be adequate to give a guy enough time to get an opportunity to rest so that he would be safer than 10 hours?

A: Twenty-four hours. At least a day before. Wouldn't you think? I don't see how you can get notified as the day is beginning and feel you could depend on being able to take a nap. If it happened every day or somehow you know that you could certainly get the probability up, but it's not something that you could ever really control. Again, there ought to be a better way.

Appendix D, pp. 10-11.

Q: We're shooting around the subject. I hate to break any of this up, but this question has been plaguing this committee. The industry keeps harping on the fact that there should be no difference between the schedule holder who knows he's got to fly from midnight to 8:00 a.m. If he can do it safely, why can't a reserve that wakes up at the same time in the morning (8:00 a.m. or 6:00 a.m.). Why is it not safe for this reserve pilot who does it with notice?

A: I don't think it's safe for either pilot. Maybe a little less dangerous in the sense of performance, etc. But I think at least he has preparation, warning, etc. and knows his own strengths and weaknesses whereas the other pilot I think is always without warning and has really no chance to prepare. I don't think the two groups are the same.

Q: Are you implying that the preparation should actually start the previous night?

A: Yes. If I was going to drive all night, I wouldn't want someone to tell me that day.

Q: They're really killing us for making that same argument. I mean we make that argument across the table and we get smiles and nods of the head and shrugs of the shoulders from the other side. They say it's not a valid argument. That's always what they come up with.

A: They say it's not a valid argument? It is a supremely valid argument. I mean that's just like saying down is up.

Appendix D, p. 13.

[6] ***(f) For augmented International operations, a certificate holder may assign a flight crewmember and a flight crewmember may accept an assignment for flight time in scheduled air transportation or other commercial flying as follows:***

(1) For single augmentation, the assignment must be scheduled to be completed within 18 hours after the end of the preceding Protected Time Period; or

(2) For double augmentation, the assignment must be scheduled to be completed within 22 hours after the end of the preceding Protected Time Period.

These limitations may be extended up to 2 hours for operational delays.

Scientific support:
(f) (1) and (2) augmented crews

Extended flight duty period: additional flight crew - Additional flight crew afford the opportunity for each flight crew member to reduce the time at the controls and provide for sleep during a flight duty period. Consequently, with additional flight crew and an opportunity for sleep, it would be expected that fatigue would accumulate more slowly. In such circumstances, flight duty periods can be increased beyond the recommended limit of 12 hours within each 24-hour period. For each additional flight crew member who rotates into the flight deck positions, the flight duty period can be extended by 4 hours as long as the following requirements are met: 1) each flight crew member be provided one or more on-duty sleep opportunities; and 2) when the extended flight duty period is 14 hours or longer, adequate sleep facilities (supine position) are provided that are separated and screened from the flight deck and passengers. Controlled rest on the flight deck is not a substitute for the sleep opportunities or facilities required for additional flight crew members.
NASA TM, ¶ 2.3.6, p. 7.

INTERNATIONAL
BROTHERHOOD OF TEAMSTERS
AFL-CIO

RAY W. BENNING, JR., Director
Airline Division
6242 Westchester Parkway, Suite 250
Los Angeles, CA 90045

TEL: (310) 645-9860
FAX: (310) 645-9869

January 6, 1999

Mr. Donald E. Hudson
Aviation Medical Advisory Group
14707 East 2nd Avenue
Suite 200
Aurora, CO 80011

Mr. Clay Foushee
Northwest Airlines
901 15th Street, NW
Suite 310
Washington, DC 20005

Gentlemen:

The undersigned (FPA, IACP, IPA, SWAPA, and IBT representing approximately 20,000 crewmembers) concur with the basic document submitted by the entire labor group concerning the issue of Reserve and Reserve Rest. This submission is supplementary to that document and it addresses additional methodology applicable to the Part 135 and non-scheduled carriers (non-scheduled as used herein applies to carriers currently operating under Part 121, Subpart S (supplemental rules) excluding such carriers as FEDEX, UPS, etc. that may operate under supplemental rules, but do so with a known published operating schedule).

It is recommended that the basic labor document, addressing a Protected Time Period (PTP) and Reserve Availability Period (RAP) methodology, apply to all carriers, i.e., scheduled, non-scheduled (as herein defined), and Part 135. Additionally, it is recommended that non-scheduled and Part 135 carriers be provided an alternative method for reserve assignments where it can be validated that the PTP-RAP methodology cannot be applied. An example requiring this alternative means would be an aircraft with one crew at a station with a prospective duty to operate the aircraft at an undetermined time.

The underlying rationale of the Flight and Duty Time ARAC working groups over the past seven years has been to ensure that crews are provided a reasonable sleep opportunity. The most effective means of rest is to provide a sleep opportunity at the same time each night. Recognizing that this is not always possible in the air transport industry, the PTP-RAP methodology and a reduced duty time, based on predetermined notice periods, represent two means of satisfying the underlying rationale of ensuring a reasonable sleep opportunity.

This alternative methodology greatly reduces the economic impact of regulatory reform on the non-scheduled and Part 135 segment of the air transport industry.

We believe that this submission should be helpful to the FAA in formulating a new rule that balances safety, economics, and the public interest. We are pleased that the FAA has addressed this issue and we are supportive of constructive change arising from the effort put forth by the respective groups and the Agency.

Dave Wells //s
FPA, CAPA

Lauri Esposito //s
IPA, CAPA

D.R. Treichler
IBT, CAPA

Bob Landa //s
SWAPA, CAPA

Don Kingery //s
IACP (non-CAPA)

PROPOSED REGULATORY LANGUAGE

121.xxx Alternative Means of Obtaining Reserve Rest for Non-scheduled Operators (without a known schedule) and Part 135 Operators (separate subpart)

(a) Non-scheduled operators and Part 135 operators may schedule a flight crewmember and that flight crewmember may accept a reserve assignment as follows:

(1) The operator first must assign a PTP period, discussed elsewhere in this rule, provided the operator's flight assignments have a known departure time (schedule), and the operator may then schedule and a crewmember may accept any assignment provided elsewhere in this rule excluding (2) and (3) below;

(2) If unable to comply with (1) above, and an advance notice before departure of not less than 14 hours is provided the crewmember, an operator may schedule and a crewmember may accept any assignment provided elsewhere in this rule excluding (3) below; or

(3) If unable to comply with (1) and (2) above, an operator may assign and a crewmember may accept a reduced duty period as set forth below:

(a) With 8 to 13:59 hours advance notice, the scheduled duty period is limited to 12 hours, but may be extended to 14 hours for operational delays; or

(b) With 6 to 7:59 hours advance notice, the scheduled duty period is limited to 10 hours, but may be extended to 12 hours for operational delays; or

(c) With 4 to 5:59 hours advance notice, the scheduled duty period is limited to 8 hours, but may be extended to 10 hours for operational delays; or

(d) With less than 4 hours advance notice, the scheduled duty period is limited to 7 hours, but may be extended 1 hour for operational delays.

(e) For assignments in paragraph (2) and (3) (a) through (d) above, the operator must relieve the crewmember from all further responsibilities between advance notice and report time.

(f) Advance notice, as used in paragraphs (a) through (d) above, means the time from when a crewmember is alerted for an assignment until transportation local in nature is available at that hotel to transport that crewmember to his place of assignment. The duty period thereby commences with hotel pick up.

Appendix I

Reference Data Furnished by the IBT

1. Normal daily sleep - References vary from 7 hours and 20 minutes to approximately 8 hours and 10 minutes.

Coren, S., *Sleep Thieves,* (Toronto: Free Press, 1996) pp. 251-253
(7 to 8 hours and 10 minutes.)

Dinges, D. and R. Broughton, *Sleep and alertness: Chronobiological, behavioral and medical aspects of napping,* (New York: Raven Press, 1989)
(Average sleep for N. American and European adults were around 7 hours and 20 minutes.)

Wojtczak-Jaroszowa, J., *Physiological and Psychological Aspects of Night and Shift Work,* USDEW (NIOSH) 1977
("During normal night sleep, lasting about 7½ hours....")

2. Napping –

Op. Cit., Coren, S., pp. 222-223
(Naps before and during a shift have shown "modest success.")

Nicholson, A. and B. Stone, *Circadian Rhythms and Disturbed Sleep: Its Relevance to Transport Operations,* IJAS 1/3-D (Unknown publication date in approximately 1982
("...naps, sleeps of 3-4 hours and very long periods of sleep are all attempts to adapt to the irregularity of duty hours and time zone changes, and to ensure adequate rest before the next duty period. It would be reasonable to assume that the natural requirements for sleep are met in this way-even though the timing and duration of the sleep periods are radically changed.")

Nicholson, A., *Sleep and Wakefulness of the Airline Pilot,* Stewart Memorial Lecture presented February 11, 1986 at the Royal Aeronautical Society
("...with a 4 hour period of sleep during the evening, there was a sustained improvement in performance overnight" ....."...recent studies show how (*naps*) can improve alertness...There was a distinct improvement in their alertness during the day when a nap of 1 hour was taken in the morning. The effect was evident in the afternoon, as the nap seemed to encourage the rise in alertness, which normally occurs during the day. The duration of a nap may be critical if it is to be beneficial, and its effects may last for several hours.")

Federal Register

Thursday,
May 17, 2001

Part II

Department of Transportation

Federal Aviation Administration

14 CFR Part 121

Flight Crewmember Flight Time Limitations and Rest Requirements; Final Rule

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 121

Flight Crewmember Flight Time Limitations and Rest Requirements

AGENCY: Federal Aviation Administration, DOT.

ACTION: Notice of enforcement policy.

SUMMARY: This notice of enforcement policy announces to the public the Federal Aviation Administration's (FAA's) intent to rigorously enforce its existing regulations governing flight crewmember rest requirements that are presently codified at 14 CFR 121.471. These regulations have been in existence since 1985, and it is the FAA's intention to ensure that the current rules, as interpreted, are followed by those whose conduct they govern. Accordingly, this notice publishes the FAA's long-standing construction of 14 CFR 121.471 and affords notice to affected certificate holders and flight crewmembers of the FAA's intent to enforce its rules in accordance with these interpretations. This policy statement is being given so those affected will have an opportunity to review their practices and, if necessary, come into full regulatory compliance.

DATES: This notice of enforcement policy is effective on May 17, 2001.

FOR FURTHER INFORMATION CONTACT: Alberta Brown, Air Transportation Division, AFS–200, 800 Independence Avenue, SW., Washington, DC 20591; telephone (202) 267–8166.

SUPPLEMENTARY INFORMATION:

The Regulation

The Civil Aeronautics Act of 1938 (52 Stat. 1007; as amended by 62 Stat. 1216, 49 U.S.C. 551) and subsequently the Federal Aviation Act of 1958 (now codified at 49 U.S.C. 40101 *et seq.*) addressed the issue of regulating flight crewmember hours of service. The FAA's governing statute empowers and directs the Secretary of Transportation to establish ''regulations in the interest of safety for the maximum hours or periods of service of airmen and other employees of air carriers.'' 49 U.S.C. 44701(a)(4). The statue further provides the FAA with the authority to prescribe ''regulations and minimum standards for other practices, methods, and procedures the Administrator finds necessary for safety in air commerce and national security.'' 49 U.S.C. 44701(a)(5).

The FAA's rules at 14 CFR 121.471(b) and (c) set forth flight time limitations and rest requirements for domestic operations. These provisions state:

Section 121.471—Flight time limitations and rest requirements: All flight crewmembers

(b) Except as provided in paragraph (c) of this section, no certificate holder conducting domestic operations may schedule a flight crewmember and no flight crewmember may accept an assignment for flight time during the 24 consecutive hours preceding the scheduled completion of any flight segment without a scheduled rest period during that 24 hours of at least the following:

(1) 9 consecutive hours of rest for less than 8 hours of scheduled flight time.

(2) 10 consecutive hours of rest for 8 or more but less than 9 hours of scheduled flight time.

(3) 11 consecutive hours of rest for 9 or more hours of scheduled flight time.

(c) A certificate holder may schedule a flight crewmember for less than the rest required in paragraph (b) of this section or may reduce a scheduled rest under the following conditions:

(1) A rest required under paragraph (b)(1) of this section may be scheduled for or reduced to a minimum of 8 hours if the flight crewmember is given a rest period of at least 10 hours that must begin no later than 24 hours after the commencement of the reduced rest period.

(2) A rest required under paragraph (b)(2) of this section may be scheduled for or reduced to a minimum of 8 hours if the flight crewmember is given a rest period of at least 11 hours that must begin no later than 24 hours after the commencement of the reduced rest period.

(3) A rest required under paragraph (b)(3) of this section may be scheduled for or reduced to a minimum of 9 hours if the flight crewmember is given a rest period of at least 12 hours that must begin no later than 24 hours after the commencement of the reduced rest period.

(4) No air carrier may assign, nor may any flight crewmember perform any flight time with the air carrier unless the flight crewmember has had at least the minimum rest required under this paragraph.

In June 1999, FAA issued a notice of enforcement policy related to this rule. In that notice, the FAA clarified that the rules were applicable to all pilots operating in domestic scheduled operations. In December, 1999, FAA conducted a comprehensive review of air carrier scheduling practices and found that with one exception all operators were in compliance with the rule.

Interpretations of Rest Requirements

In part in response to the FAA's earlier focus on air carrier compliance with the flight and rest rules, the chairman of a national pilots union sent the FAA a letter posing a set of circumstances and inquiring about the applicability of 14 CFR 121.471 (b) and (c) to various scenarios. The FAA issued a response that reflects the agency's long-standing construction of these regulatory provisions. That response is attached to this notice. In substance, the FAA reiterated that each flight crewmember must have had a minimum of 8 hours of rest in any 24 hour period that includes flight time. In addition, the interpretation reiterated that if a pilot's actual rest was less than 9 hours in the 24 hour period that included flight time, the next rest period must be lengthened to provide for the appropriate compensatory rest. The substance of the FAA response is contained in the Appendix.

After the interpretation was issued, many operators questioned whether this was consistent with earlier FAA interpretations. FAA met with representatives of the airlines as well as with organizations that represent them. At the meeting, the representatives stated that their approved scheduling systems had not been tracking the actual rest that a pilot had received in a 24-hour period that included flight time. The operators expressed concern that applying the rule as interpreted could reduce safety. They suggested that a pilot should not be diverted from important preflight and taxi-out duties by the need to constantly monitor whether he or she has had sufficient rest to finish the flight. They were particularly concerned about what might happen when there has been a lengthy ground delay and the flightcrew or the aircraft dispatcher determines that the flight cannot be completed within the rest requirements.

FAA met with representatives of the pilots unions. The pilots stated that in the vast majority of cases pilots are receiving the amount of rest required by the rule. However, they suggested that in a small number of operations it was possible that when a pilot completed his or her assigned flight schedule, he or she may have had less than 8 hours of rest in the preceding 24-hour period.

To ensure that the application of the rule would have no consequences that would reduce safety, the FAA considered all these concerns and all the information provided by the operators and the pilot unions. Although there may be some impacts to schedules and some delayed operations, FAA believes that safe operations require that a flight crewmember has a minimum of 8 hours rest in a 24 hour period that includes flight time. In addition, that flight crewmember must receive additional rest in the next rest period to compensate for any potential fatigue.

Compliance and Enforcement Plan

The FAA intends to rigorously enforce these regulations governing flight time restrictions and rest requirements. Accordingly, any noncompliance with the regulation should be corrected without delay.

For any air carriers that are not currently in compliance with these regulations, the FAA intends to take into consideration the certificate holder's good faith efforts to come into compliance in determining what, if any, enforcement action is appropriate if noncompliance is discovered. With regard to violations by individual flight crewmembers, the FAA will consider the circumstances of each case, including such factors as the employing certificate holder's effort to come into compliance and the culpability of the individual.

While the FAA reserves the right to take appropriate action to address regulatory noncompliance, particularly in egregious circumstances, the FAA does not intend to target its inspection resources on this compliance issue at this time. However, this notice serves to advise air carriers, flight crewmembers, and the public that on [insert date (6 months from publication date)] the FAA intends to begin a comprehensive review of certificate holders' flight scheduling practices and expects to deal stringently with any violations discovered.

Issued in Washington, DC, on May 14, 2001.

Margaret Gilligan,

Acting Associate Administrator for Regulation and Enforcement.

Appendix

Facts: A crew is assigned reserve standby duty commencing at 0600. They are then called at 0900 to check in for a flight assignment at 1100.

End of rest	Report at	Release at	Sched. rest	Look-back rest
Day 1 0600	1100	2100	10:00	9:00
Day 2 0700	0700	1700	12:00	10:00

In the above example, assume that the crew was assigned to three segments with a total of less than 8 hours of flying in each duty period and that the scheduled block-in of the last flight of each day is 15 minutes prior to release. This original schedule does not require compensatory rest. I note, preliminarily, that your letter states that I should assume that the flight crew ''was assigned to three segments with a total of less than 8 hours of flying in each duty period.'' I assume that by that statement you mean ''less than a total of 8 hours of scheduled flight time for the three flight segments, on both Day 1 and Day 2.'' Based on that assumption, the regulations that I will apply are those that require a minimum of 9 consecutive hours of scheduled rest (section 121.471(b)(1)) that may be reduced to a minimum of 8 hours with a minimum of 10 hours compensatory rest that must begin no later than 24 hours after the commencement of the reduced rest (section 121.471(c)(1) (the ''reduced/compensatory rest'' exception)). I have also made other assumptions or clarifications that are described in my responses below.

Situation 1: On Day 1, all goes according to plan on the first two segments. However, after leaving the gate on the third segment, the crew encounters an unanticipated ground delay that results in only an 8 hour, 45 minutes look-back rest period upon termination at destination.

1. Is compensatory rest now required upon landing?

Response: You do not provide specific details on what is the termination time of the last flight segment. (I assume that by ''termination at destination'' you mean the ''termination of the last flight segment.'') However, you state, above, that the flight crew would only receive an 8 hours and 45 minutes look-back rest period. I therefore assume that the termination of that last flight segment, based on the other factual details you provide above, was at 2115. Looking back 24 hours from 2115 on Day 1 to 2115 on the day prior to Day 1, one finds only 8 and three quarters consecutive hours of rest in the period 2115 (of the day prior to Day 1) to 0600 hours (on Day 1).

The only situation in which a certificate holder may reduce the minimum 9 hour required rest period is to utilize the ''reduced/compensatory rest'' exception that allows certificate holders the flexibility to adjust scheduled rests in the event of late arrivals. Thus, a certificate holder may reduce the required scheduled rest so that one finds a minimum look-back rest of 8 consecutive hours on termination of the last flight segment, as well as provide the required compensatory rest. In your scenario, the certificate holder could reduce the required minimum 9 consecutive hours of scheduled rest to 8 and three-quarters hours.[1] However, the certificate holder must also provide the flight crewmember with a compensatory rest period of at least 10 hours that must begin no later than 24 hours after commencement of the reduced rest period. In your scenario, that compensatory rest must begin at 2115 on Day 1, since the reduced rest begins at 2115 on the day before Day 1.

2. In the case of a ground delay prior to take-off, would the crew and certificate holder be correct in using planned flight time and taxi-in time in determining the scheduled arrival time?

Response: The FAA requires the crew and the certificate holder to use the actual expected flight time and taxi-in time, based on the specific conditions that exist on the day, to determine the scheduled arrival time for purposes of determining whether a flight should be commenced. For example, if an airline has published a flight time of three hours, but knows that the actual time the flight will take is four hours because of weather, ground delays, etc., then the FAA requires the carrier to use four hours for purposes of calculating the arrival time. On the other hand, if the air carrier has scheduled a flight for three hours, but on the day in question, it is reasonable to conclude that flight time would only be two and a half hours, the carrier may use two and a half hours to calculate the arrival time.

3. If the ground delay continues to the point that the look-back rest is reduced below 8 hours, can the crew continue? If so, what are the rest requirements upon arrival?

Response: The flight may not take off if the look-back rest period is reduced to less than 8 hours. There must be at least an eight-hour look-back rest period. The eight-hour minimum reduced rest may not be further reduced under any circumstance.

4. If a ground delay, that would result in a late arrival that would not provide at least 8 hours of look-back rest is known by the certificate holder and/or crew prior to gate departure, can the crew depart legally based upon the published scheduled flight time?

Response: No. As stated above, the FAA requires the crew and the certificate holder to use the actual expected flight time and taxi-in time, based on the specific conditions that exist on the day, to determine the scheduled arrival time for purposes of determining whether a flight should be commenced. If the actual expected flight time is longer than the carrier originally calculated in determining the scheduled arrival time, then the actual expected flight time must be used in determining the look-back rest period.

Situation 2. On Day 1, the crew is late inbound on the second segment which results in not being able to leave the gate on the third and last segment on time. As a result, the look-back would now provide 8 hours and 45 minutes rest in the previous 24, based on the scheduled duration of the final segment.

1. Is compensatory rest now required upon arrival?

Response: Yes. Compensatory rest would be required upon arrival at the third destination. See the discussion in my response to question 1 of Situation 1 above.

2. If the crew were further delayed so that they could not depart to provide at least 8 hours of look-back rest upon arrival, could they depart legally?

[1] I note that the certificate holder could reduce the scheduled rest to a minimum of 8 hours.

Response: No. If, when using the actual expected flight time, the carrier cannot find at least 8 hours of look-back rest upon arrival, then the flight may not depart, under the FAA regulations. See my response to question 3 of Situation 1 above.

3. If there is a known ground stop for the destination of the final segment, which would result in look-back rest of only 7 hours and 45 minutes, can the crew legally leave the gate? If they are off the gate when the ground stop occurs, can they continue?

Response: If it is known, or reasonably should be known, that the flight time will be extended because of ground stops at the destination airport, then this information must be included in determining the actual expected flight time. If, when this information is factored in, it is known or should be known that arrival based upon the actual expected flight time will not result in at least 8 hours of look-back rest, then the flight may not leave the gate. If the flight is away from the gate, but is not yet in the air, then the flight may not take off. If the ground stops at the destination airport do not become known until after the flight is in the air, the FAA will not, as a matter of enforcement policy, take enforcement action against the flight crewmember or the certificate holder for a violation of the regulations, provided the ground stops at the destination airport are an unforeseen delay beyond the control of the certificate holder and the full, required minimum reduced rest and the compensatory rest are given at the completion of the flight segment.

4. Should the scheduled arrival time in 3 above be based upon published scheduled flight time or flight planned duration (flight time plus taxi time)?

Response: Arrival time in 3 above should be based on flight planned duration, i.e., the actual expected flight time based on the conditions existing on the day in question. Also, I am not sure what you mean by ''published scheduled flight time.'' If you mean scheduled flight time as published in the Official Airline Guide (OAG), such flight time may be unrealistically high. Sometimes a certificate holder might overestimate the duration of a flight in order to have some cushion in the schedule and be able to report an on-time arrival. The actual realistic flight time (block to block time) may be less than such ''published scheduled flight time'' in the OAG.

5. Would the reason for the crew being late on the second flight (beyond the control of the air carrier or not) have any bearing on the rest requirement?

Response: I assume that your question is whether section 121.471(g) (the ''circumstances beyond the control of the certificate holder'' exception) excuses a rest violation. No. That exception applies only to the scheduling of flight time. It is inapplicable to, and does not excuse, a violation of a rest requirement. Also see my response to question 1 of Situation 1 in which I discuss the use of the ''reduced/compensatory rest'' exception, its purpose, and compliance with its terms.

Situation 3: On Day 1, one of the carrier's hubs is impacted by a weather system in the morning. As a result, the carrier decides to delay all remaining departure times that day out of the hub.

1. If a departure so delayed would result in a crew having look-back rest of less than 9 hours, would compensatory rest be required?

Response: Yes. (I assume that the look-back rest, which is less than 9 hours, would still be at least 8 hours.)

2. If the delay resulted in a crew having look-back rest of less than 8 hours, could a crew legally depart?

Response: No. The FAA would consider this flight to be in violation of the regulations.

Situation 4. The crew and air carrier know, prior to departure, that forecast winds or enroute weather are resulting in a flight plan for that segment that exceeds the normal duration published in the carrier's schedules.

1. Can the crew legally depart if the scheduled arrival time based on the flight plan would encroach upon or delay the required start of a compensatory rest period?

Response: I assume that the questions for Situation 4 relate to Day 1 and to the last flight segment. I am not sure what you mean by ''published in the carrier's schedules.'' See my response to question 4 in Situation 3 above. If you mean that the crew and certificate holder know, prior to take-off, that en route weather conditions will result in the flight taking longer than expected, then my answer is as follows. Even if the expected termination of the last flight segment would allow a minimum 8 consecutive hours look-back rest period, if the crew and certificate holder expect, prior to take-off, that the flight will infringe on the required start of the compensator rest period, the crew may not legally depart. Thus, although the actual flight time might exceed flight time limits and although exceeding flight time limits in these circumstances would be allowed under the ''circumstances beyond the control of the certificate holder'' exception, that exception does not permit an encroachment on reduced rest or compensatory rest below the minimums specified in the regulations.

2. If the original crewmember's schedule did not require compensatory rest, would compensatory rest be required if the scheduled arrival based upon the flight plan information resulted in the crewmember having less than 9 hours of look-back rest upon arrival?

Response: If, upon termination of the last segment, the look-back rest was actually less than 9 hours, then compensatory rest is required regardless of the scheduled arrival.

3. If the original crewmember's schedule did not require compensatory rest, would the crewmember be legal to depart if the scheduled arrival based upon the flight plan information resulted in the crewmember having less than 8 hours of look-back rest upon arrival?

Response: No. If, at the time of departure, it is calculated that a pilot will have less than 8 hours of look-back rest upon termination of the last flight segment, then the flight may not take off. The intention to give compensatory rest may not be used to permit a pilot to take a flight when it is known at the beginning of the flight that the pilot will have less than 8 hours of look-back rest upon termination of the last flight segment.

[FR Doc. 01–12419 Filed 5–14–01; 2:00 pm]

BILLING CODE 4910–13–M

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Parts 121, 135

[Docket No. 28081; Notice No. 95–18]

RIN 2120–AF63

Flight Crewmember Duty Period Limitations, Flight Time Limitations and Rest Requirements

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of proposed rulemaking (NPRM).

SUMMARY: The FAA proposes to amend existing regulations to establish one set of duty period limitations, flight time limitations, and rest requirements for flight crewmembers engaged in air transportation. The proposal results from public and congressional interest in regulating flight crewmember rest requirements, NTSB Safety Recommendations, petitions for rulemaking, and scientific data contained in recent National Aeronautics and Space Administration (NASA) studies relating to flight crewmember duty periods, flight times, and rest. The proposal would update the regulations and replace certain out-dated regulations with a simplified regulatory approach based upon scientific studies of fatigue. The objective of the proposal is to contribute to an improved aviation safety system by ensuring that flight crewmembers are provided with the opportunity to obtain sufficient rest to perform their routine and emergency safety duties.

DATES: Comments must be received on or before March 19, 1996.

ADDRESSES: Send or deliver comments on this notice in triplicate to: Federal Aviation Administration, Office of the Chief Counsel, Attention: Rules Docket (AGC–200), Room 915G, Docket No. 28081, 800 Independence Avenue, SW, Washington, DC 20591. Comments may also be submitted to the Rules Docket by using the following Internet address: nprmcmts@mail.hq.faa.gov. Comments must be marked Docket No. 28081. Comments may be examined in the Rules Docket in Room 915G on weekdays between 8:30 a.m. and 5:00 p.m., except on Federal holidays.

FOR FURTHER INFORMATION CONTACT: Larry Youngblut, Project Development Branch, AFS–240, Air Transportation Division, Flight Standards Service, Room 829, Federal Aviation Administration, 800 Independence Avenue, SW., Washington, DC 20591; telephone (202) 267–3755.

SUPPLEMENTARY INFORMATION:

Comments Invited

Interested persons are invited to participate in this rulemaking by submitting written data, views, or arguments, and by commenting on the possible environmental, economic, and federalism- or energy-related impact of the adoption of this proposal. Comments concerning the proposed implementation and effective date of the rule are also specifically requested.

Comments should carry the regulatory docket or notice number and should be submitted in triplicate to the Rules Docket address specified above. All comments received and a report summarizing any substantive public contact with FAA personnel on this rulemaking will be filed in the docket. The docket is available for public inspection both before and after the closing date for receiving comments.

Before taking any final action on this proposal, the Administrator will consider the comments made on or before the closing date for comments, and the proposal may be changed in light of the comments received.

The FAA will acknowledge receipt of a comment if the commenter includes a self-addressed, stamped postcard with the comment. The postcard should be marked ''Comments to Docket No. 28081.'' When the comment is received by the FAA, the postcard will be dated, time stamped, and returned to the commenter.

Availability of the NPRM

Any person may obtain a copy of this NPRM by submitting a request to the Federal Aviation Administration, Office of Public Affairs, Attention: Public Inquiry Center, APA–430, 800 Independence Avenue SW., Washington, DC 20591, or by calling (202) 267–3484. Communications must identify the notice number of this NPRM.

Persons interested in being placed on a mailing list for future FAA NPRM's should request a copy of Advisory Circular No. 11–2A, Notice of Proposed Rulemaking Distribution System, which describes application procedures.

Background

The aviation industry requires 24-hour activities to meet operational demands. Growth in global long-haul, regional, overnight cargo, and short-haul domestic operations is likely to increase round-the-clock requirements. Flight crews must be available to support 24-hour a day operations to meet these industry demands. Both domestic and international aviation frequently require crossing multiple time zones. Therefore, shift work, night work, irregular work schedules, unpredictable work schedules, and time zone changes will continue to be commonplace components of the aviation industry. These factors affect human physiology by causing performance-impairing fatigue that can affect the level of safety. The FAA believes that it is critical, whenever possible, to incorporate scientific information on fatigue and human sleep physiology into regulations on flight crew scheduling. Such scientific information can help to maintain the safety margin and promote optimum crew performance and alertness during flight operations.

Over the past 40 years, scientific knowledge about sleep, sleep disorders, circadian physiology, fatigue, sleepiness/alertness, and performance decrements has grown significantly. Some of this scientific knowledge, gained through field and simulator studies, has confirmed that aviators experience performance-impairing fatigue from sleep loss resulting from current flight and duty practices. Incorporation of scientific knowledge on fatigue into operations (e.g., regulatory scheduling considerations, personal strategies, fatigue countermeasures) would greatly benefit safety. A primary purpose of this rulemaking is to incorporate as much as possible of the scientific knowledge into the applicable regulations.

A second purpose of this proposed rulemaking is to establish consistent and clear duty period limitations, flight time limitations, and rest requirements for all types of operations. The current regulations require revising because of their complexity and age. While domestic flight time limitations and some commuter limitations were updated in 1985, flag and supplemental operations were not. With advancements in new aircraft, these operational distinctions are no longer as meaningful as they once were. This proposal would establish the same duty period limitations, flight time limitations, and rest requirements for all types of operations in part 121 for domestic, flag, and supplemental operations and in part 135 for commuter and on-demand operations. The duty period limitations, flight time limitations, and rest requirements would allow for differences based on the length of flights and number of flight crewmembers on a flight.

General Discussion

Historical Review

The Civil Aeronautics Act of 1938 (52 Stat. 1007; as amended by 62 Stat. 1216, 49 U.S.C. 551) and subsequently, the Federal Aviation Act of 1958 (now codified at 49 U.S.C. 40101 et seq.) addressed the issue of regulating flight crewmember hours of service. The Federal Aviation Act, as amended, empowers and directs the Secretary of Transportation to promote the safety of civil air flight in air commerce by prescribing and revising from time to time ''reasonable rules and regulations governing, in the interest of safety, the maximum hours or periods of service of airmen, and other employees.''

Despite many changes in the airline transportation industry over the 30 years before 1983, the rules governing flight time limitations and rest requirements remained virtually unchanged because no safety reasons had been presented which necessitated changes to the regulations. But the presumed level of safety established by these rules did not necessarily mean that the rules were as effective as they should have been when considered in light of changes that had occurred in the industry in the previous 30 years.

In 1983, a significant rulemaking was initiated to clarify and simplify the regulations and to make them more applicable to the air transportation environment at that time. A significant driving force for amending the flight time regulations in 1983 was that the requirements under part 121 were so complicated that they had required thousands of pages of interpretation and had sometimes been incorrectly followed by air carriers.

A second significant factor justifying amendment of the rules in 1983 was their inflexibility. For example, although under the then existing rule, air carriers were not considered in violation of the rules if flight times were exceeded due to adverse weather conditions or other circumstances beyond the control of the air carrier, an air carrier did not have the flexibility to adjust scheduled rest periods in the event of late arrivals or other factors. If a flight was late, the subsequent flights often had to be delayed while substitute flight crewmembers were brought in or while the flight crewmembers received their scheduled rest periods.

A third factor affecting the pre-1983 rules was, under deregulation of the air transportation industry, the number and variety of domestic certificate holders dramatically increased. The complexity and variety of the newer operations required that the FAA provide clear and simple minimum safety criteria for all operators.

A fourth factor affecting the pre-1983 rules, and one related to the changing character of the air transportation industry, was the growth of commuter operations. Some commuter operations fall under part 121 domestic rules while others fall under part 135 rules. A question existed as to whether either set of requirements effectively covered these comparatively new and growing operations. Thus an additional aim of the 1983–1985 rulemaking proceedings was to study the materials submitted by the commuter industry group and incorporate the findings into the applicable rules in order to provide, in this segment of the industry, a level of safety equivalent to other air transportation operations.

The 1983–1985 rulemaking proceeding was not the FAA's first attempt to solve the previously described problems. For a number of years before 1983 the FAA recognized that the flight time limits and rest requirements needed to be clarified and substantively improved in those areas where they were potentially inadequate. On several occasions the FAA had attempted to correct the flight time limitation problems of both parts 121 and 135 through rulemaking actions. But because of the complexity of the flight time rules and the economic interests affected, none of the previous proposals succeeded in resolving the problems to the satisfaction of the affected parties. Given the importance of the flight time rules in air transportation safety, the FAA decided in 1983 to try an innovative approach that would bring the affected parties together to negotiate a resolution.

1983–1985 Regulatory Negotiation

In 1983 regulatory negotiation was a new concept recommended by the Administrative Conference of the United States. Basically, it was a procedure by which representatives of all interests affected by a rulemaking could be brought together to fully discuss the issues under conditions conducive to narrowing or eliminating differences and to negotiating a proposed rule acceptable to each interest. In accordance with the recommended procedure, the FAA created an advisory committee chartered under the Federal Advisory Committee Act. The committee was comprised of persons representing the diverse interests affected by the flight time rules, including persons representing flight crewmembers, air carriers, air taxis, helicopter operators, and the public.

The committee met for 16 days in 1983 under the direction of a convener/mediator and thoroughly discussed the major issues involved in the regulation of flight time limits and rest requirements for domestic operations under part 121 and for operations under part 135. Although the committee did not reach consensus on any particular proposal, its deliberations were successful in narrowing the differences among parties and in reaching substantial agreement on some issues. In addition, the committee identified major areas of concern and all parties obtained significant, new information on a subject which had been discussed, without resolution, for years. The committee deliberations led to a notice of proposed rulemaking [49 FR 12136, March 28, 1984] and then to a final rule [50 FR 29306, July 18, 1985]. The final rule reflected comments received from the organizations represented on the Advisory Committee and from others. The final rule accomplished the following major objectives:

(1) It resolved a series-of-flights problem in part 121, domestic air carrier rules, thereby addressing many interpretation issues;

(2) It established a new rest period requirement in part 121, domestic air carrier rules, for flight crewmembers scheduled to fly 8 hours or less in 24 consecutive hours and allowed greater scheduling flexibility, including the introduction of a reduced rest period;

(3) It upgraded the requirements for all operations in part 135, particularly scheduled operations; and

(4) It incorporated into the rules certain exemptions that had wide applicability: The reduction of a 10-hour rest under part 135 under certain conditions; the extension of flight time with augmented crews; and the special limitations needed for helicopter medical emergency services.

ARAC Flight/Duty Working Group

While the FAA's 1983–1985 flight time limitations rulemaking was a step forward in dealing with rest and flight time issues, the rulemaking was limited in its scope and did not address either flag or supplemental operations under part 121. The FAA recognized at the time that flag and supplemental rules would need to be updated because these rules contained some of the same language and problems contained in the domestic rules that were amended. Furthermore, though the 1985 rulemaking clarified some of the flight time and rest requirements, it did not resolve the problems completely. Also, since the 1985 rulemaking, the complexity of the rules and

inconsistencies associated with various types of operations (domestic, flag, and supplemental under part 121 and commuter and on-demand under part 135) have continued to make application and interpretation burdensome. A number of petitions to amend the various sections were received (discussed in more detail later), as well as hundreds of letters concerning the interpretation of rest requirements for flight crewmembers assigned to a reserve status. Therefore, on June 15, 1992, the FAA announced [57 FR 26685] the establishment of the Flight Crewmember Flight/Duty Rest requirements working group (ARAC Flight/Duty Working Group) of the Aviation Rulemaking Advisory Committee (ARAC).

The ARAC had been established by the FAA in January 1991 [46 FR 2190, January 22, 1991] as a vehicle for convening representatives of interested groups to assist the FAA in addressing regulatory problems in a forum that could use, in a less formal setting, many of the regulatory negotiation techniques that had been used by the 1983–1985 flight time limitations advisory committee. The working group's task was to determine whether regulations pertaining to air carrier flight duty and rest requirements are consistently interpreted and understood by the FAA, air carriers, and pilots; to evaluate industry compliance/practice regarding scheduling of reserve duty and rest periods; and to evaluate reports of excessive pilot fatigue as a result of such scheduling. The working group was to develop recommendations for advisory material and a regulatory revision as appropriate.

Between its creation on June 15, 1992, and June 30, 1994, the ARAC Flight/Duty Working Group met on numerous occasions. The chairman of this working group (Dr. Donald E. Hudson of the Aviation Medicine Advisory Service) submitted a preliminary report on February 1, 1994, and a final report on June 30, 1994. The report indicated that while the working group did not reach a consensus on the specific issues, the working group did agree on four major areas that the FAA should address in future rulemaking actions: Absence of a duty time limitation; reserve scheduling; back-side-of-the-clock operations; and scheduled reduced rest. Each of the four areas is briefly described here. Three areas are specifically addressed in this rulemaking and one, back-side-of-the-clock operations, is partially, though indirectly, addressed.

Continuous or indefinite duty could occur under the current rules if flight crewmembers complete their daily schedule when delays encountered are beyond the control of the certificate holder, no matter how long it extends their duty period. The reserve scheduling issue concerns questions such as, do the same rest period requirements apply to flight crewmembers assigned to reserve duty as the rest period requirements that apply to flight crewmembers assigned to scheduled flights? Back-side-of-the clock operations refers to the question whether special duty limitations and rest requirements should be developed for operations that are scheduled during a flight crewmember's normal sleep cycle. The scheduled reduced rest issue concerns whether certificate holders should be allowed to schedule reduced rest in advance or whether reduced rest should only be allowed to deal with unavoidable delays.

Because no consensus could be reached, Dr. Hudson's final report included proposals submitted by several members of the working group. It also stated that there is enough clear scientific guidance available to assist the FAA in establishing a regulatory ''safety floor'' that will both address the identified issues and not unfairly penalize carriers economically. The report further stated that there is not any physiological justification for having different work rules for part 121 and 135 operators.

NASA Research Program

In 1980, in response to a Congressional request, the National Aeronautic and Space Administration (NASA) Ames Research Center created a Fatigue/Jet Lag Program to examine whether there are safety problems due to transmeridian flying and fatigue in association with various factors found in air transport operations. Since its inception, the program has pursued the following three goals: (1) to determine the extent of fatigue, sleep loss, and circadian disruption in both domestic and international flight operations; (2) to determine the impact of these factors on flight crew performance; and (3) to develop and evaluate countermeasures to reduce the adverse effects of these factors and improve flight crew performance and alertness. In 1991, the NASA Ames Program was renamed the NASA Ames Fatigue Countermeasures Program to highlight the increased focus on the third goal. Since the beginning of the program, NASA has worked in close cooperation with the FAA and with the airline industry to collect data and to provide the findings of its extensive research as quickly as possible. This research is fundamental to this proposal.

NASA Technical Memoranda reveal general principles pertinent to scheduling flight crewmembers. The memoranda include but are not limited to the following:

1. Crew Factors in Flight Operations II: Psychophysiological Responses to Shorthaul Air Transport Operations. (NASA Technical Memorandum 108856, November 1994)

2. Crew Factors in Flight Operations: Factors Influencing Sleep Timing and Subjective Sleep Quality in Commercial Long-Haul Operations. (NASA Technical Memorandum 103852, December 1991)

3. Principles and Guidelines for Duty and Rest Scheduling in Commercial Aviation. (NASA Technical Memorandum, 1995)

Copies of these memoranda have been placed in the public docket for this rulemaking.

These memoranda state that sleep, awake time off, and recovery are primary considerations for maintaining alertness and performance levels. Adequate sleep is essential to maintain alertness and performance, a positive mood, and overall health and well-being. Each individual has a basic sleep requirement. The average sleep requirement is for 8 hours in a 24-hour period. Losing as little as 2 hours of sleep in a 24-hour time period can result in acute sleep loss, which will promote fatigue and degrade subsequent performance and alertness. Over days, sleep loss will accrue into a cumulative sleep debt which can only be reversed by sleep. An individual who has obtained required sleep performs better even after long hours awake or during altered work schedules. An individual who is fatigued typically shows a decline in performance by requiring more time to complete a given task. Two nights of an individual's usual sleep requirement will typically stabilize the sleep pattern and restore acceptable levels of waking alertness and performance. More frequent recovery periods reduce cumulative fatigue more effectively than less frequent ones. For example, weekly recovery periods afford a higher likelihood of relieving acute fatigue than monthly recovery periods. Consequently, regulations that ensure minimum days off per week are critical for minimizing the effects of cumulative fatigue over longer periods of time.

The NASA findings and recommendations have been summarized in a 1995 NASA Technical Memorandum titled ''Principles and Guidelines for Duty and Rest Scheduling in Commercial Aviation.''

This is the first document that NASA intends to publish. This first document is intended to be concise, focused on operational considerations and to provide specific scientific input to this complex issue. The second document will provide the specific scientific references that support the principles and guidelines outlined in the first document. The second document will be longer and will focus on the scientific considerations related to these issues. NASA has assured the FAA that the Technical Reports presently in the docket contain the data on which the results and conclusions in both the first and second document are based. While not every NASA finding or recommendation is specifically reflected in this proposal, the overall thrust of this proposal is consistent with those findings and recommendations. Specific findings of the 1995 NASA memorandum are discussed and where relevant referenced by paragraph number in the discussion of specific proposals in this document.

National Transportation Safety Board Recommendations (NTSB)

Issues of fatigue in transportation have been of special concern to the NTSB in all modes of transportation. In 1989, the NTSB made three recommendations to the Department of Transportation (DOT) to encourage an aggressive Federal program to address the problems of fatigue and sleep issues in transportation safety:

Expedite a coordinated research program on the effects of fatigue, sleepiness, sleep disorders, and circadian factors on transportation system safety. (I–89–1)

Develop and disseminate educational material for transportation industry personnel and management regarding shift work; scheduled work and rest; and proper regimens of health, diet, and rest. (I–89–2)

Review and upgrade regulations governing hours of service for all modes to ensure that they are consistent and that they incorporate the results of the latest research on fatigue and sleep issues. (I–89–3)

Further NTSB recommendations were issued as a result of the August 18, 1993, Douglas DC–8–61 freighter crash at the Leeward Point Airfield at the U.S. Naval Air Station, Guantanamo Bay, Cuba after the captain lost control of the airplane on approach. The airplane was destroyed by impact forces and a post accident fire, and the three flight crewmembers sustained serious injuries. NTSB determined that among the probable causes of this accident were impaired judgment, impaired decision-making, and impaired flying abilities of the captain and flightcrew due to the effects of fatigue.

In the letter accompanying the NTSB Safety Recommendations issued as a result of the accident, the NTSB cited the fact that FAA's flight and duty rules applicable to part 121 and 135 certificate holders, as interpreted, allow flight crewmembers to conduct flights under part 91, e.g., ferry flights for their certificate holders following the completion of flights conducted under part 121 or 135, without having to count these flight hours or duty time toward the part 121 or 135 flight time duty time limitations and rest requirements. The NTSB concluded that ''the accident trip was under the provisions of a combination of separate regulations that allowed extended flight and duty times to be scheduled, contrary to safe operating practices.'' The NTSB went on to note that the United States and France are the only countries in the world that base their aviation hours of service regulations on flight time, while most other countries base them on duty time or a combination of duty and flight time.

As a result of the Guantanamo Bay accident, the NTSB issued the following Safety Recommendations that relate to flight and duty time limits:

(1) Revise part 121 to require that flight time accumulated in noncommercial ''tail end'' ferry flights conducted under part 91, as a result of 14 CFR, part 121, revenue flights, be included in the flight crewmember's total flight and duty time accrued during those revenue operations. (A–94–105)

(2) Expedite the review and upgrade of flight/duty time limitations of the Federal Aviation Regulations to ensure that they incorporate the results of the latest research on fatigue and sleep issues. (A–94–106)

The NTSB also reiterated an earlier recommendation that the FAA require U.S. air carriers operating under 14 CFR part 121, to include, as part of pilot training, a program to educate pilots about the detrimental effects of fatigue, and strategies for avoiding fatigue and countering its effects. (A–94–5)

Aviation Safety Reporting System

The FAA has recently examined incident reports submitted by pilots to NASA's Aviation Safety Reporting System. Since January 1, 1986, NASA has received several reports of situations resulting from fatigue from pilots engaged in part 121 operations and 200 reports from pilots conducting part 135 operations. Although these incidents did not actually result in accidents, they were of a sufficiently serious nature that pilots took the trouble to file a report with NASA with the hope of gaining the attention of the regulatory authorities.

Petitions for Rulemaking

The FAA has received several petitions for rulemaking on flight, duty, and rest requirements:

On June 1, 1989, the Air Transport Association of America (ATA) petitioned the FAA to amend part 121, Subpart R of the FAR (which contains the flight time limitations for flag operations). This petition primarily addressed the need for rulemaking to address the industry wide technological airplane changes that have taken place since these rules were promulgated, such as airplanes that require only two pilots on long distance flights and significant improvements in cockpit automation and noise reduction. Specifically, the petition requested that two-pilot flight crews be allowed to fly 12 hours between required rest periods.

On June 22, 1990, the Air Line Pilots Association (ALPA) petitioned the FAA to amend §§ 121.471 and 135.265 to delete the reduced rest provisions and to increase the required minimum rest for flight crewmembers who are scheduled to fly fewer than 8 hours in a 24-hour period to 10 hours with at least 8 hours in a rest facility; propose longer rest for flight crewmembers who are scheduled to fly more than 8 hours or who make more than eight landings in a 24-hour period; limit duty period time to 14 consecutive hours in a 24-hour period; mandate 1 calendar day free of duty every 7 days, even when flight crewmembers are assigned reserve and/or training duties; and restrict air carriers from interrupting a flight crewmember's rest by communicating with him or her during a required rest period.

On September 12, 1990, the Regional Airline Pilot Association (RAPA) petitioned to amend § 135.265 of the FAR to delete the reduced rest provisions for flight crewmembers who are scheduled to fly in pressurized aircraft during a 24-hour period and increase the minimum rest period to 10 hours with at least 9 hours in a rest facility. For those crewmembers scheduled to fly in unpressurized aircraft, and those who make more than seven landings in a 24-hour period, RAPA petitioned to require a 12-hour rest with at least 10 hours in a rest facility. RAPA petitioned also for an amendment to § 135.265(a) of the FAR which would reduce the total flight time allowed per year to 1,000 hours and per month to 100 hours.

On November 25, 1991, Mr. Thomas T. Gasta, a captain on turbo-jet aircraft, petitioned the FAA to amend the definitions in part 1 of the FAR to include a definition of rest that would ensure that a rest period is free from restraint and free from responsibility for work. Mr. Gasta's particular concern is to ensure that reserve time is not considered rest.

The FAA has considered each of these petitions for rulemaking in preparing this NPRM.

Commuter Rulemaking

The FAA has issued a proposed rulemaking that would affect commuter operations, in general, including applicable flight time limitations and rest requirements (Notice 95–5, 60 FR 16230; March 29, 1995).

The effect of Notice 95–5, if adopted, would be to apply the part 121 domestic flight time limitations and rest requirements to certain commuter operations within the United States and the part 121 flag flight time limitations and rest requirements to certain commuter operations to or from the United States. Thus, that proposal would eliminate the present differences between part 121 and part 135 flight time limitations and rest requirements for affected commuter operations. For all of the reasons discussed in this preamble, the FAA has decided to propose one set of duty period limitations, flight time limitations, and rest requirements for flight crewmembers engaged in air transportation (domestic, flag, supplemental, commuter and on-demand operations). Since, if adopted, this proposal would eliminate all of the present differences between parts 121 and 135 in this subject area, it overrides the related proposal and discussion in Notice 95–5. Nonetheless, in any final rule action based on this proposal, the FAA will consider, where relevant, any comments relating to flight time limitations and rest requirements submitted in response to Notice 95–5.

If the commuter rulemaking is issued as a final rule, the compliance date for the flight time limitations and rest requirements of that rule will be coordinated with the effective date of any final rule that may be issued as a result of this NPRM, so that certificate holders conducting commuter operations will have to change their procedures for scheduling duty periods, flight time, and rest only once.

The Proposal

General

This proposal is a preventive measure designed to address the potential safety problems associated with fatigue-based performance decrements. This proposal is not a response to specific accidents, but rather to extensive data which shows a relationship between fatigue and a decrement in performance. This proposed measure would place limitations on flight crewmember hours of service by requiring certain scheduling limitations and minimum rest periods.

The proposed rule would simplify existing flight crewmember flight time limitations and rest requirements by replacing existing Subparts Q, R, and S of part 121 with a new Subpart Q and revising most of subpart F of part 135. Subpart Q of part 121 would not differentiate between domestic, flag, and supplemental operations as current regulations do, and subpart F of part 135 would not differentiate between commuter and on-demand operations.

As stated previously, the proposed regulatory limitations for parts 121 and 135 are based in part on knowledge of effects of fatigue as reflected in the scientific studies done by NASA. These proposed amendments would be compatible with air carrier operations and would provide reasonable, basic limitations that are conducive to safety.

The FAA considered a number of options prior to proposing those outlined in this notice. The proposal in this notice takes a combined approach based on duty period limitations, flight time scheduling limitations, daily and weekly rest requirements, and requirements for augmented flight crews. Since the studies concerning fatigue in flight operations could not determine any fatigue based rationale for differentiating between types of operations, a single proposed set of scheduling limitations was selected for all types of operations. The proposal is designed to provide science based parameters for duty limitations and rest requirements and, at the same time, be understandable to everyone involved in flight operations. The proposal would establish a basic scheduling limitation for two pilot flight crews of 14 hours of scheduled duty, 10 hours of scheduled flight time, and 10 hours of scheduled rest. Certificate holders would have additional flexibility under the proposal to increase the length of scheduled duty periods, but only under certain conditions. The proposed scheduled maximum 14 hour duty period, 10 hours of scheduled flight time, and 10 hour rest period are consistent with the NASA ''Principles and Guidelines'' (Specific Principles, Guidelines, and Recommendations 2.2.3 and 2.1.2, hereafter referred to as ''Recommendations'') for 2-pilot crews.

Although not a proposal in this notice, the FAA also requests that commenters provide scientific data concerning the amount of flight time that two pilot flightcrews should be allowed to fly in a 14-hour duty period, particularly on long range international flights that infringe on the flight crewmember's window of circadian low (2 a.m. to 6 a.m. at the crewmember's home base time).

Applicability

Proposed §§ 121.471 and 135.261 state the applicability of these amendments. Subpart Q in part 121 would provide duty period limitations, flight time limitations, and rest requirements for flight crewmembers in domestic, flag, and supplemental operations. Subpart F in part 135 would provide duty period limitations, flight time limitations, and rest requirements for commuter and on-demand operations.

The proposed duty period limitations, flight time limitations, and rest requirements would also be applicable to duty periods and flight time performed for a certificate holder conducting part 91 operations, as specified in proposed §§ 121.1, 121.487, 135.1, and 135.275.

Terms and Definitions

Proposed §§ 121.471 and 135.261 contain a list of terms and definitions applicable to the proposed amendments.

The proposal defines ''approved sleeping quarters'' to mean an area designated for the purpose of flight crewmembers obtaining sleep as approved by the Administrator. See Advisory Circular 121–31, ''Flightcrew Sleeping Quarters and Rest Facilities'' for guidance on methods obtaining FAA approval for aircraft used in part 121 and 135 operations. Sleeping quarters that are already in use that have been determined to be adequate by the Administrator, such as bunks or other horizontal surfaces, will not need to be reapproved because of this proposed rule. The FAA recognizes that there is a difference between the term ''adequate'' sleeping quarters and ''approved'' sleeping quarters. Approved sleeping quarters could include additional possibilities that were not part of ''adequate sleeping quarters'' as previously interpreted. For example, formerly passenger seats were never considered adequate for use as sleeping quarters. Recently, however, a

new type of passenger seat has been developed that meets the guidelines in AC 121–31 and therefore could be approved for use as sleeping quarters by certificate holders operating under part 121 or part 135.

The proposed rule defines four kinds of time: assigned time, duty involving flight time (referred to as ''duty period''), reserve time, and rest (referred to as ''rest period''). Definitions of each of these times, as well as other terms, as proposed in §§ 121.471 and135.261, are discussed below.

''Assigned time'' is time when the flight crewmember is assigned by the certificate holder to activities other than flight duties. Assigned time may include activities such as deadhead transportation, training, loading baggage, taking tickets, administrative tasks and any other assignments, excluding reserve time and required rest periods. Assigned time may be performed as part of a duty period, in which case the proposed duty period limitations and rest requirements in §§ 121.473, 121.475, and 135.263 would apply. Rest requirements associated with assigned time that is not part of a duty period are found in proposed §§ 121.483(f) and 135.271(f).

The proposed rule defines ''duty period'' as the period of elapsed time between reporting for an assignment involving flight time and release from that assignment by the certificate holder. The time is calculated using either Coordinated Universal Time or the local time of the flight crewmember's home base.

The proposed rule defines two types of reserve: ''Reserve time'' and ''standby duty.'' ''Reserve time'' is defined as a period of time when a flight crewmember must be available to report upon notice for a duty period. The certificate holder must allow the flight crewmember a minimum of 1 hour or more to report. Reserve time is not considered part of a rest period and is not considered a duty period. Reserve time does not include activities defined as assigned time. Reserve time ends when the crewmember reports for a duty period, when the crewmember is notified of a future flight assignment and released from all further responsibilities until report time for that assignment, or when the flight crewmember has been relieved for a rest period.

''Standby duty'' in the proposed rule must be treated just like any other duty period associated with flight. Standby reserve duty is any period of time when a flight crewmember is required to report for a flight assignment in less than 1 hour from the time of notification. It also includes time when a flight crewmember is required to report to and remain at a specific facility (e.g., airport, crew lounge) designated by a certificate holder.

The proposed rule defines ''rest period'' as the time period free of all restraint or duty for a certificate holder and free of all responsibility for work or duty should the occasion arise. Rest periods are considered personal time. Rest periods are provided to give the flight crewmember a predetermined opportunity for rest.

For example, if a flight crewmember is scheduled for a duty period which ends on 1200 on Tuesday and requires 14 hours of rest and the flight crewmember is not scheduled for another duty period until 1200 on Thursday, then the 48 hours between duty periods is considered a rest period. The flight crewmember's minimum rest period requirements would be satisfied after 14 hours from the time the duty period ended. The air carrier may reschedule the flight crewmember, but must ensure the minimum rest period requirements are satisfied. It should be noted that the crewmember cannot be required by the air carrier to contact the air carrier, answer the phone, carry a beeper, remain at a specific location or in any other way be responsible to the air carrier during a scheduled rest period. This does not prohibit the flight crewmember from contacting the air carrier at his or her own discretion.

For clarification purposes, the proposal also defines a ''calendar day'' as the period of elapsed time, using Coordinated Universal Time or local time, that begins at midnight and ends 24 hours later at the next midnight. The definition is needed because certificate holders have been confused about the application of the term. ''Calendar day'' is defined in the proposed rule in a manner consistent with past interpretations of the rule.

Also, for clarification purposes, the proposal defines ''operational delays'' as delays that are beyond the control of the certificate holder such as those that would be caused by weather, aircraft equipment malfunctions, and air traffic control delays. It would not include late arriving passengers, late food service, late fuel trucks, or delays in loading baggage, freight, or mail, or similar events.

Flight Crewmember Duty, Flight, and Rest

Proposed §§ 121.473, 121.475, and 135.263 would establish maximum scheduled duty periods and a maximum scheduled amount of flight time for flight crewmembers within the maximum scheduled duty period. In addition, the proposal would establish minimum rest requirements for flight crewmembers, including requirements that apply when flight crews are augmented and when on board rest facilities are provided.

Current rules are primarily based on flight time. In addition, in some cases the current rules are based on actual rather than scheduled flight time. The major basis for the proposed rule is scheduled duty. The reason for going to a scheduled duty rule is that it is more consistent with current studies relating to fatigue.

For the purposes of assignments involving flight time, the duty period includes the total elapsed time between when the flight crewmember reports for a flight assignment, as required by the air carrier, and when the flight crewmember is relieved from duty by the air carrier. A typical duty period for a flight crewmember would consist of pre-flight duties and post-flight duties assigned by the air carrier. Pre-flight safety duties include aircraft emergency equipment checks, flight planning/dispatch related duties, and complying with the certificate holder's approved operations manual.

At least one industry study and information obtained from crewmembers indicates that air carriers vary in how early they require flight crewmembers to check in to begin their duty periods and pre-flight duties. This check-in or report time varies depending on the type of equipment flown and the flight destination. Carriers typically require flight crewmembers to arrive 30 minutes to 1 hour before scheduled departure. For international flights some carriers require flight crewmembers to report for duty up to 2 hours before departure.

Post-flight safety duties include the post-landing duties, safe deplaning of passengers, duties related to securing the aircraft, and administrative responsibilities such as reporting inoperative equipment to maintenance personnel. Typically, flight crewmembers are required to remain on duty after the aircraft arrives at the gate to accomplish these post-flight duties before they are relieved from duty.

A duty period may also include activities defined as ''assigned time,'' as discussed under ''Terms and Definitions,'' above.

Thus, a flight crewmember's duty period is not solely a function of whether the aircraft is airborne. Flight crewmembers perform important safety duties during boarding and deplaning. This proposal, therefore, is based on duty periods that include flight time

rather than solely on flight time. The FAA expects certificate holders to establish realistic report and release times to allow flight crewmembers sufficient time to complete these essential pre-flight and post-flight safety activities.

Proposed §§ 121.473 and 135.263 would provide for different duty period limits based on the number of pilots assigned. Each duty period would have a scheduled flight time limit and would be followed by a required rest period. NASA (Recommendation 2.3.6) recognizes that the use of additional flight crewmembers justifies longer duty periods if the flight crewmembers are provided on-duty sleep opportunities.

To allow flexibility a scheduled duty period could be extended two hours if the extension is needed because of operational delays. Rest periods may be reduced by up to one hour only if the reduction is needed because of operational delays and then only if the pilot has not exceeded the pilot's scheduled maximum duty-period limitations. If a rest period is reduced, the next rest period would have to be extended.

Table 1 provides a summary of the proposed limitations on duty periods and flight time and the proposed rest requirements for pilots.

For one- and two-pilot crews. In proposed § 135.263(b), the basic duty period scheduling limitation for a one-pilot crew would be 14 hours, including no more than 8 scheduled hours of flight time. In proposed §§ 121.473(b) and 135.263(c), the basic duty period limitations for a two-pilot crew would be 14 hours, including no more than 10 scheduled hours of flight time. The minimum rest period for one- and two-pilot crews would be 10 hours. The proposed 10-hour limit on scheduled flight time and the proposed 10-hour minimum rest are consistent with NASA Recommendations 2.3.3 and 2.1.1, respectively.

These proposed duty periods for one- and two-pilot crews could be extended to 16 hours due to operational delays. The rest periods may be reduced to 9 hours if the actual duty period is not more than 14 hours and if the reduction is needed due to operational delays. If the rest period is reduced the next rest period would have to be a minimum of 11 hours. A duty period extended due to operational delays may involve longer than scheduled flight time.

TABLE 1.—PILOT DUTY PERIOD, FLIGHT TIME AND REST REQUIREMENTS

No. of pilots	Duty period hours	Flight time hours	Minimum rest hours	Reduced rest hours [1]	Rest hours following reduced rest (compensatory)	Extended duty period hours [2]
1 (part 135)	No more than 14	No more than 8	10	9, May only be reduced if duty period has not exceeded 14.	11	Up to 16 only if due to operational delays
2	No more than 14	No more than 10	10	9, May only be reduced if duty period has not exceeded 14.	11	Up to 16 only if due to operational delays
3	No more than 16	No more than 12	14	12, May only be reduced if duty period has not exceeded 16.	16	Up to 18 only if due to operational delays
3 Each pilot must have sleep opportunity and approved sleeping quarters must be available.	More than 16, but no more than 18.	No more than 16	18	16, May only be reduced if duty period has not exceeded 18.	20	Up to 20 only if due to operational delays
4 Each pilot must have sleep opportunity ad approved sleeping quarters must be available [3].	More than 18 but no more than 24.	No more than 18	22	20, May only be reduced if duty period has not exceeded 24.	24	Up to 26 only if due to operational delays

[1] Rest periods may be reduced only when the actual duty period does not exceed the maximum scheduled duty period for that crew composition and if the pilot is provided a compensatory rest period. This compensatory rest period must be scheduled to begin no later than 24 hours after the beginning of the reduced rest period.
[2] The flights to which the pilot is assigned must at block out time be expected to reach their destination within the extended duty period.
[3] Applies only to duty periods with one or more flights that land or take off outside the 48 contiguous states and DC.

Longer Duty Period for a 3-Pilot Crew. Under proposed §§ 121.473(c) and 135.263(d), the certificate holder may schedule up to a 16-hour duty period with up to 12 hours of flight time if 3 pilots are assigned to the flight. The required rest would be 14 hours. This duty period could be extended to 18 hours due to operational delays. The required rest could be reduced to 12 hours if the actual duty period is not more than 16 hours. If the rest is reduced the next rest would have to be 16 hours.

Longer duty period for three-pilot flightcrews with approved sleeping quarters. Under proposed §§ 121.473(d) and 135.263(e), if three pilots are assigned and if approved sleeping quarters are provided, the scheduled duty period can be up to 18 hours with a scheduled flight time limit of 16 hours. The required rest would be 18 scheduled hours. Each pilot must be given an opportunity to rest in approved sleeping quarters. The duty period could be extended to 20 hours due to operational delays. The rest could be reduced to 16 hours if the actual duty period is not more than 18 hours. If the rest is reduced, the next rest would have to be 20 hours.

Longer duty period if outside the U.S., four pilots, and approved sleeping quarters. Under proposed §§ 121.473(e) and 135.263(f), if the duty period involves one or more flights outside the 48 contiguous states, if four pilots are assigned, and if approved sleeping quarters are provided, the scheduled duty period can be up to 24 hours with 18 hours of scheduled flight time. Each

pilot must be given an opportunity to rest in flight in approved sleeping quarters. The required scheduled rest following the duty period would be 22 hours. The duty period could be extended to 26 hours due to operational delays. The rest could be reduced to 20 hours if the duty period is not greater than 24 hours. If the rest is reduced, the next rest would have to be 24 hours.

Reporting for a duty period. The effect of the proposal is that if a flight crewmember reports for duty, including standby duty, as required and finds that the flight assignment was incorrectly scheduled or that the flight is delayed or canceled, a duty period nevertheless would have begun. For example, a flight crewmember may report for duty as scheduled, only to find that the assigned report time is incorrect and that duty actually begins 2 hours later. The carrier could either keep the flight crewmember on duty or release the flight crewmember for a complete rest period under the applicable section of this proposed rule. While the rule language does not spell out in detail this kind of example, or application, this is how the concept of duty period would work.

Extension of duty periods. The intent of this proposed rule is to ensure that flight crewmembers are provided adequate opportunity to rest through properly scheduled duty periods, flight times, and rest. Regular delays on certain routes or deviations from certain schedules would indicate that the schedules need to be adjusted to comply with the proposed limitations. The proposal acknowledges that certain delays, such as adverse weather, cannot be anticipated. A flight crewmember would not be considered to be scheduled for flight time or a duty period in excess of flight time or duty period limitations if the flights to which he is assigned are scheduled and normally terminate within the limitations, but due to operational delays (such as adverse weather conditions, equipment malfunctions, and air traffic control) are not at block out time expected to reach their destination within the scheduled time. Operational delays do not include late arriving passengers, late food service, late fuel trucks, delays in handling baggage, freight, or mail, or similar events. (See proposed §§ 121.473, 121.475, 121.479, 135.263, 135.267.)

The FAA is proposing limiting the extension of any scheduled duty period due to operational delays to no more than 2 hours. If at any time during a duty period it is determined that, due to operational delays, a scheduled flight will not terminate within the scheduled termination of that duty period plus 2 hours, then the flight crewmembers must be relieved of duty before initiating that flight segment. They may be scheduled for another flight as long as that flight is scheduled to terminate within the original scheduled duty period limitations plus two hours. The FAA believes that 2 hours provides flexibility in the event of operational delays and also limits the possibility of flight crewmembers being on a continuous duty period even when the duty period is extended due to circumstances beyond the control of the certificate holder. The limit on flight time hours is discussed elsewhere in this preamble.

Certificate holders would be expected to recognize when certain schedules need adjustment due to regularly experienced or seasonal delays.

Augmented Flight Crews

The longer scheduled duty periods that would be allowed under proposed § 121.473 (c), (d), and (e) and § 135.263 (c), (d), and (e) are contingent upon the assignment of additional pilots in order to maintain safety by distributing the workload and permitting more rest. This will ensure that pilots are alert and can contribute to safe operations. It is important to note that if a pilot is scheduled for a duty period longer than 14 hours, the appropriate number of additional pilots would have to be present on every flight segment within that duty period. In practical terms, the FAA expects that this would occur on larger aircraft and, generally, long-haul operations with relatively few flight segments. This result would be consistent with the intent of the proposal and consistent with current industry practice.

It should be noted, however, that if a flight crew with additional, non-required pilots is assigned a duty period of 14 hours or less, the certificate holder may follow § 121.473(b) or § 135.263(b), (i.e., provide a rest period of 10 hours).

Proposed §§ 121.473 (d) and (e) would require opportunities for flightcrew members to rest and availability of approved sleeping quarters for duty periods of more than 16 hours. The provision for additional flight crewmembers and for on board sleeping quarters takes into account the extended time flight crewmembers may be on duty to complete long range flight segments. Existing rules, (§§ 121.483, 121.485, 121.507, 121.509, 121.521, 121.523) require augmented flightcrews for longer duty periods.

Existing rules in some cases, under present § 121.523(c), allow a scheduled duty period of 30 hours; however, the FAA believes that 24 hours should be the limit of any scheduled duty period.

This proposal does not provide for substituting flight engineers for pilots. Rather the augmentation of pilots must take place regardless of the number of flight engineers assigned.

Reduction of the rest period. In order to provide additional flexibility, the FAA is proposing to allow the reduction of rest due to operational delays. The rest period may be reduced only if the maximum scheduled duty period limitation has not been exceeded or extended. Table 1 provides information on reduced rest periods followed by compensatory rest periods.

Flight Engineers

Proposed § 121.475 would provide similar requirements for flight engineers. Table 2 provides a summary of the proposed limitations on duty periods and flight time and the proposed rest requirements for pilots and flight engineers. Present part 121 rules for domestic operations do not contain separate flight time limitation requirements for flight engineers. The flag and supplemental operations rules (§§ 121.493 and 121.511) deal with flight engineers by referencing other sections within the applicable subpart. To avoid any possible confusion as to which flight time limitation rules apply to flight engineers, the FAA proposes in § 121.475 to address flight engineers separately.

TABLE 2.—FLIGHT ENGINEER DUTY PERIOD, FLIGHT TIME AND REST REQUIREMENTS

No. of flight engineers	Duty period hours	Flight time hours	Minimum rest hours	Reduced rest hours (1)	Rest hours following reduced rest (compensatory)	Extended duty period hours 2
1	No more than 14.	No more than 10.	10	9, May only be reduced if duty period has not exceeded 14.	11	Up to 16 only if due to operational delays
1	No more than 16.	No more than 12.	14	12, May only be reduced if duty period has not exceeded 16.	16	Up to 18 only if due to operational delays
2 Each flight engineer must have sleep opportunity and approved sleeping quarters must be available.	More than 16, but no more than 20.	No more than 16.	18	16, May only be reduced if duty period has not exceeded 18.	20	Up to 20 only if due to operational delays
2 Each flight engineer must have sleep opportunity and approved sleeping quarters must be available.	More than 18 but no more than 24 3.	No more than 18.	22	20, May only be reduced if duty period has not exceeded 24.	24	Up to 26 only if due to operational delays

1 Rest periods may be reduced only when the actual duty period does not exceed the maximum scheduled duty period for that crew composition and if the flight engineer is provided a compensatory rest period. This compensatory rest period must be scheduled to begin no later than 24 hours after the beginning of the reduced rest period.

2 The flights to which the flight engineer is assigned must at block out time be expected to reach their destination within the extended duty period.

3 Applies only to duty periods with one or more flights that land or take off outside the 48 contiguous States and DC.

Reserve and Standby Assignments

Current regulations do not specifically cover the issue of reserve time and standby duty. Within the air transportation industry two types of generic reserve assignments have developed. One type, usually referred to as ''standby reserve,'' is essentially the same as a duty period, and as discussed below would be treated as duty for duty period limitation and rest requirement purposes. The other type, here called ''reserve time'' is not considered part of a rest period and is not considered part of a duty period and therefore would be dealt with separately under this proposal. Proposed §§ 121.477 and 135.265 provide reserve assignment requirements.

Under the proposal a standby duty period must be scheduled in accordance with proposed §§ 121.473, 121.475, or 135.263. A standby duty ends when the duty period associated with a subsequent flight assignment ends or the flight crewmember is relieved from standby duty for a scheduled rest period.

Standby duty periods are assigned because the air carrier believes that some time within that period the flight crewmember will be needed for a flight assignment and must report for flight assignment within less than 1 hour of being notified. Standby duty also includes time when a flight crewmember is required to report to and remain at a specific facility (e.g., airport, crew lounge) designated by a certificate holder. Usually flight crewmembers are assigned to standby duty at the airport. In addition, since the industry has indicated that they treat standby as duty, this proposed definition should not impose any additional burdens on certificate holders. It is because of the momentary anticipation of a flight assignment, which prevents a pilot from planning for adequate rest, that standby assignments are treated as duty periods.

The proposed standby duty period would be treated as a duty period that is associated with flight, regardless of whether the flight crewmember is ever assigned to flight time during that standby duty period or not. Standby duty periods would be scheduled in accordance with proposed duty period limitations, flight time limitations, and rest requirements. A standby duty period commences when the flight crewmember is placed on standby duty and ends when the flight crewmember is relieved of duty, whether that duty is standby or flight. Following standby duty, the flight crewmember must be scheduled for and must receive the same amount of rest as he or she would receive if he or she accumulated flight time, even if there is no actual flight time.

Reserve time is a period of time when a flight crewmember is not on duty but nonetheless must be available to report upon notice for a duty period. During reserve time a flight crewmember typically goes about his or her off duty routine, obtaining rest as needed during each 24 hour period. Reserve time is not considered part of a rest period, is not considered part of a duty period, and is not considered assigned time. Reserve time ends when the crewmember is released, the crewmember is notified of a future duty period assignment and released from all further responsibility until the report time for that assignment, or the crewmember reports for a duty period. The certificate holder must allow the flight crewmember a minimum of 1 hour to report.

Often flight crewmembers are on reserve for days at a time and are given 10 or more hours notification prior to a duty period assignment. However, there are times when a flight crewmember is given fewer than 10 hours notification and may not be completely rested. Some flight crewmembers arise early in the morning and may have been awake for many hours at the time they receive notification of an evening flight. These flight crewmembers may not have an opportunity for a complete rest period before the flight assignment. The same may be true of a flight crewmember who does not awaken until the middle of the afternoon and receives fewer than 10 hours notification of a duty period which starts after midnight.

Since it is difficult to predict when an individual flight crewmember sleeps and when he or she awakens, no attempt has been made in the proposal to correlate the amount of notice a flight crewmember should receive with the time of day. Rather, the emphasis is placed on the flight crewmember's receiving enough notice to provide an

opportunity for rest before the duty period assignment. If a flight crewmember receives at least 10 hours notice there would be enough time for the flight crewmember to be fully rested before reporting for a duty period of 14 hours. However, under proposed §§ 121.477(b) and 135.265(b), when flight crewmembers receive fewer than 10 hours notice for a duty period assignment, there is a reduction in the length of that duty period. While it could be possible for a flight crewmember to receive 10 hours rest before being placed on reserve and then given 10 hours of notification in order to serve a 14-hour duty period, the FAA believes that efficient crew scheduling will minimize the possibility of this happening. Table 3 shows for each proposed amount of notification time the proposed corresponding duty period limitation.

Proposed §§ 121.477(b)(2) and 135.265(b)(2) would provide another option under which a flight crewmember could be given a minimum 6-hour period of protected time for each 24 hours of reserve time. During this 6-hour period of protected time the certificate holder would not be able to contact the flight crewmember or assign the flight crewmember to any duty. The 6-hour period must be assigned before the flight crewmember begins the reserve time assignment and must occur at the same time during each 24-hour period during a reserve time assignment. Any duty period assignment must be scheduled to be completed within the 18-hour reserve time, exclusive of the 6 hours of protected time. The length of the duty period and the subsequent rest period must be in accordance with §§ 121.473, 121.475, or 135.263. The FAA believes that this option would allow flexibility for the certificate holder while giving the flight crewmember sufficient certainty to plan for and obtain adequate rest. While the 6 hours of protected time must be the same 6 hours for any reserve assignment, it could be a different 6 hours for subsequent reserve assignments (e.g., a subsequent reserve assignment following duty or assigned time).

Under either reserve time assignment option, the flight crewmember must be notified of which option has been selected before the beginning of the reserve time assignment.

Although NASA recommends a predictable and protected 8-hour sleep opportunity (2.6.2), the FAA believes that the above described options are practical and in most instances will provide at least an 8-hour rest opportunity. Either the flight crewmember is provided an opportunity for a full 10-hour rest period or, in the case of a short notice, the flight crewmember's duty period is limited, or the flight crewmember is able to plan each day with the certain knowledge there will be a minimum 6-hour period for undisturbed rest. Thus, these options would protect against excess fatigue without eliminating the objective of the reserve system and without placing a significant economic burden on the industry.

There have been a number of complaints stating that in some cases pilots were unable to obtain enough rest because they were given a reserve assignment immediately following a duty period and then were called for duty before they had received an adequate rest. While under these proposed rules such a practice would be a violation because of the requirement for a minimum rest period between duty periods, the FAA has included in proposed §§ 121.477(b) and 135.265(b) a requirement that a flight crewmember must be given a 10-hour rest period before beginning a reserve time assignment. Sections 121.483(c) and 135.271(c) state that required rest periods can occur concurrently so this proposed requirement may not require an additional rest period.

The FAA believes that both of these methods of handling reserve time assignments would provide more flexibility, would be less costly for certificate holders, and would be more likely to ensure adequate rest than the current rules. Under the lookback provision in the current rules, for instance, a flight crewmember on reserve could not take a flight assignment unless he or she had a scheduled rest period in the previous 24 hours. There have been situations in which certificate holders have professed experiencing difficulties in implementing rest requirements for flight crewmembers on reserve. Recognizing this, the FAA has developed this proposal. However, if this proposal on reserve time assignments is not issued as a final rule, the FAA intends to ensure that the current rule, as interpreted, is being correctly implemented.

Other Proposals on Reserve Time Presented During ARAC Discussions

Southwest Airlines proposed a system under which the total of reserve time and ''time engaged in scheduled air transportation'' could not exceed 18 hours (16 hours if this period included any time during the hours between 0300 and 0459). In addition, Southwest proposed that reserve time between 0001 and 1000 not be included if the air carrier did not contact the crewmember during that period. One option presented by the Air Line Pilots Association is similar to Southwest's proposal. ALPA would not allow reserve time and duty time to exceed 16 hours. A 14-hour maximum would apply when the duty time is not contained with the period between 0500 and 0259.

The FAA has several concerns about this approach. First, we believe it will be difficult to understand and to apply consistently. More importantly, although it appears to provide for some reductions in duty time, depending on the time of day a crewmember is notified of a flight assignment, it does not expressly provide for any dedicated rest opportunity. Moreover, it is not clear exactly what would be encompassed by Southwest's term ''time engaged in scheduled air transportation.'' The FAA requests that commenters supporting this approach provide additional details about this alternative and operational scenarios on how it would be applied. Commenters should provide information on how this alternative does or does not provide the flexibility of the options proposed in this NPRM, and how this alternative provides an equivalent level of safety to the options proposed here.

The International Brotherhood of Teamsters proposed two alternatives for reserve duty. The first alternative proposes that a crewmember could be assigned a reserve period of 24 consecutive hours if the crewmember is given 11 hours or more advance notification for a flight assignment. The second alternative would allow a crewmember to be assigned a reserve period of up to 12 consecutive hours if the crewmember is given less than 11 hours of advance notification. In this case, the total flight time and duty time could not exceed 17 hours. The FAA believes that both of these options unnecessarily limit the scheduling flexibility of the operator and that both would greatly increase operators' costs while providing no increase in safety when compared with the reserve options proposed in this NPRM.

The Air Transport Association would give the operator five alternatives for dealing with reserve time. (1) The carrier could give the employee at least eight consecutive hours of rest during any 24 hour period on reserve; (2) The carrier could give the crewember at least 10 hours of advance notice of any assignment, at which point the crewmember would be released on rest until the time to report; (3) The carrier could not assign the crewmember on

reserve to flights between midnight and 5 a.m.; (4) The carrier could assign the crewmember on reserve to no more than two flight segments; or (5) The carrier could establish alternative policies and procedures to ensure that a crewmember will not be assigned to a flight unless that crewmember is ''adequately rested for that flight assignment.''

The first three ATA proposals are generally similar to this NPRM. The NPRM contains the option of blocking out a protected period of at least six hours during which the crewmember could not be disturbed by the employer. This is less restrictive than ATA's proposal (1), although it involves a slightly longer period than would be provided by proposal (3). Like ATA's proposal (2), the NPRM would provide for advance notice of assgnments. However, the NPRM is not limited to a single cut-off of 10 hours' notice. Carriers would be permitted to assign crewmembers to duty periods that vary with the amount of advance notice, down to as little as 4 hours' notice. Since ATA's proposal number (4) does not address rest at all, it is not included in the NPRM. Proposal number (5) sets no minimum standards for rest, and it, too, is therefore not part of this NPRM.

The Air Line Pilots Association, in addition to the alternative described above, offered a proposal somewhat similar to that of ATA. ALPA's proposal appears intended to provide more stability for pilot rest periods; it would not permit carriers to move the eight hour rest period more than three hours in any 24-hour period. Similarly, ALPA proposed a six-hour protected period, comparable to the five-hour period proposed by ATA. Our comments on ATA's proposal apply to ALPA's as well, i.e., we believe we have accomodated much of their objectives.

Another proposal advanced during the ARAC discussions came from a labor/pilot group consisting mainly of Part 135 pilots. This proposal would limit any combination of reserve time and duty periods to no more than 18 hours or any duty assignment to no more than 14 hours. After being on reserve for 18 hours, a crewmember would have to receive a 10-hour rest period before accepting another reserve assignment. This proposal is not included in the NPRM because it unnecessarily limits the air carrier's reserve scheduling flexibility and provides no increase in safety when compared with the options proposed in the NPRM.

TABLE 3.—ADVANCE NOTIFICATION

No. of hours notification prior to report time	10 hours or more	8 or more hours but less than 10	6 or more hours but less than 8	4 or more hours but less than 6	Less than 4 hours
Maximum scheduled duty period.	Maximum scheduled duty period [1].	No more than 12 hours.	No more than 10 hours.	No more than 8 hours	No more than 6 hours.

[1] Maximum scheduled duty period could be 14, 16, 18, or 24 hours.

Additional Duty Period Limitations and Reduced Rest

Current §§ 121.471(g) and 135.263(d) state that a flight crewmember is not considered to be scheduled for flight time in excess of the flight time limitations if the flights to which he or she is assigned normally terminate within the limitations, but due to circumstances beyond the control of the certificate holder (such as adverse weather conditions) are not at block out time expected to reach their destination within the scheduled time. These requirements do not specify a limit to the flight time extensions under these circumstances.

In theory, under the current rule language, duty periods could be extended for unlimited periods of time as long as the extension was due to operational causes beyond the control of the air carrier such as weather, mechanical problems, and Air Traffic Control situations. This could result in flight crewmembers who, after the first flight of a flight schedule in a duty period, would be as much as 6 hours late, but would still continue with the flight schedule. The NASA Scientific Working Group determined that extended duty periods with no limit on the amount of time which the duty period could be extended was one of the major fatigue related problems with current flight crewmember assignments (Recommendations 1.4, 2.1.2, and 2.3.3). Therefore, the FAA has proposed to place a limit on the amount of time that a duty period may be extended regardless of the nature of the delay.

Proposed §§ 121.473, 121.475, and 135.263 would allow certificate holders an extension of a duty period of not more than 2 hours beyond the maximum scheduled duty period if the extension is due to operational delays not under the control of the certificate holder. The proposed requirements would also allow the reduction of the required rest if the flight crewmember has not exceeded the required duty period (without the extension), if the flight crewmember is provided with a longer subsequent rest period as specified, and if the reduction in rest is due to operational delays. Reduced rest periods may not be scheduled in advance.

Proposed §§ 121.479 (a) and (b) and 135.267 (a) and (b) would state that a flight crewmember is not considered to be scheduled for a duty period or flight time in excess of the duty period or flight time limitations if the duty period or flight times to which the flight crewmember is assigned are scheduled and normally terminate within the limitations, but due to operational delays are not at block out time expected to reach their destination within the scheduled duty period or flight time.

In addition, proposed §§ 121.479(a) and 135.267(a) state that a flight crewmember may not serve as a crewmember in an aircraft if, at block out time for the purpose of flight, that flight crewmember's actual elapsed duty time plus duty time scheduled for the next flight will cause the flight crewmember to exceed the applicable duty period limitations by more than two hours. However, there is no limit on actual flight time accrued during a duty period, if the additional flight time is due to operational delays, but in any event the duty time limit may not be extended by more than 2 hours.

The proposal would allow a certificate holder the flexibility to schedule the same crew on a flight even when that flight is going to be late; however, it would not allow flight crewmembers to be scheduled indefinitely even when the circumstances which caused them to be late are beyond the control of the certificate holder. During a scheduled flight assignment, if the combination of scheduled times for the remaining flights would mean that the maximum scheduled duty period would be exceeded by more than two hours, the flight crewmember would have to be

rescheduled so that the remaining duty period to which he or she is assigned will not exceed the maximum scheduled duty period by more than two hours. This can be done by assigning a flight crewmember to a new flight schedule or by reassigning the original scheduled flights so the flight crewmember is relieved of duty before commencing the flight which would extend beyond the maximum scheduled duty period plus two hours.

Weekly and Monthly Flight Time Limitations

Proposed §§ 121.481 and 135.269 would provide limits on the amount of actual flight time which a flight crewmember can accrue in a calendar month and in any 7 consecutive calendar days. These proposed rules would replace current §§ 121.471(a), 121.481 (d), (e), and (f), 121.503 (d) and (e), 135.265(a) and 135.267(a). Although NASA states that there is insufficient scientific information to provide guidance in this area, these limits are proposed to counter any harmful effects of any possible cumulative fatigue.

In addition to the scheduled flight time limits which are integrated into the scheduled duty periods, weekly and monthly flight time limits are proposed as follows:

- Proposed §§ 121.481(a) and 135.269(a) would limit a flight crewmember to 32 flight hours in any 7 consecutive calendar days.
- Proposed §§ 121.481(b) and 135.269(b) would limit a flight crewmember to 100 flight hours in any calendar month.

In practice, this means that, before beginning to fly on any particular day, a flight crewmember's actual accrued flight time for the previous six days must be added to the flight time scheduled to be flown that day. If the result is fewer than 32 hours, the flight crewmember may begin and complete the day's scheduled flying even if delays (which are beyond the carrier's control) encountered during the day eventually cause the total time to exceed 32 hours. The same principle applies for the calendar month flight time limitation.

Current regulations place varying limits on the amount of time that a flight crewmember can serve. The variance is based on the type of operation. Flight crewmembers given flight assignments under part 121 for domestic operations (§ 121.471(a)) are limited to 30 flight hours in any 7 consecutive days. The 7 consecutive day limit for flag operations is 32 flight hours (§ 121.481(d)) and there is no 7 consecutive day limit for supplemental operations. Under § 135.265(a) in scheduled operations the amount of flight time which may be accrued in any 7 consecutive days is 34 hours and there is no 7 consecutive day limit for unscheduled operations. Sections 121.471(a) and 121.481(e) restrict flight crewmembers serving in domestic or flag operations conducted under part 121 to 100 hours in any calendar month and § 121.503(d) restricts flight crewmembers serving in supplemental operations to 100 flight hours in any 30 consecutive days. Section 121.521(c) allows certain flight crewmembers to accrue 120 hours in any 30 consecutive days. Section 135.265 allows flight crewmembers serving in part 135 scheduled operations to accumulate 120 flight hours in any calendar month.

In addition, § 121.471(a) restricts flight crewmembers engaged in domestic operations conducted under part 121 to 1000 hours in any calendar year. Section 135.265 allows flight crewmembers serving in part 135 scheduled operations to serve as crewmembers during flight for 1200 hours in any calendar year, while § 135.267 allows 1,400 flight hours in a calendar year for unscheduled operations. Sections 121.503, 121.521, 135.267, and 135.269 also provide other calendar quarter and 90 consecutive day limitations.

The proposed rule would establish a common 32 hour limitation in any 7 consecutive days, a 100 hour limitation in any calendar month, and would eliminate quarterly, 90 consecutive day and calendar year limitations.

The proposed rule does not provide a yearly flight time limitation because the monthly limit would effectively restrict flight time to 1200 hours in a calendar year. Although the NASA document recommends the annual flight time limitations be decreased a percentage of the monthly requirement, it also states that there is not enough scientific data to provide specific guidance in this area. The FAA believes that this proposal contains sufficient additional rest provisions (i.e. 36 hours in 7 days, 10 hour rest periods, and 48 hours for crossing multiple time zones). Because of the increase in rest requirements, the FAA believes that safety would not be adversely affected because of a lack of a yearly flight time limit which is less than the sum of all the monthly flight time limits. At the same time the lack of annual flight time limits will provide flexibility and the opportunity for increased productivity. In view of the fact that there is no scientific data to suggest a discrete yearly limit and the fact that the requirement for rest has been increased, the FAA believes the proposed rule will provide the appropriate level of safety.

The FAA believes that there is no longer justification for the different weekly, monthly, and annual flight time limitations for different types of operations and that proposing a single limitation standard provides adequate safeguard against the effects of cumulative fatigue, eliminates rules that do not have an adequate scientific rationale, and also simplifies the overall limitations. The FAA asks for comments from the public about the maximum number of hours a flight crewmember should be allowed to fly under this chapter. Further, the FAA asks for comments regarding the impact of this rule on seasonal flying.

Additional Rest Requirements

The proposed rule would continue some of the rest requirements which are contained in the existing regulations. Proposed §§ 121.483(a) and 135.271(a) would state that no certificate holder may assign any flight crewmember and no flight crewmember may accept any duty period or flight time with the certificate holder unless the flight crewmember has had at least the minimum rest period required. Proposed §§ 121.483(b) and 135.271(b) would state that no duty could be assigned during any required rest period. This proposed requirement would preclude any carrier from assigning any type of duty, including nonflight assignments (such as training, assigned time, reserve time, standby duty, or ground duties), to any flightcrew member during a required rest period. These proposed requirements are the same as those in current § 121.471(c)(4) and (e) and § 135.263(a) and (b).

Proposed §§ 121.483(c) and 135.271(c) would be a new requirement to clarify that rest periods required under the subpart can occur concurrently with any other required rest period. For instance a required 10-hour rest could occur concurrently with the 36-hour rest required under proposed §§ 121.483(e) and 135.271(e). Further, under the proposal, if a flight crewmember is not serving in assigned time, reserve time, standby duty or a duty period, that crewmember would be in a rest period.

Proposed §§ 121.483(d) and 135.271(d) would be a new requirement stating that a rest period required in §§ 121.473, 121.475, or 135.263 may be reduced only because of operational delays. The reductions may not be scheduled in advance.

Current §§ 121.471 and 135.265 require each domestic air carrier operating under part 121 and each

certificate holder in scheduled operations under part 135 to relieve each flight crewmember engaged in scheduled air transportation from all further duty for at least 24 consecutive hours during any 7 consecutive days. Proposed §§ 121.483(e) and 135.271(e) would require that each flight crewmember who is assigned to one or more duty periods, standby duty, or reserve time shall be provided a rest period of at least 36 consecutive hours during any 7 consecutive calendar days. The proposed 36-hour rest could be taken during a layover. Thirty-six hours of rest is the amount of time recommended by the NASA Scientific Working Group (2.1.3); further the FAA believes that flight crewmembers should be provided at least 36 consecutive hours rest during any 7 consecutive calendar days any time they are assigned to reserve regardless of the nature of the reserve. This allows flight crewmembers the time to plan for and obtain a thorough rest so that they are not fatigued if they receive a duty period assignment.

The Air Transport Association proposed, during the ARAC discussions, that this provision be applied over a period of 168 consecutive hours rather than 7 consecutive calendar days. We believe that it would be more difficult for crewmembers and carriers to maintain records in this fashion. However, commenters are invited to address this issue more fully in their comments. If adequate justification is shown for using 168 hours rather than 7 calendar days, the final rule may incorporate that proposal. Commenters should note that any change in this provision would likely require corresponding changes in the flight time limitations proposed in §§ 121.481 and 135.269.

Proposed §§ 121.483(f) and 135.271(f) would require certificate holders to provide each flight crewmember assigned to assigned time, as defined in proposed §§ 121.471 and 135.261, a minimum rest period of 10 hours before the commencement of a subsequent duty period. This rest period may occur concurrently with another required rest period. This proposed rest requirement is needed to address situations in which a flight crewmember is assigned to one of a group of activities that are neither rest nor part of an assignment involving flight time, but which could contribute to crewmember fatigue (e.g. training, deadhead transportation, etc.). The intent of this proposed rule is for flight crewmembers to have the opportunity to obtain sufficient rest in order to be able to perform assigned flight duties, regardless of whether the fatigue was caused by flight duties or by other activities for the certificate holder. However, certificate holders have the option of counting assigned time as part of a duty period and scheduling the appropriate rest period for that duty period or of counting assigned time exclusively as assigned time and ensuring that the flight crewmember is given 10 hours of rest before commencing a duty period. The 10 hours is consistent with the other required rest periods.

For example, a flight crewmember could be deadheaded to a new location at the beginning of a duty period and then begin a schedule flight assignment. In this case the deadhead transportation would be counted as part of the duty period. Alternatively, after completing a duty period, a flight crewmember could be deadheaded back to his or her home base before beginning the required rest period. In this case the deadhead transportation could be considered assigned time. Performing assigned time after the completion of a duty period would be permitted as long as the flight crewmember received the minimum rest required for that duty period or 10 hours, whichever is greater, before the next duty period.

Proposed §§ 121.483(g) and 135.271(g) would establish a requirement for a certificate holder to provide each flight crewmember at least 48 consecutive hours of rest upon return to the flight crewmember's home base after completion of one or more duty periods that terminate in a time zone or zones that differs from the time zone of the flight crewmember's home base by 6 or more hours and the flight crewmember remains in that time zone or zones for at least 48 consecutive hours. The accumulation of the 48 hours may be in one or more time zones but each of these time zones must be 6 or more hours from the flight crewmember's home base. The flight crewmember must receive this rest before beginning a subsequent duty period. The home base is determined by the certificate holder and is where that crewmember is based and receives schedules. The present rules make no provisions for rest periods based on time zones. The NASA Scientific Working Group data and subjective comments from crewmembers indicate there is a need to recognize the additional fatigue effects of crossing time zones (2.1.4). The literature indicates that some flight crewmembers experience, at times, additional fatigue from crossing as few as two time zones; while others do not report the same fatigue until they have crossed many more time zones. The FAA recognizes the complicated problem of addressing each individual flight crewmembers circadian rhythm; nevertheless by establishing a minimum rest requirement at the home base for flight crewmembers who cross 6 or more time zones the FAA believes these flight crewmembers will be given an opportunity to once again establish what is for that flight crewmember the normal sleep awake cycle. The proposed rest requirement is a minimum requirement and is provided to give the flight crewmember an opportunity for rest. The flight crewmember should use this time to obtain the needed rest so that he or she will be rested when called upon for the next duty period. The FAA will issue advisory material based on scientific studies to assist air carriers and flight crewmembers in dealing with fatigue related issues.

Deadhead Transportation

Current §§ 121.471(f) and 135.263(c) specify that time spent in transportation, not local in character, that a certificate holder requires of a flight crewmember and provides to transport the crewmember to an airport to which he or she is to serve on a flight as a crewmember, or from an airport at which the flight crewmember was relieved from duty to return to his or her home base is not considered part of a rest period. This type of transportation is commonly called ''deadhead'' transportation. Proposed §§ 121.485 and 135.273 would be the same as the current requirement except that in addition it would specify that for duty period limitation purposes the certificate holder and flight crewmember must consider deadhead time as assigned time or as part of a duty period associated with flight.

Other Flying for a Certificate Holder

Proposed §§ 121.487 and 135.275 establish duty period and flight time limitations for other flying for a certificate holder, including flying under part 91. Flight crewmembers and certificate holders must ensure that any duty periods and flight assignments assigned by the certificate holder are scheduled, assigned, and performed under the applicable requirements of parts 121 and 135 (14 CFR 121.473, 121.477, 121.479,121.481, 121.483, and 14 CFR 135.263, 135.265, 135.267, 135.269, and 135.271) even if the flight is not conducted under part 121 or 135. In addition, any flight crewmember who is employed by two or more air carriers or commercial operators must ensure that any duty periods and flight assignments are scheduled, assigned and performed under the applicable rules of parts 121 and 135. In other

words, when certificate holders assign flight crewmembers to conduct ferry flights, or other flights under part 91, this flight assignment is treated just as any other duty period involving flight.

This proposal is based on NTSB recommendation A–94–105, which was issued as a result of the Guantanamo Bay accident, discussed above under ''NTSB Recommendations'' and the FAA's belief that other flying for a certificate holder such as training flights for a 121 or 135 certificate holder may cause both short term and cumulative fatigue which may adversely effect that flight crewmember's flight duties performed under parts 121 and/or 135. This would include flying for more than one part 121 and/or 135 certificate holder.

Proposed Effective Date for Final Rule

The FAA is proposing an effective date of 60 days after these proposals are published as a final rule. By that date all certificate holders operating under part 121 or part 135 would have to begin scheduling all flight time duty periods and rest periods in accordance with the new requirements. However, as mentioned above under ''Commuter Rulemaking,'' the FAA intends to coordinate the effective date of this rulemaking with the compliance date of the commuter rulemaking, so that certificate holders conducting commuter operations will have to change their procedures for scheduling flight time, duty periods, and rest periods only once.

The FAA requests comments on the length of time needed between the issuance of the final rule and its effective date.

Regulatory Impact Analysis 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 interpretation that the benefits of the intended regulation justify its costs. Second, the Regulatory Flexibility Act of 1980 requires agencies to analyze the economic effect of regulatory changes on small entities. Third, the Office of Management and Budget directs agencies to assess the effect of regulatory changes on international trade. In conducting these analyses, the FAA has determined that this Notice of Proposed Rulemaking (NPRM) would probably generate benefits and cost savings that are greater than its costs and is ''a significant regulatory action'' as defined in the Executive Order. The FAA also estimates that the NPRM would have a significant economic impact on a substantial number of small entities. No part of the proposed rule is expected to constitute a barrier to international trade. These analyses, available in the docket, are summarized below.

This proposal would amend existing regulations to establish one set of duty period limitations, flight time limitations, and rest requirements for flight crewmembers engaged in air transportation. Currently, these limitations and requirements differ across the various sectors of the industry (e.g., part 121, part 135). In addition, the FAA is required to consider alternatives to the proposed rule when the following circumstances are met:

—The regulatory action is designated as a ''significant regulatory action'' (as defined by Executive Order 12866), and

—The regulatory action is designated as having a significant impact on a substantial number of small businesses, nonprofit groups, or airports operated by small governmental jurisdictions.

The FAA has determined that the potential economic impacts of the proposed rule are sufficiently large that both of these criteria are satisfied. Accordingly, two alternatives will be discussed in the section entitled ''Analysis of Alternatives'' below.

Cost-Benefit Analysis

Proposal

As mentioned above, the main thrust of the proposal is to amend existing regulations to establish one set of duty period limitations, flight time limitations, and rest requirements for flight crewmembers engaged in air transportation. The proposal would establish a basic scheduling limitation for 2 pilot crews of 14 hours of scheduled duty and 10 hours of scheduled rest. The maximum length of duty periods permitted would increase as the number of pilots increases. The proposal would also revise limits on the amount of flight time which a flight crewmember can accrue in a duty period, in any 7 consecutive calendar days, and in a calendar month. The maximum duty period limits would be decreased in most cases for part 121 and part 135 operators, and the required length of rest periods would be increased. These changes are expected to impose unquantifiable costs on unscheduled part 135 operators.

Although the maximum length of duty periods would generally decrease under the proposal, the maximum allowable flight times for pilots operating 2-pilot aircraft (no flight engineer) would increase from 8 to 10 hours. This provision should create the potential for substantial cost savings for both part 121 and 135 operators.

The FAA determined that 2 provisions of the proposed rule could impose substantial quantifiable costs. Another provision could impose substantial costs on the commuter operators, but could not be quantified. The potential economic impacts on the air taxi operators of these provisions could not be quantified at this time. The most costly provision applies to the scheduling and duty assignments of reserve pilots. A reserve pilot must be available to report upon notice for a duty period with one hour or longer of notice. The proposal would require that the maximum length of a duty period be reduced in those cases when less than 10 hours of notice for a duty period assignment is received. The proposal would also provide another option under which a flight crewmember could be given a regularly scheduled minimum 6 hour protected time within each 24 hours of reserve time.

The other provision which would impose substantial quantifiable costs would require that ''ferry'' flight time used to reposition aircraft be counted the same as time accrued in part 121/135 revenue operations for the purpose of determining compliance with FAA limitations on duty periods and flight time limitations. Another provision that would increase the minimum required rest periods between flight duty periods might impose substantial costs on the commuter operators, but they cannot be quantified without additional data. The provisions pertaining to reserve pilot scheduling might also impose substantial costs on air taxi operators, but these costs could not be quantified.

Cost Analysis

As described in more detail in the Regulatory Impact Analysis, the FAA has relied heavily on surveys of a limited number of operators to develop its analysis. The FAA is interested in comments on the representativeness of the data used for extrapolation to the entire affected population. Where commenters believe these survey data do not reflect the circumstances/responses for operators generally, the FAA welcomes any and all relevant data supporting such claims.

The FAA also seeks comments on its methodology, assumptions, and/or data used to estimate the following:

(1) The efficiency gains from the increase in allowable flight time from 8 to 10 hours.

(2) The likely operator response to the reserve pilot requirements (i.e., the likelihood of operators choosing between canceling flights and adding pilots),

(3) The cost to operators and passengers of flight cancellations and of adding pilots, and

(4) The potential safety benefits from reduced fatigue.

Part 121 Air Carriers

The FAA estimated the economic impact of each provision of this proposed rule. Some of the provisions by themselves were estimated to entail substantial compliance costs, whereas others have the potential for affording substantial cost savings to operators.

The proposed rule is estimated to impose discounted costs of $842.03 million on part 121 operators over the next 15 years, but these costs are expected to be offset by the cost savings. The total potential discounted cost savings from increased productivity were estimated at $1.72 billion over this period. The net discounted compliance cost savings of the proposed rule would therefore amount to $877.90 million over this period. The cost savings would result if operators take advantage of opportunities afforded by the proposal to more efficiently schedule their existing workforce, which could enable them to reduce their plans for hiring new pilots by 3,348 pilots over the next 15 years.

Costs

The FAA determined that the primary cost of implementing the reserve pilot scheduling and duty time regulations would consist of the cost of reassigning some scheduled airline pilots or hiring new pilots to assure adequate coverage of flights that would otherwise have to be canceled or delayed. Other provisions of the proposal, however, may allow operators to use on-line pilots more intensively; therefore, the need for additional reserve pilots is likely to be satisfied by reassigning on-line pilots that would become available because of enhanced productivity. In addition, a relatively small number of flights might be canceled.

These cost estimates were based on the least cost combination of reserve pilot scheduling options for each operator based on the nature of its flight operations, such as the amount of advance notification provided reserve pilots and duty period durations. The FAA estimates that the part 121 scheduled operators would have to hire an additional 500 pilots, representing a 1% increase in their current pilot staffing level, thereby increasing their recurring annual salary costs by $41.29 million. In addition, the FAA estimated that the flight cancellations resulting from decreased flexibility in scheduling reserve pilots would impose societal costs (the value of delayed passenger time) amounting to $8.12 million per year. The total potential cost of the reserve pilot regulation was therefore estimated at $49.40 million annually after the first year the proposed rule were in effect for part 121 scheduled carriers. In the first year, this annual cost would be increased by $9.26 million to $58.66 million to capture initial training costs.

The FAA determined that the reserve pilot regulation would also impose substantial costs on part 121 unscheduled or ''supplemental'' air carriers. The economic impact on these air carriers is expected to be greater than for the scheduled part 121 carriers because of the less predictable nature of their operations, which doesn't allow them to give as much advance notification of flight assignments to their reserve pilots. The FAA estimated that approximately 330 additional pilots, representing about 4% of their present pilot staffing level, would need to be hired by these air carriers at a recurring annual cost of $24.02 million.

The FAA determined that the proposed restriction on ''ferry'' flights would have very little, if any, impact on scheduled part 121 operators. These proposed restrictions, however, could have a substantial economic impact on part 121 unscheduled operators, which are more likely than the scheduled operators to conduct these operations because of the greater distance between crew bases and destination points of their revenue flights. The FAA estimated that these operators would have to hire an additional 235 pilots (3% increase in current pilot staff) to avoid major disruptions in their flight schedules, entailing recurring annual costs amounting to $17.04 million.

The total recurring annual potential compliance costs (reserve pilot and ''ferry flight'' restrictions) for unscheduled or supplemental operators were therefore estimated at $41.06 million. The first year initial training costs for these unscheduled air carriers were estimated to add $10.10 million to annual costs in the first year.

In summary, the total first year annual compliance costs for all part 121 air carriers of the reserve pilot regulation and restriction on ferry flights were estimated at $110.28 million. Societal costs resulting from canceled flights were estimated to comprise $8.12 million of this total. These costs were estimated based on the time that passengers on canceled flight would be delayed, which the analysis assumes would be two hours. Total discounted costs were estimated at $842.46 million over the period from 1996–2010.

Cost Savings

The FAA expects that these costs would be more than offset by cost savings afforded the scheduled part 121 operators by the opportunity to more effectively utilize their flight crewmembers. The potential cost savings for the unscheduled part 121 air carriers, however, are not expected to be of a sufficient magnitude to outweigh the proportionally higher potential costs that were estimated for this sector of the industry. Under the proposal, both scheduled and unscheduled air carriers could increase the maximum permitted flight times within individual duty periods from 8 to 10 hours for 2-pilot crews.

The potential productivity gains from this provision should enable scheduled part 121 air carriers to maintain their current schedules with fewer pilots and transfer some pilots from active or nonreserve to reserve status. The decrease in the anticipated need for pilots among the scheduled air carriers is expected to substantially outweigh any potential increased need for pilots among the unscheduled air carriers. In other words, the overall need for pilots in future years should decrease because the positive economic effects resulting from increased productivity are expected to outweigh the negative economic impacts of the need for more reserve pilots.

Data collected by the FAA indicate that domestic air carriers do not fly their crewmembers close to the maximum permitted current limit of 100 hours per month. The average monthly flying time for the scheduled air carriers is 60 hours. The part 121 unscheduled operators tended to fly their crewmembers from 40–60 hours per month. In fact, most unionized air carriers are prevented by labor contracts from flying their crewmembers more than 75–80 hours per month.

If this proposed rule is adopted as an amendment, most air carriers would likely attempt to take advantage of the opportunity to utilize their crewmembers more effectively. The increase from 8 to 10 hours in the maximum permitted flight hours 2-pilot crews could fly within individual duty periods should provide an incentive for air carriers to increase the daily flight hours and hence monthly flight hours of their crews and decrease the amount of duty time which is not flight time. The FAA determined that air carriers would

most likely be able to increase utilization of their pilots by 4% on average (which would amount to an additional 2 flight hours per month per pilot in most cases).

Air carriers would realize these productivity gains only to the extent that their pilot salary costs would not increase. Such an assumption appears warranted for the following reasons. The FAA estimated that about 10% of the pilot salary cost of the major air carriers is for nonproductive time (i.e., time within a duty period that is not devoted to actually flying the airplane). Air carriers frequently pay pilots for this nonproductive time at a reduced hourly rate, as established by formulas in their contracts. The proposal would allow them to significantly reduce this nonproductive time by permitting an increase in maximum flight hours from 8 to 10 hours within a shorter duty period.

Many unionized part 121 air carriers would probably have to renegotiate their contracts in order to reduce the amount of nonproductive time for which they are currently paying. Renegotiation would not be required, however, in order to add about 2 hours on average to monthly pilot flying hours because actual flying hours are currently considerably lower than the maximum range of 75–80 hours under most contracts. In addition, the nonunionized air carriers would in theory have a greater potential for increasing flight hours flown by their crewmembers because their maximum limits on flight hours tend to be closer to the current regulatory maximums of 1,000 hours per year. Under the proposal, the maximum monthly flight time of 100 hours per month would effectively allow 1,200 hours of flight time per year, thereby affording them the potential of a 20% increase in productivity (nonunionized air carriers account for 16% of the operations flown by all part 121 air carriers). This analysis, however, only assumes a 4% increase in productivity.

The FAA estimated that a 4% overall productivity enhancement would afford part 121 carriers overall total cost savings amounting to $3.07 billion (present value, $1.72 billion) over the next 15 years. These estimates are based on an expected decrease of 3,348 new pilots hired over this period and an average loaded salary of $82,572 for part 121 scheduled and $72,600 for part 121 supplemental. In addition, initial training costs of $18,516 for part 121 scheduled pilot and $17,908 for part 121 supplemental pilot were used in this analysis as in the cost analysis.

This estimate should be regarded as an lower bound for potential cost savings arising from the increase in pilot productivity. Productivity cost savings above 4% are theoretically possible; however, due to any salary increases that unions may negotiate, the air carriers may not be able to achieve all of these savings. In any event, air carriers would have a greater opportunity to limit pay for nonproductive time under the proposal, as noted above, which currently amounts to a significant part of their total salary costs. The FAA does not have sufficient information to assess the interplay of these factors in determining pilot salaries and requests comments from the public on this issue.

Longer proposed flying hours would also allow air carriers to reduce the number of 3-pilot crews in favor of 2-pilot crews. The FAA estimates an additional savings of 200 pilots, with annual net cost savings which could amount to $20.40 million in the first year and $16.54 million in subsequent years. These potential cost savings were estimated at $119.62 million (discounted) over a 15-year period. Consequently, total cost savings of the proposed rule for part 121 air carriers is expected to amount to $3.32 billion (present value, $1.87 billion) over the next 15 years.

Part 135 Scheduled Air Carriers

The proposed rule is estimated to impose discounted quantifiable costs of $56.75 million on part 135 carriers over the next 15 years, but these costs could be offset by cost savings. The total potential cost savings of the proposed rule are expected to amount to $94.04 million over the next 15 years. The net cost savings, which would result from an expected net reduction of 353 new pilots hired over the next 15 years, could therefore amount to $50.68 million over this period. This conclusion is contingent on the assumption that these operators would be able to modify their flight schedules so as to avoid expenses associated with longer minimum rest periods without significantly affecting revenues.

Costs

The FAA estimated that the reserve pilot provisions of the proposal would result in the hiring of 152 additional pilots in order to avoid having to cancel flights because of inadequate reserve pilot resources. The increased annual cost for the industry was estimated at $6.12 million. In addition, these operators are expected to incur incremental initial training costs amounting to $1.06 million in the first year the proposed rule is in effect, increasing annual compliance costs to $7.18 million in that year. These costs would amount to a discounted $56.75 million over a 15-year period.

Cost Savings

Part 135 scheduled airlines would reap potential cost savings amounting to $145.04 million (present value, $84.76 million) over the next 15 years. Although these operators currently tend to utilize their pilots more intensively than the part 121 operators (i.e., 74–89 hours), they still utilize them well under the proposed regulatory maximum of 100 hours a month. The potential for a 4% increase in productivity would still remain. The fact that a considerably smaller portion of the part 135 pilot workforce is unionized would remove that possible constraint to increased productivity.

These potential cost savings are based on a projection that these operators would need 353 fewer pilots at an average annual loaded salary of $40,280 that was used in the analysis of costs. In addition, initial training costs of $6,948 per pilot would be saved.

Benefits

The FAA has promulgated flight time limitation rules that contain rest requirements for certain operations and weekly and monthly limits on the number of hours of flight time in an effort to protect flight crewmembers from work-related fatigue. The issue did not receive much publicity until May 1994, when the NTSB cited pilot fatigue as a probable cause in an accident when the captain lost control of a DC–8 freighter while approaching the U.S. Naval Station Airbase at Guantanomo Bay, Cuba in August 18, 1993. Prior to that time, this factor had never been cited by the NTSB as a probable cause in an accident involving part 135 or 121 operations.

In its investigation, the NTSB noted that the flight crew had been on duty about 18 hours and had flown about 9 hours at the time of the accident. Under the proposed rule, this flight would have been illegal because the maximum length of a duty period for a 3-person flight crew on an airplane lacking appropriate sleeping quarters is 16 hours. In addition, the company had intended to further extend this flight by having the crew ferry the airplane back to Atlanta after the plane had landed at Guantanamo Bay, which would have resulted in a total duty time of 24 hours. The NTSB report specifically noted that the flight crewmembers had experienced a disruption of circadian rhythms and sleep loss, which resulted in fatigue that had adversely affected

performance during the critical landing phase.

The National Aeronautic and Space Administration (NASA) Ames Research Center has been studying this issue since 1980 and has published a number of studies on it. These studies have established a relationship between long duty periods and fatigue and between fatigue and a deterioration in performance.

It is very difficult to quantify the potential safety benefits of this proposed rule because of the scarcity of accidents that have been attributable to pilot fatigue. The NTSB has not focused on this issue until quite recently in its accident investigations. The FAA believes that the investigation of the effects of fatigue on pilot performance should not be limited to a review of relevant accidents. A better understanding of this issue can be gained from examining incident reports submitted by pilots to the National Aeronautical and Space Administration's Aviation Safety Reporting System (ASRS). Since January 1, 1986, ASRS has received 21 reports of unsafe incidents resulting from fatigue by pilots engaged in part 121 operations and 200 reports from pilots conducting part 135 operations. Although these incidents did not actually result in accidents, they were of a sufficiently serious nature that pilots filed a report with NASA with the hope of gaining the attention of the regulatory authorities.

NASA has sponsored some research into the issue of the relationship between fatigue and performance decrements based on information contained in these incident reports. The researchers found that about 21% of the reports citing air transport flight crew errors were related to the general issue of fatigue. The researchers selected a control or comparison group of incident reports citing these problem areas but where fatigue was not an apparent factor. Most of the incidents in both data sets involved altitude or clearance operational deviations (e.g., taking off or landing without clearance). The deviations within the fatigue set tended to occur more frequently during the more critical descent, approach, and landing flight phases. This finding was expected because fatigue is most likely to set in towards the end of a flight or work day. Another key finding was that duty period length and workload level were most frequently cited as being responsible for the fatigue.

The FAA has quantified the economic value of all major accidents involving the part 121 air carriers and part 135 air carriers over the 1985–1994 period that were attributable to pilot error. For the part 121 analysis, the FAA examined the seating capacity, average passenger load, and the average replacement cost of a representative sample of both narrow body and wide body aircraft. The FAA examined the same factors in estimating the cost of a part 135 accident.

For the part 121 analysis, the FAA assumes that an average airplane costs $14.75 million in 1994 dollars and carries 107 people (101 passengers, 3 flight crewmembers, and 3 flight attendants). In order to provide the public and government officials with a benchmark comparison of the expected safety benefits of rulemaking actions over an extended period of time with estimated costs in dollars, the FAA currently uses a value of $2.7 million to statistically represent a human fatality avoided. The values for serious and minor injuries are $518,000 and $38,000, respectively. For the part 135 analysis, the FAA used the same assumptions regarding the value of a human life and injuries. The amount of airplane damage and severity of injuries was based on a review of NTSB reports of all accidents involving 10–30 seat aircraft over the period from 1985–1994.

Based on these assumptions, the FAA estimated that the economic value of the 71 serious accidents involving pilot error used in part 121 scheduled operations that were involved in serious accidents over the 1985–1994 period at $1.896 billion. Projecting this total from 1996 to 2010 yields a discounted $1.151 billion. The comparable total for the 8 serious accidents involving pilot error used in part 121 supplemental operations that were involved in serious accidents over this time period was $273.9 million. Projecting this total from 1996 to 2010 yields a discounted $166.3 million. The corresponding total for the 71 aircraft involving pilot error used in part 135 operations with 10 to 30 seats that were involved in serious accidents over that period was $602.32 million. Projecting this total from 1996 to 2010 yields a discounted $365.73 million.

The NASA research study summarized above revealed that 21% of pilot error incidents were related to fatigue. Applying this proportion to the total discounted value of the pilot error accidents, using the assumptions noted above, one could conclude that fatigue resulted in accidents valued at $398.24 million (present value, $241.81 million) for part 121 scheduled operations, $57.52 million (present value, $34.92 million) for part 121 supplemental operations, and $126.49 million (present value, $76.80 million) for part 135 operations over a 15-year period. These estimates could be used to provide some idea of the potential safety benefits of this proposed rule, assuming it is 100% effective in preventing these types of accidents.

Cost Savings and Benefits

Initial annual quantifiable compliance costs for part 121 scheduled, part 121 supplemental, and scheduled part 135 air carriers were estimated at $58.66 million, $41.16 million and $7.18 million, respectively. Subsequent annual quantifiable compliance costs were estimated at $49.40 million, $41.06 million and $6.12 million, respectively. Over the period from 1996 to 2010, costs would amount to $750.33 million (present value, $458.63 million), $625.99 million ($383.40 million) and $92.89 million (present value, $56.75 million), respectively.

For part 121 scheduled operators, these compliance costs should be more than offset by cost savings that are projected to result from productivity enhancements for the scheduled part 121 carriers. The same conclusion may apply to the part 135 operators as well in view of the potential magnitude of the unquantifiable costs. But cost savings expected to accrue to the part 121 supplemental carriers are not expected be sufficient to offset potential costs for this sector of the industry.

The estimates for the scheduled part 135 air carriers do not include the potential costs of the proposed general limitations on flight duty and rest periods, which are expected to be fairly significant, although not quantifiable at the present time. On the other hand, these estimates do not take account of potential cost savings as air carriers gain more experience in implementing the various combinations of the available options, which should in theory result in the selection of the most cost effective option. The extent to which these potential impacts would offset each other cannot be determined on the basis of the available data.

These estimates also do not include the potential costs of the proposed rule for air taxi operators, which could not be quantified. The FAA expects that the costs of the reserve pilot restrictions would probably not be substantial for this sector of the industry because the majority of the operators should be able to adopt the second reserve pilot scheduling option without major operational disruptions. The FAA does not have sufficient information to estimate the potential compliance costs for this sector of the industry if the ''other commercial flying'' restrictions in the proposal are adopted. The potential for cost savings would appear

to be more limited for these operators because of the point-to-point and geographically restricted nature of their operations, which would tend to limit the length of flight assignments.

The FAA has quantified the economic value of all major accidents involving the part 121 fleet and part 135 fleet over the 1985–1994 period that were attributable to pilot error. Based on this value and the proportion of incidents with similar causal factors where pilots were affected by fatigue, the FAA estimated that if proposed rule were 100% effective at eliminating fatigue as a factor in accidents, it could prevent accidents involving part 121 scheduled operations valued at $242 million and part 121 supplemental operations at $35 million over a 15-year period. The same methodology yielded an estimate of $77 million for the potential effectiveness of the proposal in preventing part 135 accidents. It is important to note that it is unlikely that this proposal would be 100% effective, in part because it addresses duty and rest times, but does not require pilots to rest. The FAA is unable to develop an estimate of effectiveness of this proposal in reducing fatigue-related incidents, but welcomes data and methodologies that may assist such an effort.

The table below compares the costs, potential benefits, and cost savings sections. The FAA therefore concludes that the proposed rule would be cost beneficial for the part 121 scheduled operators, sector of the air transportation industry, would probably be cost beneficial for the entire part 121 sector of the air transportation industry, and could be cost beneficial for the scheduled part 135 operators as well, provided the unquantifiable compliance costs for the commuters do not exceed about $127.5 million (discounted) over a 15-year period.

The FAA does not have sufficient information at this time to evaluate the cost effectiveness of this proposal for air taxi operators. A more definitive overall conclusion would not be appropriate in view of the lack of data pertaining to how the affected air carriers would modify their operations in order to comply with the proposed rule and also to take advantage of the opportunities to increase pilot productivity. The FAA has decided to issue this proposed rule with the expectation that additional data that can clarify these issues will be forthcoming.

FIFTEEN YEAR DISCOUNTED COSTS/COST SAVINGS

	Part 121 scheduled	Part 121 supplemental	Total part 121	Part 135 scheduled	Air taxi
Compliance costs	$458,627,143	$383,403,020	$842,030,163	$56,750,685	Unknown.
Reserve requirements	458,627,143	224,331,554	682,958,697	56,750,685	Unknown.
Other requirements	0	159,071,466	159,071,466	0	Unknown.
Potential safety benefits	241,806,628	34,922,912	276,729,539	76,802,495	Unknown.
Net costs of reserve and other requirements	216,820,515	348,480,108	565,300,623	(20,051,810)	Unknown.
Cost savings	1,658,078,896	215,723,343	1,873,802,239	107,431,330	Unknown.
Increased flight times	1,504,206,226	215,723,343	1,719,929,569	107,431,330	Unknown.
Other cost savings	153,872,670	0	153,872,670	0	Unknown.
Net combined cost savings of proposal	1,441,258,380	(132,756,765)	1,308,501,615	127,483,140	Unknown.

This rulemaking should be considered complimentary to the Commuter Rule and the Air Carrier Training Program final rule. One of the goals of these three rulemaking actions is to prevent the 67 accidents that represent the accident-rate gap between part 135 commuter operators and part 121 operators. The FAA estimates that over the next 15 years, closing this gap would prevent 67 accidents at a present value benefit of $350 million.

In terms of the accident rate gap, the benefits of this NPRM are a part of this total benefit. However, it is not possible to allocate that benefit among the three rulemaking actions because it difficult to determine which rulemaking action would prevent a given accident. For example, individual accidents may be prevented by any one or a combination of several factors such as:

- Preventing the occurrence of a problem with an airplane in the first place (Commuter rule);
- Providing more or better crew training to properly respond to the problem after it occurs (Air Carrier Training Program rule);
- Providing a dispatcher to help identify a problem before it becomes a potential accident (Commuter rule);
- And ensuring pilots are not overworked and tired (Pilot Rest and Duty NPRM).

The Commuter Rule only addresses a portion of the necessary requirements to close the accident-rate gap. If the $51 million present value in net cost savings of this rule ($107 million in cost savings minus $56 million in costs) is combined with the cost of the Commuter Rule, $75 million, and the cost of Pilot Training, $34 million, the total cost, $58 million (−$51+$75+$34), is still less than the estimated $350 million benefit of eliminating the accident-rate gap. These rules combined need only be 17 percent effective to be cost-beneficial. The $77 million in potential safety benefits of this proposed rule is a subset of the aforementioned $350 million.

Analysis of Alternatives

As explained above, the FAA is required to consider alternatives to the proposed rule; the two alternatives will be discussed in this section. As indicated earlier in this preamble, if this proposal on reserve time assignments is not issued as a final rule, the FAA intends to ensure that the current rule, as interpreted, is being correctly implemented. The FAA has estimated that doing so could cost part 121 operators in excess of $2.5 billion and part 135 operators in excess of $450 million discounted over the next 10 years. At the same time, the resulting potential safety benefits would be no more than those estimated for this proposal.

Alternative Number One

This alternative would be to maintain the status quo. This option would not impose any costs on operators because it would not require that they change their pilot scheduling practices. It could impose costs on society, however, by increasing the risk of a preventable fatigue-related accident. The accumulation of a substantial body of scientific evidence documenting the harmful effects of fatigue on pilot performance have increased the need to amend these rules. In addition, given the scientific data available and the NTSB recommendations resulting from an accident at Guantanamo Bay in August 1993, this option is not feasible.

Alternative Number Two

This alternative was the original proposal considered by the FAA. After surveying industry, the FAA determined

that such a proposal would impose substantial costs, and that these costs would outweigh any potential benefits. Consequently, the current proposal was established, which uses some of the elements of this original proposal.

This alternative would afford operators three options for scheduling their reserve pilots but does not address the fatigue problem for pilots who are not on reserve status. The three options for scheduling reserve pilots are as follows:

Option 1: The certificate holder provides a minimum of 10 hours of advance notice of reporting time for flight duty.

Option 2: The certificate holder provides 8 hours of rest each 24 hour period of reserve duty. The 8 hours of rest must be assigned prospectively and remain constant for the duration of the reserve assignment.

Option 3: For each 24 hour period of reserve duty the flight crewmember is limited to 18 hours of eligibility for flight duty, with the remaining 6 hours being set aside for rest.

The potential annual compliance costs for the part 121 scheduled carriers were estimated at $225 million on an annual basis based on the assumption they would have to increase their pilot staffing by 4%. The second most heavily affected sector of the industry was the air taxi operators, who indicated they would have to increase their pilot staffing by 74%, resulting in potential annual compliance costs of $175 million. The FAA estimated that commuter operators would increase their pilot staffing by 5% in order to avoid disrupting their flight schedules, resulting in potential annual compliance costs of $24 million. Finally, the annual compliance cost for the part 121 unscheduled operators was estimated at $11.5 million.

The total annual cost was estimated to be $436 million for the air carrier industry. These costs would not be offset by any cost savings because of the limited nature of this alternative (i.e., applies only to reserve pilots). In addition, this alternative would have a considerably lower potential for preventing accidents than the proposal for the same reason. The FAA therefore concluded that this alternative would not be cost beneficial.

Initial Regulatory Flexibility Determination

The Regulatory Flexibility Act of 1980 (RFA) requires Federal agencies to review rules that may have ''a significant economic impact on a substantial number of small entities.''

Under FAA Order 2100.14A, the criterion for a ''substantial number'' is a number that is not less than 11 and that is more than one third of the small entities subject to the rule. This rule would primarily affect part 121 and 135 operators. For operators of aircraft for hire, a small operator is one that owns, but not necessarily operates, nine or fewer aircraft. The FAA's criteria for ''significant impact'' are $4,600 or more per year for an unscheduled operator, $119,900 or more per year for a scheduled operator whose airplane fleet has over 60 seats, and $67,000 or more for other scheduled carriers.

A. Initial Regulatory Flexibility Determination

The present value cost savings of the proposed rule over the 10-year study period would be $1.20 billion for the part 121 scheduled carriers or $148.47 million annualized at 7%. Based on a total fleet of 3,429 airplanes for these air carriers, the projected annualized cost savings of this rule would be $43,298 per airplane. Given the threshold annualized cost of $119,900 for a small part 121 scheduled operator, the FAA estimates that the proposed rule would have a significant economic impact on any operator owning 3 or more aircraft but less than 10 aircraft. However, there are only 7 small operators in this category. Since this is less than 11, a substantial number of these entities would not be affected.

The present value of the net costs of the proposed rule over the 10-year study period would be $139.56 million for the part 121 unscheduled carriers or $19.82 million annualized at 7%. Based on a total fleet of 557 airplanes for these operators, the projected annual cost of this rule would be $42,747 per airplane. This exceeds the cost threshold of $4,600 per unscheduled operator for all small operators in this sector of the industry.

The present value of the cost savings of the proposed rule over the study period has been estimated at $50.68 million for the part 135 scheduled carriers or $7.2 million annualized at 7%. Based on a total fleet of 950 airplanes for these operators, the projected annual cost of this rule would be $7,579 per airplane. Given the threshold annualized cost of $67,000 for a small commuter operator, the FAA estimates that an operator would need to own exactly 9 airplanes in order to incur a significant economic impact. As there is only one part 135 scheduled carrier with 9 airplanes, the FAA concludes that a substantial number of small entities in this sector of the industry would not be significantly affected by the proposed rule.

The FAA requests comments from small air taxi operators regarding the potential economic impacts of this proposed rule on their operations. Would additional pilots be required to maintain the current scope of their operations?

B. Initial Regulatory Flexibility Analysis

As the proposed rule would have a significant economic impact on a substantial number of small part 121 unscheduled operators, an initial regulatory flexibility analysis has been prepared. This analysis assures that agencies have examined selected regulatory alternatives that could minimize the economic burdens of the proposed rule on small entities. As delineated in section 603(b) of the RFA, this initial regulatory flexibility analysis is required to identify: (1) the reasons why the agency is considering this action, (2) the objectives and legal basis for the proposed rule, (3) the kind and number of small entities to which the proposed rule would apply, (4) the projected reporting, record keeping, and other compliance requirements of the proposed rule, and (5) all Federal rules which may duplicate, overlap or conflict with the proposed rule. This section of the RFA further requires that each initial regulatory flexibility analysis contain a description of any significant alternatives to the proposed rule which accomplish the stated objectives of applicable statutes and which minimize any significant economic impact of the proposed rule on small entities.

1. Why the Agency Action is Taken

The main reason for the NPRM is that the FAA Administrator, when prescribing safety regulations, is required by statute to consider ''the duty of an air carrier to provide service with the highest possible safety in the public interest.'' The FAA has determined that the most appropriate way to meet this statutory mandate is to ensure that flight crewmembers are provided with the opportunity to obtain sufficient rest to perform their routine and emergency safety duties. The need for this rulemaking is supported by studies on pilot fatigue conducted by NASA, anecdotal evidence of the problem contained in pilot reports submitted to the Aviation Safety Reporting System, and the complexity and age of the current flight duty and rest period restrictions.

2. Objective of and Legal Basis for the Proposed Rule

The objective of the proposed rule is to increase safety in passenger- and cargo-carrying operations, both scheduled and unscheduled. The proposed rule would also clarify and

simplify existing regulations pertaining to duty period limitations, flight time limitations, and rest requirements for crewmembers. This objective is more thoroughly discussed in the preamble to the NPRM.

The legal basis for the proposed rule is 49 U.S.C. 106(g), 1153, 40101, 40102, etc.

3. Description of the Small Entities Affected by the Proposed Rule

The proposal would affect part 121 air carriers conducting both scheduled and unscheduled operations. The FAA estimates that the proposal would affect only one scheduled part 121 operator, which owns 9 aircraft. The remaining operators in this category each own 5 or fewer aircraft, less than the number required for a substantial economic impact potential. The FAA estimates that the proposal would have a substantial economic impact on all 23 small part 121 unscheduled operators, which operate a total of 99 aircraft.

4. Compliance Requirements of the Proposed Rule

The proposed duty period limitations, flight time limitations, and rest requirements would apply to all crewmembers conducting part 121 domestic, flag, and supplemental operations, as well as those engaged in commuter and on-demand operations. These limitations and requirements would also apply to part 121 and 135 certificate holders conducting part 91 operations. The preamble to the NPRM provides a more thorough discussion of the compliance requirements of the proposed rule.

5. Overlap of the Proposed Rule With Other Federal Regulations

No other Federal rules would duplicate, overlap, or conflict with the proposed rule.

6. Alternatives to the Proposed Rule

Alternative Number One did not have any potential compliance costs. Alternative Number Two would have been more costly and would have had a significant impact on a substantial number of entities for the three industry areas where costs could be estimated. Alternative Number Two would have projected annual costs of $65,325 per aircraft for part 121 scheduled operators. Therefore, any operator with 2 or more aircraft would be significantly affected by this alternative rule. Since these operators would comprise more than one-third of the total number of small operators in this category, the FAA concludes that a substantial number of small entities would be affected. In addition, Alternative Number Two was substantially more costly for part 121 unscheduled operators than the proposed rule, which would have affected all operators in this sector of the industry. The impacts of this Alternative on these operators would be considerably greater than the proposed rule.

Alternative Number Two would have projected annual costs of $20,443 per aircraft for part 135 scheduled operators.

Therefore, any operator with 4 or more aircraft would be significantly affected by this alternative rule. Since these operators comprise at least one-third of the total number of small entities in this sector of the industry, the FAA concludes that a substantial number of small operators would be affected. This Alternative, which would be considerably more costly for on-demand air taxis than scheduled part 135 operators, would have a significant economic impact on a substantial number of small operators in this sector of the industry as well.

In addition, the FAA considered an alternative proposal for part 121 supplemental carriers that was proposed at an ARAC (Aviation Regulatory Advisory Committee) meeting. Under this proposal, part 121 supplementals could develop alternative policies and procedures or flight schedules that allow a flight crewmember to anticipate when a flight time assignment might occur or that otherwise ensures a flight crewmember will not be assigned to a flight unless that flight crewmember is adequately rested for that flight assignment. However, the FAA rejected this option because it does not provide one level of safety for the industry. These different policies or procedures would be ripe for abuse by both certificate holders and pilots and they would be very difficult for the FAA to enforce. In short the FAA believes this alternative would not provide the same level of safety as the proposal. The FAA does, however request comments on other possible alternatives.

Initial Trade Impact Analysis

The FAA believes that in specific foreign countries, including Great Britain, Germany, and some other European countries, pilot, flight, and duty regulations are more restrictive because they make use of more variables as constraints than in the United States. These variables include 1) take-offs and landings, 2) day or night flights, 3) cumulative duty hours per week and month, 4) the number of flights in a duty period, 5) whether the flight crew is ''acclimated'' to the local time. The net impact of the proposal on the U.S. firms' operating costs is likely to be considerably less than the compliance costs with current rules because of the projected gains in productivity. Foreign air carriers may already be burdened with similar or higher costs to the extent the applicable regulations are as strict or more strict than the proposal. The FAA solicits information from commenters regarding these policies.

Any impacts should be limited to the part 121 air carriers. Most of the nation's 65 commuter airlines operate almost exclusively on domestic routes, with only limited international operations and no transoceanic routes. Similarly, air taxi operators seldom fly outside of domestic airspace.

Federalism Implications

The proposed regulations do not have substantial direct effects on the states, on the relationship between national government and the states, or on the distribution of power and responsibilities among various levels of government. Thus, in accordance with Executive Order 12612, it is determined that such a regulation does not have federalism implications warranting the preparation of a Federalism Assessment.

Paperwork Reduction Act

The reporting and recordkeeping requirements associated with this proposed rule remain the same as under the current rules and have previously been approved by the Office of Management and Budget under the provisions of the Paperwork Reduction Act of 1980 (Public Law 96–511) and have been assigned OMB Control Numbers 2120–0585. The FAA believes that this proposed rule would not impose any additional recordkeeping or reporting requirements. If, however, a commenter finds that this notice would require additional recordkeeping or reporting, the FAA solicits specific information on the volume, type, and costs of the additional records or reports.

Conclusion

For the reasons set forth under the heading ''Regulatory Analysis,'' the FAA has determined that this proposed regulation is a significant rule under Executive Order 12866, and is a significant rule under Department of Transportation Regulatory Policies and Procedures (44 FR 11034, February 26, 1979). Also, for the reasons stated under the headings ''Trade Impact Statement'' and ''Regulatory Flexibility Determination,'' the FAA certifies that the proposed rule would have a significant economic impact on a

substantial number of small entities. A copy of the full regulatory evaluation is filed in the docket and may also be obtained by contacting the person listed **FOR FURTHER INFORMATION CONTACT.**

List of Subjects

14 CFR Part 121

Air carriers, Aircraft, Aircraft pilots, Airmen, Airplanes, Aviation Safety, Safety.

14 CFR Part 135

Air carriers, Aircraft, Airmen, Aviation Safety, Pilots, Safety.

The Proposed Amendment

In consideration of the foregoing, the Federal Aviation Administration proposes to amend the Federal Aviation Regulations (14 CFR parts 121 and 135) as follows:

PART 121—CERTIFICATION AND OPERATIONS: DOMESTIC, FLAG, AND SUPPLEMENTAL AIR CARRIERS AND COMMERCIAL OPERATORS OF LARGE AIRCRAFT

1. The authority citation for part 121 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44119, 44101, 44701–44702, 44705, 44709–44711, 44713, 44716–44717, 44722, 44901, 44903–44904, 44912, 46105. 46103, 46105.

2. Section 121.1 is amended by adding a new paragraph (g) to read as follows

§ 121.1 Applicability.

* * * * *

(g) As specified in § 121.487, the duty period limitations, flight time limitations and rest requirements of this part are also applicable to duty periods and flight time performed for a certificate holder conducting operations under part 91 or part 135 of this chapter.

Subpart R—[Removed and reserved]

3. Subpart R (§§ 121.480 through 121.493) is removed, and the subpart heading is reserved.

4. Subpart Q is revised to read as follows:

Subpart Q—Flight Crewmember Duty Period Limitations, Flight Time Limitations and Rest Requirements

Sec.

Subpart Q—Flight Crewmember Duty Period Limitations, Flight Time Limitations and Rest Requirements

§ 121.471 Applicability and terms.

(a) This subpart prescribes duty period limitations, flight time limitations and rest requirements for flight crewmembers in domestic, flag, and supplemental operations.

(b) For the purpose of this subpart the following terms and definitions apply:

(1) *Approved sleeping quarters* means an area designated for the purpose of flight crewmembers obtaining sleep as approved by the Administrator.

(2) *Assigned time* means a period of time when the flight crewmember is assigned by the certificate holder to activities other than flight duties or reserve time. Assigned time may include activities such as deadhead transportation, training, loading baggage, taking tickets, administrative tasks, or any other assignments at the direction of the certificate holder. Assigned time may be considered part of a duty period or not part of a duty period, at the discretion of the certificate holder.

(3) *Calendar day* means a period of elapsed time, using Coordinated Universal Time or local time, that begins at midnight and ends 24 hours later at the next midnight.

(4) *Duty period* means a period of elapsed time between reporting for an assignment involving flight time and release from that assignment by the certificate holder. The time is calculated using either Coordinated Universal Time or the local time of the flight crewmember's home base, to reflect the total elapsed time.

(5) *Operational delays* means delays due to operational conditions and requirements that are beyond the control of the certificate holder such as adverse weather, aircraft equipment malfunctions, and air traffic control. It does not include late arriving passengers, late food service, late fuel trucks, delays in handling baggage, freight or mail, or similar events.

(6) *Protected time* means a period of time during which a certificate holder may not contact the flight crewmember and the crewmember has no responsibility for work. Protected time occurs only during a reserve assignment pursuant to § 121.477(b)(2).

(7) *Reserve time* means a period of time when a flight crewmember must be available to report upon notice for duty involving flight time and the certificate holder allows the flight crewmember at least 1 hour to report. Reserve time is not considered part of a rest period and is not considered part of a duty period involving flight time. Reserve time ends when the flight crewmember reports for a duty period, when the flight crewmember is notified of a future flight assignment and released from all further responsibilities until report time for that assignment, or when the flight crewmember has been relieved for a rest period. Reserve time does not include activities defined as ''assigned time.''

(8) *Rest period* means a period of time free of all restraint or duty for a certificate holder and free of all responsibility for work or duty should the occasion arise. A flight crewmember is not ''free of all restraint'' or ''free of all responsibility'' if that person must, among other things, accept phone calls, carry a beeper, or contact the air carrier. If a flight crewmember is not serving in assigned time, reserve time, standby duty or a duty period, that crewmember would be in a rest period.

(9) *Standby duty* means any period of time when a flight crewmember is required to report for a flight assignment in less than 1 hour from the time of notification. It also includes time when a flight crewmember is required to report to and remain at a specific facility (e.g. airport, crew lounge) designated by a certificate holder. Standby duty is considered part of a duty period. Standby duty commences when the flight crewmember is placed on standby duty. Standby duty ends when the flight crewmember is relieved from duty associated with an actual flight or is otherwise relieved from duty.

§ 121.473 Pilot duty period limitations, flight time limitations, and rest requirements.

(a) A certificate holder may assign a scheduled duty period or reserve assignment to a pilot and a pilot may accept that assignment only when the applicable duty period limitations, flight time limitations, and rest requirements of this section are met.

(b) Except as required in paragraphs (c), (d), and (e) of this section, no certificate holder may assign a flight crew consisting of two pilots, and no pilot may accept, a scheduled duty period of more than 14 hours. The duty period may not include more than 10 scheduled hours of flight time. Each pilot must be scheduled for a subsequent rest period of at least 10 consecutive hours. This rest period

must occur between the completion of the scheduled duty period and the commencement of the next duty period.

(1) Due to operational delays, the rest period required under this paragraph (b) may be reduced to no fewer than 9 consecutive hours if the pilot has not actually exceeded the maximum 14-hour duty period and if the pilot's next rest period is at least 11 hours. This subsequent rest period must be scheduled to begin no later than 24 hours after the beginning of the reduced rest period and must occur between the completion of the scheduled duty period and the commencement of the next duty period.

(2) The duty period required under this paragraph (b) may be extended to 16 hours when the extension is due to operational delays. In this case the 10 hour rest period may not be reduced.

(c) A certificate holder may assign a flight crew consisting of 3 pilots, and a pilot may accept, a scheduled duty period of up to 16 hours. The duty period may not include more than 12 scheduled hours of flight time. Each pilot must be scheduled for a subsequent rest period of at least 14 consecutive hours. This rest period must occur between the completion of the scheduled duty period and the commencement of the next duty period.

(1) Due to operational delays, the rest period required under this paragraph (c) may be reduced to no fewer than 12 consecutive hours if the pilot has not actually exceeded the maximum 16-hour duty period and if the pilot's next rest period is at least 16 hours. This subsequent rest period must be scheduled to begin no later than 24 hours after the beginning of the reduced rest period and must occur between the completion of the scheduled duty period and the commencement of the next duty period.

(2) The duty period required under this paragraph (c) may be extended to 18 hours when the extension is due to operational delays. In this case the 14 hour rest period may not be reduced.

(d) A certificate holder may assign a flight crew consisting of 3 pilots, and a pilot may accept, a scheduled duty period of more than 16 hours, but no more than 18 hours. The duty period may not include more than 16 scheduled hours of flight time. Each pilot must be given an opportunity to rest in-flight in approved sleeping quarters. Each pilot must be scheduled for a subsequent rest period of at least 18 consecutive hours. This rest period must occur between the completion of the scheduled duty period and the commencement of the next subsequent duty period.

(1) Due to operational delays, the rest period required under this paragraph (d) may be reduced to no fewer than 16 consecutive hours if the pilot has not actually exceeded the maximum 18-hour duty period and if the pilot's next rest period is at least 20 hours. This subsequent rest period must be scheduled to begin no later than 24 hours after the beginning of the reduced rest period and must occur between the completion of the scheduled duty period and the commencement of the next subsequent duty period.

(2) The duty period required under this paragraph (d) may be extended to 20 hours when the extension is due to operational delays. In this case the 18 hour rest period may not be reduced.

(e) If the scheduled duty period includes one or more flights that land or take off outside the 48 contiguous states and the District of Columbia, a certificate holder may assign a flight crew consisting of 4 pilots, and a pilot may accept, a scheduled duty period of more than 18 hours but not more than 24 hours. The duty period may not include more than 18 scheduled hours of flight time. Each pilot must be given an opportunity to rest in-flight in approved sleeping quarters. Each pilot must be scheduled for a subsequent rest period of at least 22 consecutive hours. This rest period must occur between the completion of the scheduled duty period and the commencement of the next subsequent duty period.

(1) Due to operational delays, the rest period required under this paragraph (e) may be reduced to no fewer than 20 consecutive hours if the pilot has not actually exceeded the maximum 24 hour duty period and if the pilot's next rest period is at least 24 hours. This subsequent rest period must be scheduled to begin no later than 24 hours after the beginning of the reduced rest period and must occur between the completion of the scheduled duty period and the commencement of the next subsequent duty period.

(2) The duty period required under this paragraph (e) may be extended to 26 hours when the extension is due to operational delays. In this case the 22 hour rest period may not be reduced.

§ 121.475 Flight engineer duty period limitations, flight time limitations, and rest requirements.

(a) A certificate holder may assign a scheduled duty period or reserve assignment to a flight engineer, and a flight engineer may accept, a scheduled duty period only when the applicable duty period limitations, flight time limitations, and rest requirements of this section are met.

(b) Except as provided in paragraphs (c), (d), and (e) of this section, no certificate holder may assign a flight engineer, and no flight engineer may accept, a scheduled duty period of more than 14 hours. The duty period may not include more than 10 scheduled hours of flight time. Each flight engineer must be scheduled for a subsequent rest period of at least 10 consecutive hours. This rest period must occur between the completion of the scheduled duty period and the commencement of the next subsequent duty period.

(1) Due to operational delays, the rest period required under this paragraph (b) may be reduced to no fewer than 9 consecutive hours if the flight engineer has not actually exceeded the maximum 14-hour duty period and if the flight engineer is provided with a subsequent rest period of at least 11 hours. This subsequent rest period must be scheduled to begin no later than 24 hours after the beginning of the reduced rest period and must occur between the completion of the scheduled duty period and the commencement of the next subsequent duty period.

(2) The duty period required under this paragraph (b) may be extended to 16 hours when the extension is due to operational delays. In this case the 10 hour rest period may not be reduced.

(c) A certificate holder may assign a flight engineer, and a flight engineer may accept, a scheduled duty period of more than 14 hours, but no more than 16 hours. The duty period may not include more than 12 scheduled hours of flight time. Each flight engineer must be scheduled for a subsequent rest period of at least 14 consecutive hours. This rest period must occur between the completion of the scheduled duty period and the commencement of the next subsequent duty period.

(1) Due to operational delays, the rest period required under this paragraph (c) may be reduced to no fewer than 12 consecutive hours if the flight engineer has not actually exceeded the maximum 16-hour duty period and if the flight engineer is provided with a subsequent rest period of at least 16 hours. This subsequent rest period must be scheduled to begin no later than 24 hours after the beginning of the reduced rest period and must occur between the completion of the scheduled duty period and the commencement of the next subsequent duty period.

(2) The duty period required under this paragraph (c) may be extended to 18 hours when the extension is due to operational delays. In this case the 14 hour rest period may not be reduced.

(d) A certificate holder may assign a flight engineer, and a flight engineer

may accept, a scheduled duty period of more than 16 hours, but no more than 18 hours. The duty period may not include more than 16 scheduled hours of flight time. The certificate holder must assign to the flight or flights in that duty period at least two flight engineers. Each flight engineer must be given an opportunity to rest in flight in approved sleeping quarters. Each flight engineer must be scheduled for a subsequent rest period of at least 18 consecutive hours. This rest period must occur between the completion of the scheduled duty period and the commencement of the next subsequent duty period.

(1) Due to operational delays, the rest period required under this paragraph (d) may be reduced to no fewer than 16 consecutive hours if the flight engineer has not actually exceeded the maximum 18-hour duty period and if the flight engineer is provided with a subsequent rest period of at least 20 hours. This subsequent rest period must be scheduled to begin no later than 24 hours after the beginning of the reduced rest period and must occur between the completion of the scheduled duty period and the commencement of the next subsequent duty period.

(2) The duty period required under this paragraph (d) may be extended to 20 hours when the extension is due to operational delays. In this case the 18 hour rest period may not be reduced.

(e) If the scheduled duty period includes one or more flights that land or take off outside the 48 contiguous states and the District of Columbia, the certificate holder may assign a flight engineer, and a flight engineer may accept, a scheduled duty period of more than 18 hours but not more than 24 hours. The duty period may not include more than 18 scheduled hours of flight time. The certificate holder must assign to the flight or flights in that duty period at least two flight engineers. Each flight engineer must be given an opportunity to rest in-flight in approved sleeping quarters. Each flight engineer must be scheduled for a subsequent rest period of at least 22 consecutive hours. This rest period must occur between the completion of the scheduled duty period and the commencement of the next subsequent duty period.

(1) Due to operational delays, the rest period required under this paragraph (e) may be reduced to no fewer than 20 consecutive hours if the flight engineer has not actually exceeded the maximum 24-hour duty period and if the flight engineer is provided with a subsequent rest period of at least 24 hours. This subsequent rest period must be scheduled to begin no later than 24 hours after the beginning of the reduced rest period and must occur between the completion of the scheduled duty period and the commencement of the next subsequent duty period.

(2) The duty period required under this paragraph (e) may be extended to 26 hours when the extension is due to operational delays. In this case the 22 hour rest period may not be reduced.

§ 121.477 Reserve and standby assignments.

(a) *Standby duty.* Standby duty commences when a flight crewmember is placed on standby duty. Standby duty periods must be scheduled in accordance with §§ 121.473 or 121.475. Standby duty periods end when the duty period associated with a subsequent flight assignment ends or the flight crewmember is relieved from standby duty for a scheduled rest period.

(b) *Reserve time.* A certificate holder may assign a reserve assignment to a flight crewmember and a flight crewmember may accept that assignment only when the applicable provisions of this section are met. Each flight crewmember must be given a 10-hour rest period before being assigned to reserve time. Reserve time may be assigned under either of the following options and the flight crewmember must be notified of which option has been selected before the beginning of the reserve time assignment:

(1) A certificate holder may schedule a flight crewmember assigned to reserve time and a flight crewmember may accept any duty period if the flight crewmember receives at least 10 hours notice and if the duty period is scheduled in accordance with §§ 121.473 or 121.475. If a flight crewmember does not receive at least 10 hours notice, the following limitations apply:

(i) If at least 8 hours notice is given, the scheduled duty period is limited to no more than 12 hours. The duty period required under this paragraph (b)(1) may be extended to 14 hours when the extension is due to operational delays.

(ii) If at least 6 hours notice is given, the scheduled duty period is limited to no more than 10 hours. The duty period required under this paragraph (b)(1) may be extended to 12 hours when the extension is due to operational delays.

(iii) If at least 4 hours notice is given, the scheduled duty period is limited to no more than 8 hours. The duty period required under this paragraph (b)(1) may be extended to 10 hours when the extension is due to operational delays.

(iv) If fewer than 4 hours notice is given, the scheduled duty period is limited to no more than 6 hours. The duty period required under this paragraph (b)(1) may be extended to 8 hours when the extension is due to operational delays.

(2) A certificate holder may assign a flight crewmember to a reserve assignment, and a flight crewmember may accept a duty period, if, for each 24-hour period, the flight crewmember receives at least a regularly scheduled 6-hour period that is protected from any contact by the certificate holder. The hours of the 6-hour protected time period must be assigned before the flight crewmember begins the reserve time assignment and must occur at the same time during each 24-hour period during a reserve time assignment. Any duty period assignment must be scheduled to be completed within the 18 hour reserve period. The length of the duty period and the subsequent rest period must be in accordance with §§ 121.473 or 121.475.

§ 121.479 Additional flight crewmember duty period and flight time scheduling limitations.

(a) A flight crewmember is not considered to be scheduled for a duty period in excess of the scheduled duty period limitations if the duty periods to which he or she is assigned are scheduled and normally terminate within the limitations, but, due to operational delays, the flights to which he or she is assigned are not at block out time expected to reach their destination within the scheduled duty period. However, no air carrier may assign a flight crewmember, nor may a flight crewmember accept, a flight that at block out time would extend the flight crewmembers scheduled duty period maximum more than two hours, as provided in §§ 121.473 and 121.475.

(b) A flight crewmember is not considered to be scheduled for flight time in excess of the flight time limitations if the flights to which he or she is assigned are scheduled and normally terminate within the limitations, but due to operational delays are not at block out time expected to reach their destination within the scheduled time.

§ 121.481 Weekly and monthly flight crewmember flight time limitations.

No certificate holder may schedule any flight crewmember, and no flight crewmember may accept, an assignment for flight time under this part if that flight crewmember's total flight time for a certificate holder under parts 91, 121, and 135 of this chapter will exceed—

(a) 32 hours in any 7 consecutive calendar days.

(b) 100 hours in any calendar month.

§ 121.483 Additional flight crewmember rest requirements.

(a) No certificate holder may assign any flight crewmember, and no flight crewmember may accept, any duty period or flight time with the certificate holder unless the flight crewmember has had at least the minimum rest required under this subpart.

(b) No certificate holder may assign any flight crewmember and no flight crewmember may accept any duty with the certificate holder during any required rest period. For example the flight crewmember may not be required to contact the certificate holder, answer the telephone, carry a beeper, remain at a specific location or in any other way be responsible to the air carrier during a rest period.

(c) Rest periods that are required under this subpart can occur concurrently with any other rest period.

(d) The reduced rest periods allowed under §§ 121.473 and 121.475 may only be used due to operational delays and may not be scheduled in advance.

(e) Each certificate holder shall provide each flight crewmember who is assigned to one or more duty periods, standby duty, or reserve time a rest period of at least 36 consecutive hours during any 7 consecutive calendar days.

(f) Each certificate holder must provide each flight crewmember assigned to assigned time, when the assigned time is not part of a duty period, a rest period of at least 10 hours before the commencement of a subsequent duty period.

(g) Each certificate holder must provide each flight crewmember at least 48 consecutive hours of rest upon return to the flight crewmember's home base after completion of one or more duty periods that contain flights that terminate in a time zone or zones that differs from the time zone of the flight crewmember's home base by 6 or more hours and the flight crewmember remains in that time zone or zones for at least 48 consecutive hours. The flight crewmember must receive this rest before beginning a subsequent duty period. The home base is determined by the certificate holder and is where that crewmember is based and receives schedules.

§ 121.485 Deadhead transportation.

Time spent in transportation, not local in character, that a certificate holder requires of a flight crewmember and provides to transport the crewmember to an airport at which he or she is to serve on a flight as a crewmember, or from an airport at which he or she was relieved from duty to return to his or her home station is not considered part of a rest period. For duty period limitation purposes the certificate holder and flight crewmember must consider deadhead time as assigned time or as part of a duty period associated with flight.

§ 121.487 Duty period and flight time limitations: Other flying for a certificate holder.

No flight crewmember who is employed by a certificate holder conducting operations under this part may do any other duty or flying for any certificate holder conducting operations under part 121 or 135 of this chapter if that duty or flying for a certificate holder plus his or her duty or flying under this part will exceed any duty period or flight time limitation in this part. This section applies to any other duty or flying under part 91, part 121 or part 135 of this chapter for any certificate holder whether the duty or flying precedes or follows the flight crewmember's flying under this part.

Subpart S—[Removed and reserved]

5. Subpart S (§§ 121.500 through 121.525) is removed, and the subpart heading is reserved.

PART 135—AIR TAXI OPERATORS AND COMMERCIAL OPERATORS

6. The authority citation for part 135 is revised to read as follows:

Authority: 49 U.S.C. 106(g), 1153, 40101, 40102, 40103, 40113, 44105, 44106, 44111, 44701–44717, 44722, 44901, 44903, 44904, 44906, 44912, 44914, 44936, 44938, 46103, 46105.

7. Section 135.1 is amended by adding a new paragraph (b) to read as follows

§ 135.1 Applicability.

* * * * *

(b) As specified in § 135.275, the duty period limitations, flight time limitations and rest requirements of this part are also applicable to duty periods and flight time performed for a certificate holder conducting operations under part 91 or part 121 of this chapter.

8. The heading for subpart F is revised to read as follows:

Subpart F—Flight Crewmember Duty Period Limitations, Flight Time Limitations, and Rest Requirements

9. Sections 135.261, 135.263, 135.265, 135.267, 135.269, and 135.273 are revised and 135.275 is added.

§ 135.261 Applicability and terms.

(a) This subpart prescribes duty period limitations, flight time limitations and rest requirements for flight crewmembers in commuter and on-demand operations.

(b) For the purpose of this subpart the following terms and definitions apply:

(1) *Approved sleeping quarters* means an area designated for the purpose of flight crewmembers obtaining sleep as approved by the Administrator.

(2) *Assigned time* is time when the flight crewmember is assigned by the certificate holder to activities other than flight duties or reserve time. Assigned time may include activities such as deadhead transportation, training, loading baggage, taking tickets, administrative tasks, or any other assignments at the direction of the certificate holder. Assigned time may be considered part of a duty period or not part of a duty period, at the discretion of the certificate holder.

(3) *Calendar day* means the period of elapsed time, using Coordinated Universal Time or local time, that begins at midnight and ends 24 hours later at the next midnight.

(4) *Duty period* means the period of elapsed time between reporting for an assignment involving flight time and release from that assignment by the certificate holder. The time is calculated using either Coordinated Universal Time or the local time of the flight crewmember's home base, to reflect the total elapsed time.

(5) *Operational delays* means delays due to operational conditions and requirements that are beyond the control of the certificate holder such as adverse weather, aircraft equipment malfunctions, and air traffic control. It does not include late arriving passengers, late food service, late fuel trucks, delays in handling baggage, freight or mail, or similar events.

(6) *Protected time* means a period of time during which a certificate holder may not contact the flight crewmember and the crewmember has no responsibility for work. Protected time occurs only during a reserve assignment pursuant to § 121.477(b)(2).

(7) *Reserve time* means a period of time when a flight crewmember must be available to report upon notice for duty involving flight time and the certificate holder allows the flight crewmember at least 1 hour to report. Reserve time is not considered part of a rest period and is not considered part of a duty period involving flight time. Reserve time ends when the flight crewmember reports for a duty period, when the flight crewmember is notified of a future flight assignment and released from all further responsibilities until report time for that assignment, or when the flight crewmember has been relieved for a rest

period. Reserve time does not include activities defined as ''assigned time.''

(8) *Rest period* means the time period free of all restraint or duty for a certificate holder and free of all responsibility for work or duty should the occasion arise. ''Free of all restraint'' and ''free of all responsibility'' would include, but not be limited to, accepting phone calls, being required to carry a beeper, or being required to contact the air carrier. If a flight crewmember is not serving in assigned time, reserve time, standby duty or a duty period, that crewmember would be in a rest period.

(9) *Standby duty* means any period of time when a flight crewmember is required to report for a flight assignment in less than 1 hour from the time of notification. It also includes time when a flight crewmember is required to report to and remain at a specific facility (e.g. airport, crew lounge) designated by a certificate holder. Standby duty is treated like any other duty associated with flight. Standby duty commences when the flight crewmember is placed on standby duty. Standby duty ends when the flight crewmember is relieved from duty associated with an actual flight or is otherwise relieved from duty.

§ 135.263 Pilot duty period limitations, flight time limitations, and rest requirements.

(a) A certificate holder may assign a scheduled duty period or reserve assignment to a pilot and a pilot may accept that assignment only when the applicable duty period limitations, flight time limitations, and rest requirements of this section are met.

(b) For aircraft for which only one pilot is required, no certificate holder may assign a pilot and no pilot may accept a scheduled duty period of more than 14 hours. The duty period may not include more than 8 scheduled hours of flight time. The pilot must be scheduled for a rest period of at least 10 consecutive hours. This rest period must occur between the completion of the scheduled duty period and the commencement of the next subsequent duty period.

(1) Due to operational delays, the rest period required under this paragraph (b) may be reduced to no fewer than 9 consecutive hours if the pilot has not actually exceeded the maximum 14-hour duty period and if the pilot is provided with a subsequent rest period of at least 11 hours. This subsequent rest period must be scheduled to begin no later than 24 hours after the beginning of the reduced rest period and must occur between the completion of the scheduled duty period and the commencement of the next duty period.

(2) The duty period required under this paragraph (b) may be extended to 16 hours when the extension is due to operational delays. In this case the 10 hour rest period may not be reduced.

(c) Except as required in paragraphs (d), (e), and (f) of this section, no certificate holder may assign a flight crew consisting of two pilots and no pilot may accept a scheduled duty period of more than 14 hours. The duty period may not include more than 10 scheduled hours of flight time. Each pilot must be scheduled for a rest period of at least 10 consecutive hours. This rest period must occur between the completion of the scheduled duty period and the commencement of the next duty period.

(1) Due to operational delays, the rest period required under this paragraph (c) may be reduced to no fewer than 9 consecutive hours if the pilot has not actually exceeded the maximum 14-hour duty period and if the pilot is provided with a subsequent rest period of at least 11 hours. This subsequent rest period must be scheduled to begin no later than 24 hours after the beginning of the reduced rest period and must occur between the completion of the scheduled duty period and the commencement of the next duty period.

(2) The duty period required under this paragraph (c) may be extended to 16 hours when the extension is due to operational delays. In this case the 10 hour rest period may not be reduced.

(d) A certificate holder may assign a flight crew consisting of 3 pilots and a pilot may accept a scheduled duty period of more than 14 hours, but no more than 16 hours. The duty period may not include more than 12 scheduled hours of flight time. Each pilot must be scheduled for a rest period of at least 14 consecutive hours. This rest period must occur between the completion of the scheduled duty period and the commencement of the next duty period.

(1) Due to operational delays, the rest period required under this paragraph (d) may be reduced to no fewer than 12 consecutive hours if the pilot has not actually exceeded the maximum 16-hour duty period and if the pilot is provided with a subsequent rest period of at least 16 hours. This subsequent rest period must be scheduled to begin no later than 24 hours after the beginning of the reduced rest period and must occur between the completion of the scheduled duty period and the commencement of the next duty period.

(2) The duty period required under this paragraph (d) may be extended to 18 hours when the extension is due to operational delays. In this case the 14 hour rest period may not be reduced.

(e) A certificate holder may assign a flight crew consisting of 3 pilots, and a pilot may accept a scheduled duty period of more than 16 hours, but no more than 18 hours. The duty period may not include more than 16 scheduled hours of flight time. Each pilot must be given an opportunity to rest in-flight in approved sleeping quarters. Each pilot must be scheduled for a rest period of at least 18 consecutive hours. This rest period must occur between the completion of the scheduled duty period and the commencement of the next subsequent duty period.

(1) Due to operational delays, the rest period required under this paragraph (e) may be reduced to no fewer than 16 consecutive hours if the pilot has not actually exceeded the maximum 18-hour duty period and if the pilot is provided with a subsequent rest period of at least 20 hours. This subsequent rest period must be scheduled to begin no later than 24 hours after the beginning of the reduced rest period and must occur between the completion of the scheduled duty period and the commencement of the next subsequent duty period.

(2) The duty period required under this paragraph (e) may be extended to 20 hours when the extension is due to operational delays. In this case the 18 hour rest period may not be reduced.

(f) If the scheduled duty period includes one or more flights that land or take off outside the 48 contiguous states and the District of Columbia, a certificate holder may assign a flight crew consisting of 4 pilots and a pilot may accept a scheduled duty period of more than 18 hours but not more than 24 hours. The duty period may not include more than 18 scheduled hours of flight time. Each pilot must be given an opportunity to rest in-flight in approved sleeping quarters. Each pilot must be scheduled for a rest period of at least 22 consecutive hours. This rest period must occur between the completion of the scheduled duty period and the commencement of the next subsequent duty period.

(1) Due to operational delays, the rest period required under this paragraph (f) may be reduced to no fewer than 20 consecutive hours if the pilot has not actually exceeded the maximum 24 hour duty period and if the pilot is provided with a subsequent rest period of at least 24 hours. This subsequent rest period must be scheduled to begin no later than 24 hours after the beginning of the reduced rest period and must occur between the completion of the

scheduled duty period and the commencement of the next subsequent duty period.

(2) The duty period required under this paragraph (f) may be extended to 26 hours when the extension is due to operational delays. In this case the 22 hour rest period may not be reduced.

§ 135.265 Reserve and standby assignments.

(a) *Standby duty.* Standby duty commences when a flight crewmember is placed on standby duty assignment. Standby duty periods must be scheduled in accordance with § 135.263. Standby duty periods end when the duty period associated with a subsequent flight assignment ends or the flight crewmember is relieved from standby duty for a scheduled rest period.

(b) *Reserve time.* A certificate holder may assign a reserve assignment to a flight crewmember and a flight crewmember may accept that assignment only when the applicable provisions of this section are met. Each flight crewmember must be given a 10-hour rest period before being assigned to reserve time. Reserve time may be assigned under either of the following options and the flight crewmember must be notified of which option has been selected before the beginning of the reserve time assignment:

(1) A certificate holder may schedule a flight crewmember assigned to reserve time and a flight crewmember may accept any duty period if the flight crewmember receives at least 10 hours notice and if the duty period is scheduled in accordance with § 135.263. If a flight crewmember does not receive at least 10 hours notice, the following limitations apply:

(i) If at least 8 hours notice is given the scheduled duty period is limited to no more than 12 hours. The duty period required under this paragraph (b)(1) may be extended to 14 hours when the extension is due to operational delays.

(ii) If at least 6 hours notice is given the scheduled duty period is limited to no more than 10 hours. The duty period required under this paragraph (b)(1) may be extended to 12 hours when the extension is due to operational delays.

(iii) If at least 4 hours notice is given the scheduled duty period is limited to no more than 8 hours. The duty period required under this paragraph (b)(1) may be extended to 10 hours when the extension is due to operational delays.

(iv) If fewer than 4 hours notice is given the scheduled duty period is limited to no more than 6 hours. The duty period required under this paragraph (b)(1) may be extended to 8 hours when the extension is due to operational delays.

(2) A certificate holder may assign a flight crewmember to a reserve assignment and a flight crewmember may accept a duty period if, for each 24-hour period, the flight crewmember receives at least a regularly scheduled 6-hour period that is protected from any contact by the certificate holder. The hours of the 6-hour protected time period must be assigned before the flight crewmember begins the reserve time assignment and must occur at the same time during each 24-hour period during a reserve time assignment. Any duty period assignment must be scheduled to be completed within the 18 hour reserve period. The length of the duty period and the subsequent rest period must be in accordance with § 135.263.

§ 135.267 Additional flight crewmember duty period and flight time scheduling limitations.

(a) A flight crewmember is not considered to be scheduled for a duty period in excess of the scheduled duty period limitations if the duty periods to which he or she is assigned are scheduled and normally terminate within the limitations, but, due to operational delays, the flights to which he or she is assigned are not at block out time expected to reach their destination within the scheduled duty period. However, no air carrier may schedule a flight crewmember, nor may a flight crewmember accept a flight that at block out time would extend the flight crewmembers scheduled duty period maximum more than two hours, as provided in § 135.263.

(b) A flight crewmember is not considered to be scheduled for flight time in excess of the flight time limitations if the flights to which he or she is assigned are scheduled and normally terminate within the limitations, but due to operational delays are not at block out time expected to reach their destination within the scheduled time.

§ 135.269 Weekly and monthly flight crewmember flight time limitations.

No certificate holder may schedule any flight crewmember and no flight crewmember may accept an assignment for flight time under this part if that flight crewmember's total flight time for a certificate holder under parts 91, 121, and 135 of this chapter will exceed—

(a) 32 hours in any 7 consecutive calendar days.

(b) 100 hours in any calendar month.

§ 135.271 Additional flight crewmember rest requirements.

(a) No certificate holder may assign any flight crewmember and no flight crewmember may accept any duty period or flight time with the certificate holder unless the flight crewmember has had at least the minimum rest required under this subpart.

(b) No certificate holder may assign any flight crewmember and no flight crewmember may accept any duty with the certificate holder during any required rest period. For example the flight crewmember may not be required to contact the certificate holder, answer the telephone, carry a beeper, remain at a specific location or in any other way be responsible to the air carrier during a rest period.

(c) Rest periods that are required under this subpart can occur concurrently with any other rest period.

(d) The reduced rest periods allowed under § 135.263 may only be used due to operational delays and may not be scheduled in advance.

(e) Each certificate holder shall provide each flight crewmember who is assigned to one or more duty periods, standby duty, or reserve time a rest period of at least 36 consecutive hours during any 7 consecutive calendar days.

(f) Each certificate holder must provide each flight crewmember assigned to assigned time, when the assigned time is not part of a duty period, a rest period of at least 10 hours before the commencement of a subsequent duty period.

(g) Each certificate holder must provide each flight crewmember at least 48 consecutive hours of rest upon return to the flight crewmember's home base after completion of one or more duty periods that terminate in a time zone or zones that differs from the time zone of the flight crewmember's home base by 6 or more hours and the flight crewmember remains in that time zone or zones for at least 48 consecutive hours. The flight crewmember must receive this rest before beginning a subsequent duty period. The home base is determined by the certificate holder and is where that crewmember is based and receives schedules.

§ 135.273 Deadhead transportation.

Time spent in transportation, not local in character, that a certificate holder requires of a flight crewmember and provides to transport the crewmember to an airport at which he or she is to serve on a flight as a crewmember, or from an airport at which he or she was relieved from duty to return to his or her home station is not considered part of a rest period. For

duty period limitation purposes the certificate holder and flight crewmember must consider deadhead time as assigned time or as part of a duty period associated with flight.

§ 135.275 Duty period and flight time limitations: Other flying for a certificate holder.

No flight crewmember who is employed by a certificate holder conducting operations under this part may do any other duty or flying for a certificate holder conducting operations under part 121 or part 135 of this chapter if that duty or flying for a certificate holder plus his or her duty or flying under this part will exceed any duty period or flight time limitation in this part. This section applies to any other duty or flying under part 91, part 121, or part 135 of this chapter for a certificate holder whether the duty or flying precedes or follows the flight crewmember's flying under this part.

§ 135.271 [Redesignated as § 135.277]

10. Section 135.271 is redesignated as § 135.277 and revised to read as follows:

§ 135.277 Additional flight crewmember rest requirements.

(a) No certificate holder may assign any flight crewmember and no flight crewmember may accept any duty period or flight time with the certificate holder unless the flight crewmember has had at least the minimum rest required under this subpart.

(b) No certificate holder may assign any flight crewmember and no flight crewmember may accept any duty with the certificate holder during any required rest period. For example the flight crewmember may not be required to contact the certificate holder, answer the telephone, carry a beeper, remain at a specific location or in any other way be responsible to the air carrier during a rest period.

(c) Rest periods that are required under this subpart can occur concurrently with any other rest period.

(d) The reduced rest periods allowed under § 135.263 may only be used due to operational delays and may not be scheduled in advance.

(e) Each certificate holder shall provide each flight crewmember who is assigned to one or more duty periods, standby duty, or reserve time a rest period of at least 36 consecutive hours during any 7 consecutive calendar days.

(f) Each certificate holder must provide each flight crewmember assigned to assigned time, when the assigned time is not part of a duty period, a rest period of at least 10 hours before the commencement of a subsequent duty period.

(g) Each certificate holder must provide each flight crewmember at least 48 consecutive hours of rest upon return to the flight crewmember's home base after completion of one or more duty periods that terminate in a time zone or zones that differs from the time zone of the flight crewmember's home base by 6 or more hours and the flight crewmember remains in that time zone or zones for at least 48 consecutive hours. The flight crewmember must receive this rest before beginning a subsequent duty period. The home base is determined by the certificate holder and is where that crewmember is based and receives schedules.

Issued in Washington, D.C., on December 11, 1995.

Thomas C. Accardi,

Acting Director, Flight Standards Service.

[FR Doc. 95–30547 Filed 12–14–95; 8:45 am]

BILLING CODE 4910–13–U

14 CFR Part 121

[Docket No. 27264]

RIN 2120–AF96

The Age 60 Rule

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Disposition of comments and notice of agency decisions.

SUMMARY: This action announces FAA's decisions on a number of issues regarding the FAA's ''Age 60 Rule''. The issues include: responding to the comments requested in 1993 regarding various aspects of the Age 60 Rule, including the ''Age 60 Project, Consolidated Database Experiments, Final Report'', and issues raised by pilots seeking exemptions from the Age 60 Rule, issues raised by a petition for rulemaking by the Professional Pilots Federation (PPF), requesting the FAA to remove the Age 60 Rule.

After review of all comments, studies, and other pertinent information, the FAA has determined not to initiate rulemaking to change the Age 60 Rule at this time. The FAA also has decided not to grant any of the pending petitions for exemption or rulemaking.

ADDRESSES: The complete docket containing recent comments on the Age 60 Rule, including copies of studies related to the Age 60 issue, may be examined at the Federal Aviation Administration, Office of the Chief Counsel (AGC–200), Rules Docket, Room 915–G, 800 Independence Avenue SW., Washington, DC 20591, weekdays (except Federal holidays) between 8:30 a.m. and 5:00 p.m.

Availability of Disposition

Any person may obtain a copy of this Disposition by submitting a request to the Federal Aviation Administration, Office of Public Affairs, Attention: Public Inquiry Center, APA–220, 800 Independence Avenue, SW., Washington, DC 20591, or by calling (202) 267–3484. Requests should be identified by the docket number of this Disposition.

FOR FURTHER INFORMATION CONTACT: Daniel V. Meier, Jr., AFS–240, Regulations Branch, Federal Aviation Administration, 800 Independence Avenue, SW., Washington, DC 20591, Telephone (202) 267–3749 or (202) 267–8086.

SUPPLEMENTARY INFORMATION:

I. Background

Section 121.383(c) of the Federal Aviation Regulations (FAR) (14 CFR § 121.383(c)) prohibits any air carrier from using the services of any person as a pilot, and prohibits any person from serving as a pilot, on an airplane engaged in operations under part 121 if that person has reached his or her 60th birthday. The FAA adopted the ''Age 60 Rule'', as it has come to be known, in 1959 (24 FR 9767, December 5, 1959).

In late 1990, the FAA initiated a study aimed at consolidating available accident data and correlating it with the amount of flying by pilots as a function of their age. This resulted in a document entitled ''Age 60 Project, Consolidated Database Experiments, Final Report'', dated March 1993 (the ''Hilton Study''). The FAA held a public meeting and requested comments regarding various issues related to the Age 60 Rule, including the Hilton Study (58 FR 21336, April 20, 1993). The FAA has reviewed the written comments received in the docket (Docket No. 27264) and to the comments presented at the public meeting. The FAA is also responding to a number of pending petitions from pilots seeking an exemption from the Age 60 Rule. Finally, the FAA is responding to a petition for rulemaking submitted by the Professional Pilots Federation (PPF).

This document describes the history and basis for the rule, the major events during the history of the rule, the FAA's response to the issues raised above, and the FAA's rationale for maintaining the Age 60 Rule.

I(a). Basis for the 1959 Rule

The FAA promulgated the Age 60 Rule in 1959 because of concerns that a hazard to safety was presented by utilization of aging pilots in air carrier operations. As noted in that rulemaking,

(1) The Airplane Flight Manual for airplanes that comply with paragraph (a)(1) or (a)(2) of this section, or

(2) The Airplane Flight Manual or in the manual required by § 121.133 for airplanes that comply with paragraph (a)(3) of this section.

(d) Procedures for operation of the airframe ice protection system must include initial activation, operation after initial activation, and deactivation. Procedures for operation after initial activation of the ice protection system must address—

(1) Continuous operation,

(2) Automatic cycling,

(3) Manual cycling if the airplane is equipped with an ice detection system that alerts the flightcrew each time the ice protection system must be cycled, or

(4) Manual cycling based on a time interval if the airplane type is not equipped with features necessary to implement paragraphs (d)(1) through (3) of this section.

(e) System installations used to comply with paragraphs (a)(1) or (a)(2) of this section must be approved through an amended or supplemental type certificate in accordance with part 21 of this chapter.

Issued in Washington, DC, on November 16, 2009.

John W. McGraw,

Acting Director, Flight Standards Service.

[FR Doc. E9–28036 Filed 11–20–09; 8:45 am]

BILLING CODE 4910–13–P

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Parts 121 and 135

[Docket No. 28081]

RIN 2120–AI93 (Formerly 2120–AF63)

Flight Crewmember Duty Period Limitations, Flight Time Limitations and Rest Requirements; Withdrawal

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of proposed rulemaking (NPRM); withdrawal.

SUMMARY: The FAA is withdrawing a previously published NPRM that proposed to establish one set of duty period limitations, flight time limitations, and rest requirements for flight crewmembers engaged in air transportation. The NPRM also proposed to establish consistent and clear duty period limitations, flight time limitations, and rest requirements for domestic, flag, supplemental, commuter and on-demand operations. We are withdrawing the NPRM because it is outdated and because of the many significant issues commenters raised. The FAA intends to issue a new NPRM to address flight, duty, and rest.

DATES: The proposed rule published on December 20, 1995 (60 FR 65951), is withdrawn as of November 23, 2009.

FOR FURTHER INFORMATION CONTACT: Dale E. Roberts, Air Transportation Division (AFS–200), Flight Standards Service, Federal Aviation Administration, 800 Independence Avenue, SW., Washington, DC 20591; telephone (202) 267–5749; *e-mail: dale.e.roberts@faa.gov.*

SUPPLEMENTARY INFORMATION:

Background

In June 1992 the FAA announced the tasking of the Aviation Rulemaking Advisory Committee (ARAC) Flight Crewmember Flight/Duty Rest Requirements working group.[1] The tasking followed the FAA's receipt of hundreds of letters about the interpretation of existing rest requirements and several petitions to amend existing regulations. The working group was tasked to determine if regulations on air carrier flight, duty, and rest requirements were being consistently interpreted; to evaluate industry compliance and practice on scheduling of reserve duty and rest periods; and to evaluate reports of excessive pilot fatigue related to such scheduling. While the working group could not reach consensus, they submitted a final report in June 1994 with proposals from several working group members.

Following receipt of the ARAC's report, the FAA published the 1995 NPRM.[2] The proposed rule was based on proposals from the ARAC working group, the petitions for rulemaking from the industry and others, National Transportation Safety Board (NTSB) recommendations, and existing knowledge of fatigue, including research by the National Aeronautics and Space Administration (NASA). Subsequently, and in response to requests from the industry, the FAA extended the comment period closing date and answered clarifying questions to the NPRM in a 1996 notice published in the **Federal Register.**[3]

The NPRM included proposals for a 14-hour duty day for two-pilot operations; a 10-hour flight time limit; two options for reserve and standby duty; a 32-hour in 7 days limit on flight time; and a 10-hour rest period. It also included provisions for tail end ferry flights (conducted under part 91) under the proposed duty period and flight time limits.

Discussion of Comments

The FAA received over 2,000 comments to the NPRM. Although some commenters, including the NTSB, NASA, Air Line Pilots Association, and Allied Pilots Association, said the proposal would enhance safety, the same commenters had specific objections. For example, the pilot unions objected to the proposed increase in allowed flight time. These commenters also said the proposal should have included special duty and flight time limits for disruptions in circadian rhythm and for operations with multiple takeoffs and landings.

Many industry associations opposed the NPRM, stating the FAA lacked safety data to justify the rulemaking, and industry compliance would impose significant costs. The reserve duty time provisions generated the most controversy. Overwhelmingly, air carrier associations and operators strongly criticized these provisions, asserting that they had no safety basis and were extremely costly.

Subsequent Fatigue Mitigation Efforts

Given the significant issues the NPRM raised, particularly about reserve time, the FAA tasked[4] ARAC in 1998 to make recommendations on reserve time for all types of air carrier operations. ARAC held a series of public meetings across the country to seek a broad cross-section of views. While the exchange helped in identifying issues that needed to be resolved before issuing a final rule, in the end, ARAC was unable to reach consensus. The FAA had stated in the NPRM that if the proposal on reserve time was not adopted, the agency would undertake rigorous enforcement of existing flight, duty, and rest rules. Consequently, in a June 1999 notice of enforcement policy,[5] the FAA informed the industry that the agency would conduct inspections to ensure compliance with current rules. Those inspections began in December 1999. After publication of this notice, the FAA received several requests for interpretation of various provisions of the rules. We responded to these requests in a second notice of

[1] 57 FR 26685; June 15, 1992.

[2] Flight Crewmember Duty Period Limitations, Flight Time Limitations and Rest Requirements notice of proposed rulemaking (60 FR 65951; December 20, 1995).

[3] 61 FR 11492; March 20, 1996.

[4] 63 FR 37167; July 9, 1998.

[5] Flight Crewmember Flight Time Limitations and Rest Requirements notice of enforcement policy (64 FR 32176; June 15, 1999).

enforcement policy [6] published in the **Federal Register** in May 2001.

Since 2001, the agency has undertaken other fatigue mitigation efforts. Among these efforts was the Part 125/135 Aviation Rulemaking Committee (ARC),[7] which we convened in February 2003, to do a comprehensive regulatory review of 14 CFR parts 125 and 135. This review included rules on flight, duty, and rest. The ARC submitted its recommendations in September 2005. Also, in June 2008, we held an Aviation Fatigue Management Symposium [8] that provided the industry with the latest information on fatigue science, mitigation, and management. Currently, the agency is developing an Advisory Circular on fatigue that incorporates information from the Symposium. Additionally, in June 2009, the FAA chartered the Flight and Duty Time Limitations and Rest Requirements ARC [9] comprised of labor, industry, and FAA representatives to develop recommendations for an FAA rule based on current fatigue science and a thorough review of international approaches to the issue.

Reason for Withdrawal

The FAA is withdrawing the 1995 Flight Crewmember Duty Period Limitations, Flight Time Limitations and Rest Requirements NPRM because it is outdated and because it raised many significant issues that the agency needed to consider before proceeding with a final rule. Instead of adopting the provisions of the 1995 NPRM, the FAA intends to develop a new NPRM later this year that considers the Flight and Duty Time Limitations and Rest Requirements ARC recommendations, scientific research, NTSB recommendations on fatigue and flight duty time, and the recommendations of the Part 125/135 ARC.

Conclusion

The FAA is withdrawing the December 1995 NPRM for the reasons stated in this notice and will issue a new proposed rule to address flight, duty, and rest. We will provide the opportunity for comment on the new rulemaking through the NPRM process.

[6] 66 FR 27548; May 17, 2001.

[7] 68 FR 5488; February 3, 2003 (*See also* 67 FR 42323; July 17, 2003).

[8] *See www.faa.gov/about/office%5Forg/headquarters%5Foffices/avs/offices/afs/afs200/* for the Symposium proceedings.

[9] See *http://www.faa.gov/about/office%5Forg/headquarters%5Foffices/avs/offices/afs/afs200/* for the ARC Charter.

Issued in Washington, DC, on November 17, 2009.

Chester D. Dalbey,

Deputy Director, Flight Standards Service.

[FR Doc. E9–28054 Filed 11–20–09; 8:45 am]

BILLING CODE 4910–13–P

DEPARTMENT OF HEALTH AND HUMAN SERVICES

Food and Drug Administration

21 CFR Part 501

[Docket No. FDA–2009–N–0025]

RIN 0910–AG02

Animal Food Labeling; Declaration of Certifiable Color Additives

AGENCY: Food and Drug Administration, HHS.

ACTION: Proposed rule.

SUMMARY: The Food and Drug Administration (FDA) is proposing to amend its regulations regarding the declaration of certified color additives on the labels of animal food including animal feeds and pet foods. FDA is proposing this amendment in response to the Nutrition Labeling and Education Act of 1990 (the 1990 amendments), which amended the Federal Food, Drug, and Cosmetic Act (the act) by requiring, among other things, the listing on food labels of the common or usual names of all color additives required to be certified by FDA. An additional purpose of this amendment is to make these regulations consistent with the regulations regarding the declaration of certified color additives on the labels of human food. The proposed rule also suggests appropriate terminology for the declaration of certification-exempt color additives on the labels of animal food.

DATES: Submit written or electronic comments on the proposed rule by February 22, 2010. Submit comments on information collection issues under the Paperwork Reduction Act of 1995 by December 23, 2009, (see the ''Paperwork Reduction Act of 1995'' section of this document).

ADDRESSES: You may submit comments, identified by Docket No. FDA–2009–N–0025 and/or RIN number 0910–AG02, by any of the following methods, except that comments on information collection issues under the Paperwork Reduction Act of 1995 must be submitted to the Office of Regulatory Affairs, Office of Management and Budget (OMB) (see the ''Paperwork Reduction Act of 1995'' section of this document).

Electronic Submissions

Submit electronic comments in the following way:

- Federal eRulemaking Portal: *http://www.regulations.gov*. Follow the instructions for submitting comments.

Written Submissions

Submit written submissions in the following ways:

- FAX: 301–827–6870.
- Mail/Hand delivery/Courier [For paper, disk, or CD–ROM submissions]: Division of Dockets Management (HFA–305), Food and Drug Administration, 5630 Fishers Lane, rm. 1061, Rockville, MD 20852.

To ensure more timely processing of comments, FDA is no longer accepting comments submitted to the agency by e-mail. FDA encourages you to continue to submit electronic comments by using the Federal eRulemaking Portal, as described previously, in the **ADDRESSES** portion of this document under *Electronic Submissions*.

Instructions: All submissions received must include the agency name and Docket No(s). and Regulatory Information Number (RIN) (if a RIN number has been assigned) for this rulemaking. All comments received may be posted without change to *http://www.regulations.gov*, including any personal information provided. For additional information on submitting comments, see the ''Comments'' heading of the **SUPPLEMENTARY INFORMATION** section of this document.

Docket: For access to the docket to read background documents or comments received, go to *http://www.regulations.gov* and insert the docket number(s), found in brackets in the heading of this document, into the ''Search'' box and follow the prompts and/or go to the Division of Dockets Management, 5630 Fishers Lane, rm. 1061, Rockville, MD 20852.

FOR FURTHER INFORMATION CONTACT: John P. Machado, Center for Veterinary Medicine (HFV–228), Food and Drug Administration, 7519 Standish Pl., Rockville, MD 20855, 240–453–6854; e-mail: *john.machado@fda.hhs.gov*.

SUPPLEMENTARY INFORMATION:

I. Background

Before passage of the 1990 amendments, the act provided that colorings could be declared collectively on food product labels using the term ''colorings.'' However, the 1990 amendments amended section 403(i) of the act (21 U.S.C. 343(i)) to require that certified color additives be declared by their common or usual names and not be designated by the term ''colorings.'' As a result of this change in the statute, each certified color additive (e.g., FD&C