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INITIAL REGULATORY EVALUATION, INITIAL REGULATORY FLEXIBILITY DETERMINATION, INITIAL INTERNATIONAL TRADE IMPACT ASSESSMENT, AND INITIAL UNFUNDED MANDATE ASSESSMENT

FOR

PROPOSED RULE

SPECIAL FEDERAL AVIATION REGULATION NO. XX – MITSUBISHI MU-2B SERIES AIRPLANE SPECIAL TRAINING, EXPERIENCE, AND OPERATING REQUIREMENTS 14 CFR PARTS 61, 91, AND 135

OFFICE OF AVIATION POLICY AND PLANS REGULATORY ANALYSIS DIVISION

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I. REGULATORY EVALUATION SUMMARY

This Regulatory Evaluation examines the impacts of a Federal Aviation Administration (FAA) proposed rule that would modify the regulations applicable to the Mitsubishi Heavy Industries (MHI) MU-2B series airplane that would create new pilot training, experience, and operating requirements.

The FAA estimates the present (2006) value (using a 7% discount rate) of the total quantified cost from 2008 through 2017 is approximately \$27.1 million. The FAA estimates the present (2006) value (using a 7% discount rate) of the total quantified benefits from 2008 through 2017 is approximately \$55.4 million. The time period for this analysis is ten years because this period is long enough to encompass the important benefits and costs likely to result from the rule.

The FAA has made initial determinations that the proposed rule: (1) has benefits which do justify its costs, (2) would not impose costs sufficient to be considered "significant" under the economic standards for significance under Executive Order 12866, and would not be "significant" under DOT's Regulatory Policies and Procedures, (3) would have a significant economic impact on a substantial number of small entities, (4) would not constitute a barrier to international trade, and (5) would not constitute a significant regulatory action under the Unfunded Mandates Reform Act of 1995.

II. INTRODUCTION

This regulatory evaluation assesses the economic impact of a proposed rule amending Parts 61, 91, and 135 of Title 14, Code of Federal Regulations (14 CFR) to modify the regulations applicable to the Mitsubishi Heavy Industries (MHI) MU-2B series airplane that would create new pilot training, experience, and operating requirements. After an increased accident and incident rate in the MU-2B series airplane, the Federal Aviation Administration (FAA) began a safety evaluation of the MU-2B in July 2005, and found that changes in the training and operating requirements for that airplane are needed. This proposed regulation is the result of information gathered from a review of MU-2B accidents, and it is intended to improve the level of safety.

III. BACKGROUND

A. HISTORY

In the 1950s, MHI developed the MU-2B series airplane equipped with state-of-the-art turboprop engines. The MU-2B design provided a high-wing loading in cruise configuration, the capability of carrying nine passengers in a pressurized cabin, a highly efficient double-slotted Fowler flap system designed to run the full span of the wing to achieve short field takeoff and landing capability, and a spoiler system for roll control. MHI produced 764 MU-2B series airplanes with 397 (active and inactive) airplanes on the U.S. registry as of August 2005.

The FAA type certificated the MU-2B airplane in November 1965; the type certification basis was Civil Aviation Regulation (CAR) 10, which required compliance with CAR 3 standards. CAR 3 standards did not require a cockpit checklist for the MU-2B, nor was the airplane required to demonstrate the ability to complete the takeoff climb with one engine inoperable.

B. USAGE

At first, the MU-2B was popular with corporate and business users. MHI eventually produced 13 different models with two basic categories of fuselage length: a "short body" and a "long body" design. Over the years, corporate and business aviation have switched to more modern jet airplanes. As a result, the MU-2B is now used primarily in air taxi operations (especially cargo hauling) and as a personal use airplane. Of the 397 MU-2Bs on the U.S. registry, the majority are operated under the requirements of 14 CFR part 91 as personal use

airplanes. As of August 2005, there were 60 MU-2Bs operating under Part 135 within the United States.

C. RISK IDENTIFICATION

This shift to air taxi and personal flight operations increased the exposure of the MU-2B to certain known hazards: more frequent night flights, a significantly higher number of hours flown than in previous operations, and operation by pilots who may not be getting the level and frequency of training that corporate pilots typically receive. This shift in usage may have resulted in an increase in the accident rate. Figure 1 below shows the trend in MU-2B fatal and non-fatal accidents in the U.S. from 1996 to 2005.



Figure 1: MU-2B Fatal and Non-Fatal Accidents in the U.S.

From 1996 – 2005, there were 35 MU-2B accidents in the U.S., and 18 of those accidents were fatal accidents with a total of 39 fatalities. Over a two-year period from 2004-2005, the MU-2B airplane has been involved in 12 accidents (including one in Canada), 8 of which were fatal accidents with a total of 14 fatalities. For more detailed information on MU-2B accidents in the U.S., refer to Table 1 below.

| Category | # Accidents | % Accidents | # Fatal Accidents | % Fatal Accidents | # Fatalities | % Fatalities |
|-----------|-------------|-------------|----------------------|----------------------|--------------|--------------|
| 2004-2005 | | | | | | |
| Part 135 | 6 | 55% | 4 | 57% | 5 | 42% |
| Part 91 | 5 | 45% | 3 | 43% | 7 | 58% |
| All | 11 | | 7 | | 12 | |
| 1996-2005 | | | | | | |
| Part 135 | 11 | 31% | 6 | 33% | 7 | 18% |
| Part 91 | 24 | 69% | 12 | 67% | 32 | 82% |
| All | 35 | | 18 | | 39 | |

Table 1: MU-2B Accidents in the U.S.

Source: NTSB

D. RISK ANALYSIS

In response to the increasing number of accidents and incidents involving the MHI MU-2B series airplane, the FAA began a safety evaluation of the MU-2B in July of 2005. With the assistance of pilots and maintenance personnel, the FAA evaluated the design, operations, training, and maintenance of the MU-2B series airplane. Our goal was to determine if this airplane continues to meet the required certificated minimum level of safety and to determine what steps may be necessary to ensure its continued safe operation.

The safety evaluation provided an in-depth review and analysis of MU-2B series airplane accidents, incidents, safety data, pilot training requirements, and engine reliability. The safety

evaluation employed new analysis tools that provided a more detailed root cause analysis of the service history problems of the MU-2B than was previously possible.

The safety evaluation also included convening an FAA Flight Standardization Board (FSB) to evaluate proposed training, checking, and currency requirements for pilots operating the MU-2B series airplane. The FSB is comprised of representatives from the manufacturer and from the FAA. There were many Technical Advisors to the MU-2B FSB in order to draw on existing operating experience and to have resources to address specific concerns identified by the Safety Evaluation Group. Industry input was a core part of the MU-2B FSB even though no industry pilots were FSB members. The FSB reviewed a proposed MHI MU-2B training program and a standardized cockpit checklist. The FSB also conducted a human factors evaluation to determine if average pilots, without exceptional skills, can perform various in-flight procedures during high workloads and if automation can reduce pilot workloads and enhance safety.

E. RISK MITIGATION

The <u>MU-2B Series Airplane Safety Evaluation Report</u> of December 2005 recommended, among other things, that the FAA commence a rulemaking to address the recommendations of the report. Based on the safety evaluation recommendations, the FAA proposes a Special Federal Aviation Regulation (SFAR) addressing the following items:

 The Safety Evaluation Team and the FSB concluded safe operation of the airplane requires initial and annual recurrent pilot training. This training must be standardized to be effective.

- A standardized cockpit checklist that emphasizes proper operational procedures is critical to the safe operation of the MU-2B series airplane.
- All operations of the MU-2B should be done in accordance with an updated Airplane Flight Manual (AFM).

IV. COST OF COMPLIANCE FOR THE PROPOSED RULE

A. THE PROPOSED RULE

The FAA proposes to amend 14 CFR parts 61, 91, and 135 by adding the proposed Special Federal Aviation Regulation (SFAR) to modify the regulations applicable to the MU-2B airplane that would create new pilot training, experience, and operating requirements based on the <u>MU-2B Series Airplane Safety Evaluation Report</u> of December 2005.

B. METHODOLOGY TO ESTIMATE COMPLIANCE COSTS

Time Period of Analysis

The proposed rule would require MU-2B pilots, instructors, and operators to comply with the final rule 180 days after its effective date. For the purpose of this analysis, we assume that the final rule would be issued on January 1, 2008, and made effective March 1, 2008. Thus, compliance costs for requalification and differences training would be incurred in 2008, and recurrent training costs would continue into the future. The time period for this analysis is ten years because this period is long enough to encompass the important benefits and costs likely to result from the rule.

Number Of MU-2B Airplanes

According to Turbine Aircraft Services, Inc. (TAS), which is under contract to Mitsubishi Heavy Industries America (MHIA) (MHI's distributor in the U.S.), there were 311 active MU-2Bs in the U.S. as of May 2006. Refer to Table 2 for more detailed information on the

MU-2B fleet in the U.S. Given the high average age of these airplanes, we expect some of these airplanes to be retired at the end of the 10-year analysis period.

| Sales Designation | TC Model Number | Date of Production | Number Active in the U.S. |
|----------------------|--------------------|-----------------------|------------------------------|
| MU-2B | MU-2B | 1967 | 8 |
| MU-2-D | MU-2B-10 | 1968 | 2 |
| MU-2-DP | MU-2B-15 | 1968 | 0 |
| MU-2-F | MU-2B-20 | 1968-1972 | 29 |
| MU-2-K | MU-2B-25 | 1972-1974 | 34 |
| MU-2-M | MU-2B-26 | 1975-1976 | 14 |
| MU-2-P | MU-2B-26A | 1977-1978 | 26 |
| Solitaire | MU-2B-40 | 1979-1985 | 37 |
| MU-2-G | MU-2B-30 | 1970-1971 | 5 |
| MU-2-J | MU-2B-35 | 1972-1974 | 34 |
| MU-2-L | MU-2B-36 | 1975-1976 | 17 |
| MU-2-N | MU-2B-36A | 1977-1978 | 23 |
| Marquise | MU-2B-60 | 1979-1985 | 82 |
| Totals | | | 311 |

 Table 2: MU-2B Active Fleet (as of May 2006)

Source: Turbine Aircraft Services, Inc.

Based on FAA data as of August 2005, there were 60 MU-2Bs operating under Part 135. This number will change slightly over time as companies buy and/or sell MU-2Bs. For the purposes of this regulatory evaluation, the FAA estimates that there would be 60 MU-2Bs operating under Part 135 and 251 MU-2Bs operating under Part 91.

MU-2B Variable Operating Cost

Howell Enterprises, Inc., conducted a cost study of the Mitsubishi Marquise and determined that the variable operating cost was \$905.00 per hour. This figure included the cost of maintenance, avionics, engine reserve for overhaul & hot section, propeller reserve, and fuel. This figure does not include crew costs or other fixed costs such as hangar rent, interest, or insurance costs. Other MU-2B pilots and operators estimated the MU-2B operating cost to be from \$900 to \$1200 per hour. We have an indication that these numbers include some fixed costs and crew costs. However, the variable operating cost, by definition, does not include fixed costs. In contrast, *The Aircraft Cost Evaluator* (Spring 2006) by Conklin & de Decker Associates, Inc., states that the total variable costs (not including crew costs) per flight hour for the MU-2B Marquise is \$776.21, and for the MU-2B Solitaire is \$767.50. For the purposes of this regulatory evaluation, the FAA estimates that the variable operating cost of a MU-2B is \$900 per hour based on information from Howell Enterprises, Inc.

Number of Affected Pilots

TAS estimates that there are at least 600 MU-2B pilots in the U.S. The FAA accepts the TAS estimate. Based on information from small businesses flying the MU-2B (operating under Part 135 and Part 91), the FAA estimates that there is an average of two pilots per MU-2B being used in a small business, and one pilot per MU-2B that isn't used as part of a business. Hence, the FAA estimates that 20% of MU-2B pilots are flying under Part 135 (60 MU-2Bs * 2 pilots per MU-2B /600 pilots = 20%), and 80% of MU-2B pilots are flying under Part 91.

Based on the MU-2B Aircraft Owners and Pilots Association (MAOPA) estimate that 85% to 90% of MU-2B pilots currently voluntarily receive recurrent training at one of the MU-2B training facilities, the FAA estimates that 85% of MU-2B pilots are currently getting recurrent MU-2B training. Thus, 510 MU-2B pilots are getting recurrent training (600 * .85 = 510), and about 90 pilots are not currently getting any recurrent training (600 * .15 = 90).

Regarding new MU-2B pilots, TAS estimates that about 15% of the airplanes are resold every year, and that two-thirds of those sales are to new operators. Since there are 311 active MU-2Bs in the U.S., there would be about 47 MU-2Bs changing hands every year (311 * .15 = 46.7), and about 31 new MU-2B pilots every year (46.7 * 2/3 = 31.1). In 2005, there were 42 MU-2B sales in the U.S., and about 50 worldwide MU-2B sales according to Jet Net data. MU-2B sales in 2006 are on track with 21 MU-2B sales in the U.S. during the first half of the year. (The numbers for 2005 and 2006 are lower than they have been in previous years due to the uncertainty in 2005 of whether the MU-2B airplane would be grounded and the uncertainty in 2006 about what would be required in the proposed rule.) So the estimate of approximately 47 MU-2Bs being resold every year is a good estimate. A modest increase in training costs is likely to deter new MU-2B pilots. Those pilots can choose to fly other twins and to avoid all of the proposed training costs. Given an ample number of twin-engine airplanes to fly instead of a MU-2B, there is likely to be no lost social opportunity costs. The FAA requests comments.

Based on information from TAS, the FAA estimates that the total number of MU-2B pilots will be steady at around 600 pilots because production of the MU-2B ceased in 1986. Hence, the FAA estimates that there would be 31 existing MU-2B pilots per year who decide to stop flying the MU-2B.

Value of Time

Based on the Economic Values for FAA Investment and Regulatory Decisions, the FAA estimates the average value of time for all Part 91 pilots to be \$37.20 per hour.¹ This figure is a weighted average value of travel time for both personal and business aviation flying under Part 91. When considering general aviation passengers as a separate category, a value of 70 percent of the median hourly income of Aircraft Owners and Pilots Association (AOPA)

¹ Economic Values for FAA Investment and Regulatory Decisions -- A Guide, Draft Final Report, (December 31, 2004), Table 1-1.

members is established for personal travel and 100 percent of median hourly income for business travel.² The value of travel time is used as a proxy for the value of time for Part 91 pilots.

For pilots flying under Part 135, the FAA estimates the average value of time based on the average wage rates published by the Bureau of Labor Statistics (BLS). According to BLS, the mean annual wage of commercial pilots of small fixed or rotary winged aircraft, primarily for the transport of cargo and passengers, is 65,560.³ BLS calculated the annual wage by multiplying the hourly mean wage by a "year-round, full-time" hours figure of 2,080 hours.⁴ Hence, the hourly mean wage for commercial pilots is 31.52 (65,560/2080 = 31.52).

The average value of time for all MU-2B pilots is \$36.06 per hour (20% * \$31.52 + 80% * \$37.20 = \$36.06) based on the information above. This is the average value of time that is used in this regulatory evaluation.

Average Incremental Cost

This analysis uses the concept of average incremental cost in determining the compliance costs of the proposed regulation. For example, there are about 510 MU-2B pilots who currently receive training, and about 90 MU-2B pilots who currently do not receive training. So the compliance costs for 510 pilots would be equal to the difference between what these pilots are currently paying for training compared to the full cost of the proposed MU-2B training program. In contrast, the compliance costs for the other 90 pilots (and for the estimated 31 new MU-2B pilots per year) would be equal to the full cost of the proposed MU-2B training program.

² Economic Values for FAA Investment and Regulatory Decisions -- A Guide, Draft Final Report, (December 31, 2004), page 1-2.

³ Bureau of Labor Statistics, Occupational Employment and Wages, May 2005, SOC Code number: 53-2012.

⁴ Bureau of Labor Statistics, Occupational Employment and Wages, May 2005, SOC Code number: 53-2012, note (2).

Discounting

The discount rate in this analysis is 7% (Office of Management & Budget policy). The

FAA also uses a 3% discount rate for comparison. The base year is 2006.

C. COMPLIANCE COSTS

The compliance cost is the cost of meeting the proposed requirements for the following categories:

- Required pilot training.
- Aeronautical experience.
- Flight instructors.
- Currency requirements and flight review.
- Operating requirements.

Required Pilot Training

This is a new requirement. The new required pilot training must meet the specifications in the Mitsubishi Heavy Industries MU-2B Training Program, Part Number YET 05301. This

training program includes ground and flight training in four different categories:

initial/transition, requalification, recurrent, and differences training.

- Initial/transition training applies to pilots who have not flown the MU-2B within the past two years.
- Requalification training applies to pilots who have flown the MU-2B within the past two years, but have not received training as specified in the Mitsubishi Heavy Industries MU-2B Training Program, Part Number YET 05301. Hence, requalification training applies to all current MU-2B pilots.

- Recurrent training applies to all MU-2B pilots, and must be done on an annual basis.
- Differences training applies to pilots who fly more than one model, or who switch models.

Currently, any pilot with a multi-engine rating can legally fly a MU-2B. Many MU-2B pilots do get initial and recurrent pilot training because the insurance companies require it. However, there are many MU-2B pilots who decide not to get insurance, and decide to fly the MU-2B without any training. Based on information from industry representatives (MU-2B training providers and MAOPA), the FAA estimates that approximately 15% of MU-2B pilots have no training and are self-insured. Hence, the compliance cost for 85% of MU-2B pilots would be the incremental difference in costs between the existing training programs and the newly required training program, and the compliance cost for the remaining 15% of the MU-2B pilots would be 100% of the associated training costs.

According to MHIA, the three facilities that are the primary flight training providers for the MU-2B are SimCom, Howell Enterprises, and Professional Flight Training. In 2006, the cost of initial training (including ground training and flight training) at SimCom is \$6,860, at Howell Enterprises is \$3,500, and at Professional Flight Training is \$2,500. Training costs are lower at Howell Enterprises and Professional Flight Training because those companies perform flight training in the customer's MU-2B (which has an average variable operating cost of \$900 per hour). On the other hand, SimCom performs flight training using its two Flight Training Devices (FTDs). Table 3 below shows the total training and variable operating costs (excluding crew costs) of existing MU-2B training programs at each of the above-mentioned MU-2B training providers.

| | Training Costs | Ground Training | Flight Training (hours) | Total Days | MU-2 Operating Costs * | Training & Operating Costs |
|---|-------------------|----------------------|-------------------------------|---------------|------------------------------|----------------------------------|
| Howell Enterprises (Smyrna, TN) | | | | | | |
| Initial Training | \$3,500 | 4 days (or 32 hours) | 5 | 5 | \$4,500 | \$8,000 |
| Recurrent Training | \$2,500 | 3 days (or 24 hours) | 1.5 | 3 | \$1,350 | \$3,850 |
| Additional Flight Training Per Hour | \$100 | | | | | |
| Professional Flight Training (Salina, KS) | | | | | | |
| Initial Training | \$2,500 | 4 days (or 32 hours) | 15 | 7 | \$13,500 | \$16,000 |
| Recurrent Training | \$2,000 | 3 days (or 24 hours) | 2.5 | 3 | \$2,250 | \$4,250 |
| SimCom (Orlando, FL) | | | | | | |
| 5-Day Initial | \$6,860 | 20 hours | 10 | 5 | \$0 | \$6,860 |
| 3-Day Recurrent | \$4,100 | 12 hours | 6 | 3 | \$0 | \$4,100 |

Table 3: Costs of Existing Training Programs (2006)

Source: Company websites and information from instructors.

* MU-2 operating costs exclude crew costs.

All of the existing training programs meet the proposed requirements for the minimum number of hours of ground training. However, the existing training programs do not meet all of the proposed requirements for the minimum number of hours of flight training which include the following:

- Initial training: 12 hours, with at least 6 hours in an actual airplane or advanced simulator.
- Recurrent training:
 - 4 hours in an actual airplane or an advanced simulator, or
 - 6 hours in a flight training device (FTD).

In addition, the proposed training program includes new requirements for requalification training (12 hours of ground and 8 hours of flight training) and differences training (1.5 or 3 hours of ground training only). The cost analysis of differences training will be provided toward the end of this section (see Table 9). Based on information from MU-2B instructors, the FAA estimated the costs of the training programs after the final rule is published. Table 4 shows the cost

estimates for initial training, recurrent training, and requalification training at each of the training providers mentioned previously.

The proposed requirement for recurrent flight training is 4 or 6 hours depending on whether the training is conducted in the airplane, a simulator, or a FTD.⁵ Because Howell Enterprises and Professional Flight Training conduct their flight training in the customer's airplane, 4 hours is the minimum number of flight training hours for recurrent training at those facilities. In contrast, SimCom's flight training is currently performed in a Level 5 FTD, so 6 hours is the minimum number of flight training hours for recurrent training at SimCom.

| | Training Cost Estimates | Ground Training | Flight Training (hours) | Total Days | MU-2 Operating Costs | Training & Operating Costs |
|---|-------------------------------|----------------------|-------------------------------|---------------|----------------------------|----------------------------------|
| Howell Enterprises (Smyrna, TN) | | | | | | |
| Initial Training | \$4,000 | 4 days (or 32 hours) | 12 | 6 | \$10,800 | \$14,800 |
| Recurrent Training | \$2,750 | 3 days (or 24 hours) | 4 | 4 | \$3,600 | \$6,350 |
| Requalification Training | \$3,000 | 3 days (or 24 hours) | 8 | 5 | \$7,200 | \$10,200 |
| Professional Flight Training (Salina, KS) | | | | | | |
| Initial Training | \$2,500 | 4 days (or 32 hours) | 15 | 7 | \$13,500 | \$16,000 |
| Recurrent Training | \$2,000 | 3 days (or 24 hours) | 4 | 4 | \$3,600 | \$5,600 |
| Requalification Training | \$2,000 | 3 days (or 24 hours) | 8 | 5 | \$7,200 | \$9,200 |
| SimCom (Orlando, FL) | | | | | | |
| Initial Training | \$11,000 | 20 hours | 12 | 8 | \$5,400 | \$16,400 |
| Recurrent Training | \$4,600 | 12 hours | 6 | 4 | \$0 | \$4,600 |
| Requalification Training | \$5,100 | 12 hours | 8 | 4 | \$0 | \$5,100 |

 Table 4: Cost Estimates of Future Training Programs (After Final Rule)

Source: FAA estimates based on information from instructors.

Note 1: The number of ground training hours in all existing courses meets or exceeds the minimum proposed regulatory requirement:

Note 2: Professional's existing 15 hours of flight training in the initial course exceeds the 12-hour proposed regulatory requirement.

⁵ The existing rules of 14 CFR 135.351(c) currently allows a 14 CFR 135.293 check be substituted for recurrent flight training. Because of the importance of recurrent training, the exception to recurrent training as described in 14 CFR 135.351(c) would not be allowed for the MU-2B airplane. Accordingly, the FAA has calculated the full estimated cost associated with recurrent training in this initial regulatory evaluation for the proposed rule. The FAA notes that some of the recurrent training requirements could be incorporated into portions of the existing 135.293 check. Thus, the cost of recurrent training would be offset to some extent by a reduction in costs associated with the 135.293 check.

The costs of attending the pilot training would include travel and per diem costs as well as value of time costs (during training and during travel). The 2006 per diem rates for each of the three training facility locations is shown in Table 5 based on the federal government per diem rates in those cities. Regarding Orlando, FL, the per diem rates used in this analysis are a timeperiod weighted average of the per diem rates in Orlando.

| P | er Diem Cos | ts | | |
|----------------------------|-------------|---|----------------------|---|
| Location | Lodging | Meals & Incidental Expenses (M&IE) | Max Per Diem Rate | First & Last Day (75% of M&IE) |
| Smyrna, TN | 60 | 39 | 99 | 29.25 |
| Salina, KS | 60 | 39 | 99 | 29.25 |
| Orlando, FL | | | | |
| Orlando (Oct. 1 - Dec. 31) | 83 | 49 | 132 | 36.75 |
| Orlando (Jan. 1 - Mar. 31) | 101 | 49 | 150 | 36.75 |
| Orlando (Apr. 1 - Sep. 30) | 83 | 49 | 132 | 36.75 |
| Average Orlando, FL | 87.5 | 49 | 136.5 | 36.75 |

 Table 5: Per Diem Rates (FY 2006)

Source: U.S. General Services Administration, Domestic Per Diem Rates (FY '06) Note: Standard CONUS Per Diem rates apply in Smyrna, TN, and in Salina, KS.

Table 6 shows the incremental costs and time (in days) between the existing training programs (data in Table 3) and the proposed training program (data in Table 4), as well as the associated increase in per diem costs (based on the data in Table 5).

| | Training Costs | MU-2 Operating Costs | Training & Operating Costs | # Add'l Training Days | # Add'l Nights Lodging | Lodging | M&IE | Per Diem Costs |
|---|-------------------|----------------------------|----------------------------------|-----------------------------|------------------------------|---------|-------|-------------------|
| Howell Enterprises (Smyrna, TN) | | | | | | | | |
| Initial Training | \$500 | \$6,300 | \$6,800 | 1 | 1 | \$60 | \$39 | \$99 |
| Recurrent Training | \$250 | \$2,250 | \$2,500 | 1 | 1 | \$60 | \$39 | \$99 |
| Requalification Training | \$3,000 | \$7,200 | \$10,200 | 5 | 6 | \$360 | \$254 | \$614 |
| Professional Flight Training (Salina, KS) | | | | | | | | |
| Initial Training | \$0 | \$0 | \$0 | 0 | 0 | \$0 | \$0 | \$0 |
| Recurrent Training | \$0 | \$1,350 | \$1,350 | 1 | 1 | \$60 | \$39 | \$99 |
| Requalification Training | \$2,000 | \$7,200 | \$9,200 | 5 | 6 | \$360 | \$254 | \$614 |
| SimCom (Orlando, FL) | | | | | | | | |
| Initial Training | \$4,140 | \$5,400 | \$9,540 | 3 | 3 | \$263 | \$147 | \$410 |
| Recurrent Training | \$500 | \$0 | \$500 | 1 | 1 | \$88 | \$49 | \$137 |
| Requalification Training | \$5,100 | \$0 | \$5,100 | 4 | 5 | \$438 | \$270 | \$707 |

 Table 6: Incremental Training & Operating Costs and Time

The number of additional days of training that would be required to complete the proposed initial and recurrent training programs is the same as the number of additional nights of lodging required because this time period represents an extension of the existing training program. On the other hand, the requalification training is an entirely new requirement, so the number of additional nights lodging equals the number of additional days of training plus one. For example, a student in a 5-day course would arrive one day before the 5-day course starts, and return one day after the last day of the 5-day course. Hence, the total time involved would be 7 days and 6 nights.

The Meals and Incidental Expenses (M&IE) associated with the initial and recurrent training equals the number of days of additional training multiplied by the M&IE rate. In contrast, the M&IE associated with the requalification training equals the number of training days multiplied by the M&IE rate plus the First and Last Day of M&IE rate multiplied by two. This is based upon the standard federal government practice of providing 75% of the full M&IE rate during the first and last days of travel. The rationale is that a person would be traveling during part of the first and last days, and would not be traveling for the whole day.

Table 7 below shows the average domestic one-way travel costs to each of the three locations by MU-2B and by air carrier. The average time to the destination is computed by dividing the average O&D great circle distance in the Official Airline Guide (OAG) Schedules Database by the average cruising speed of a MU-2B. Then this number is multiplied by the \$900 per hour variable operating cost to arrive at the average MU-2B travel costs, and is multiplied by the \$36.06 per hour average value of time to arrive at the average value of travel time in a MU-2B. For traveling in an air carrier to SimCom (Orlando, FL), this procedure was repeated using data from the U.S. Department of Transportation (DOT) OD1A database and the OAG Schedules database. Because Howell Enterprises and Professional Flight Training only provide MU-2B training in the customer's airplane, calculating travel costs to those locations in an air carrier would not be applicable.

| | Avg. O&D | | Avg. Time | | | | Avg. Time | |
|--------------------------------------|----------|-------------------|-------------|---------------------|------------------------|--------------------|-------------|-------------------------|
| | Great | MU-2 | to | | Avg. Value | Avg. Air | to | Avg. Value |
| | Circle | Cruising Sneed | Destination | Avg. MU-2 Travel | of Travel Time in a | Carrier Fare to | Destination | of Travel Time in an |
| Destination | (sm) | (mph) | (hours) | Costs | MU-2 | Destination | carrier | air carrier |
| Orlando, FL | 887 | 345 | 2.57 | \$2,314 | \$92.72 | \$128 | 2.31 | \$83.31 |
| Nashville, TN (proxy for Smyrna, TN) | 778 | 345 | 2.26 | \$2,030 | \$81.33 | N/A | N/A | N/A |
| Wichita, KS (proxy for Salina, KS) | 640 | 345 | 1.86 | \$1,670 | \$66.90 | N/A | N/A | N/A |

Table 7: One-Way Travel Costs

Sources: BACK OAG Schedules Database, Jane's Aircraft Guide, US DOT OD1A Database

Table 8 shows the average per pilot additional costs of the proposed training program (including the training, operating, per diem, round trip travel, value of travel time, and value of training time costs). Since the time period of analysis for this regulatory evaluation is 10 years, the average total per pilot cost is equal to the recurrent cost multiplied by 9 plus the initial or

requalification cost, whichever is appropriate for the pilot. So the average total per pilot costs over 10 years range from about \$30,000 to \$112,000.

Table 8: Average Per Pilot Training, Operating, Per Diem, Travel, and Value of TimeCosts

| Pilot Category | Initial | Requalification | Recurrent | Total |
|--|----------|-----------------|-----------|-----------|
| Additional Costs for MU-2 pilots with training | | \$12,604 | \$1,937 | \$30,036 |
| Costs for MU-2 pilots without training | | \$12,604 | \$9,889 | \$101,603 |
| Costs for Initial/Transition pilots | \$22,961 | | \$9,889 | \$111,960 |

Note: Slight discrepancies in the addition of figures are due to rounding.

There would be cost savings from existing MU-2B pilots who decide not to continue flying the MU-2B. The per pilot weighted average recurrent cost (considering the 510 pilots who have MU-2B training and the 90 pilots who have no MU-2B training) is \$3,129.76 per year. If a pilot decides to stop flying the MU-2B prior to the first six months after publication of the final rule, he would save a total of about \$40,770 (\$12,604 + 9 * \$3,129.76 = \$40,771.40). On the other hand, if a pilot continues flying for 5 more years after publication of the final rule before he stops flying the MU-2B, this pilot would save a total of about \$15,650 (5 * \$3,129.76 = \$15,648.82). So the per pilot cost savings over 10 years ranges from about \$3,130 to \$40,770.

Differences training would be required for pilots who fly more than one MU-2B model. The proposed regulation would require that pilots who fly two models of MU-2Bs to have 1.5 hours of differences training, and pilots who fly three or more models of MU-2Bs to have 3.0 hours of differences training. The various training providers offer differences training through diverse methods. For example, SimCom charges \$950 for its MU-2B differences training, which includes 2 hours of flight training (in a FTD) and 4 hours of ground training. On the other hand, Howell Enterprises includes differences training (if it is applicable to the pilot) as part of the recurrent training at no additional cost. Hence, the average per pilot cost of differences training at a MU-2B training facility would be \$475. The FAA assumes that there would be no additional travel or per diem costs for differences training because pilots would take differences training in conjunction with recurrent or requalification training. The value of time for differences training is discussed later. Since the existing differences training meets or exceeds the proposed regulatory requirement, the pilots who are not currently getting training (i.e., some pilots flying under Part 91) are the ones who would incur additional cost. It is possible that some training providers would not charge any additional fee for providing differences training along with requalification training.

The FAA has complete data (including model types and numbers of airplanes) for the companies that fly MU-2Bs operating under Part 135, but has sparse data on the companies that fly MU-2Bs operating under Part 91. As of April 2006, there were 5 companies that flew two models of MU-2Bs operating under Part 135, and there was one company that flew three models of MU-2Bs operating under Part 135. Pilots flying under Part 135 are currently required to get differences training. Hence, these pilots flying under Part 135 would incur no additional costs associated with this proposed requirement.

Regarding companies that fly MU-2Bs operating under Part 91, the FAA has incomplete data on the MU-2B models flown. The FAA is aware of two Part 91 operators that each own two MU-2Bs, which are different models. However, the FAA does not have complete data on the models of MU-2Bs that are flown by all Part 91 companies. Based on the "Review of Aviation Accidents and Incidents Involving the Mitsubishi MU-2B Aircraft" report dated October 2005 published by the FAA Aviation Safety Information Analysis and Sharing (ASIAS) Center (formerly known as the National Aviation Safety Data Analysis Center), there are 19

domestic U.S. operators that fly at least two MU-2Bs. Because there are six companies that fly two or more MU-2Bs under Part 135, there are about 13 domestic U.S. Part 91 operators that fly at least two MU-2Bs. Some of these operators may have two different models of MU-2Bs. For purposes of this analysis, this Regulatory Evaluation employs a high estimate of 13 companies, 26 airplanes, and 52 pilots that fly different models of MU-2Bs under Part 91. The FAA estimates that 8 pilots flying under Part 91 have no training (52 pilots * 15% without training = 8 pilots).

Based on an additional 3 hours of differences training per pilot flying under Part 91, we estimate that the value of time for differences training is \$111.60 per pilot (\$37.20 per hour value of time for Part 91 pilots * 3 hours = \$111.60). The total additional cost of differences training would be \$586.60 per pilot (\$475 + \$111.60 value of time = \$586.60).⁶ Table 9 shows the estimated cost of differences training for MU-2B pilots that fly more than one model.

 Table 9: Estimated Cost of Differences Training For Pilots Flying More Than One Model of MU-2B

| | | | Per Pilot Costs | | | |
|---|---------------------|-------------------------|---------------------|---------------------|---------------------|--------------------|
| | Number of Pilots | Number of Pilots w/o | Average Training | Average Value of | Total Additional | |
| Differences Training | Affected | Training | Cost | Time | Cost | Total Costs |
| Current MU-2B pilots flying under Part 91 (est.) | 52 | 8 | \$475 | \$111.60 | \$586.60 | \$4,692.80 |
| Future MU-2B pilots flying under Part 91 (per year) | 16 per year | 2 | \$475 | \$111.60 | \$586.60 | \$1,173.20 |
| Total Costs over the 10-year analysis period | | | | | | \$15,251.60 |

Source: FAA data, SimCom, Howell Enterprises

Note: Average value of time is based on an additional 3 hours of training. This meets or exceeds the proposed requirement.

In the future, some MU-2B pilots would want to fly a different MU-2B model also.

Since there are about 47 MU-2Bs that are resold every year, and 2/3 of these airplanes are sold to

⁶ This is a very high cost estimate because most of these pilots would only require an additional 1.5 hours of differences training. In addition, some pilots would only require differences training at the lowest level, which could be conducted through self-instruction by the pilot.

new operators, then 1/3 of these airplanes are sold to existing operators. So about 16 existing MU-2B pilots/operators per year would buy MU-2Bs (47 * 1/3 = 16). Some of these 16 pilots would be buying a different MU-2B model compared to what they had flown earlier. If all 16 pilots per year bought different models, there could be an estimated 2 pilots per year who were not getting training (16 pilots * 15% without training = 2 pilots). In the future, the additional cost of differences training would be \$1,173.20 per year (2 pilots per year * \$586.60 per pilot = \$1,173.20 per year). Therefore, a high total cost estimate to comply with the differences training requirement over the ten-year analysis period is about \$15,000 (\$4,692.80 + \$1,173.20 * 9 = \$15,251.60).

Table 10 shows the total pilot training costs for MU-2B pilots over the 10-year analysis period. This figure includes the costs for training, operating, travel, per diem, and value of time (during travel and during training). The total pilot training costs to comply with the proposed regulation are approximately \$39.8 million (undiscounted). Refer to Appendix A for more details on the total pilot training costs. As a high training cost increase is likely to deter initial pilots, the FAA requests comments on these costs.

| Category | # Pilots | Total |
|---|-----------------|---------------|
| Additional Costs for MU-2 pilots with training | 510 | \$15,319,000 |
| Costs for MU-2 pilots without training | 90 | \$9,144,000 |
| Costs for Initial/Transition Pilots * | 31 | \$20,913,000 |
| Cost Savings from pilots that discontinue flying* | 31 | (\$5,630,000) |
| Differences Training ** | 126 | \$15,000 |
| Total (undiscounted) | | \$39,761,000 |

Table 10: Total Pilot Training Costs

* 31 pilots per years. Cost figures here include recurrent training costs.

** 126 pilots now, plus 16 pilots per year in the future

Aeronautical Experience

The proposed rule would require that a pilot-in-command (PIC) of a Mitsubishi MU-2B series airplane hold an airplane category and multi-engine land class rating, and log a minimum of 100 flight hours of PIC time in multi-engine airplanes. Currently, MU-2B PICs are only required to hold an airplane category and multi-engine land class rating. The proposed additional requirement is to log a minimum of 100 flight hours of PIC time in multi-engine airplanes.

Based on information from flight instructors at the primary MU-2B flight training facilities, the FAA estimates that about three students per year do not already have a minimum of 100 flight hours of PIC time in multi-engine airplanes. Because the MU-2B training program would require a minimum of 12 flight hours during initial training, a student without any previous multi-engine airplane experience would need to have an additional 88 flight hours to meet this proposed requirement. Hence, the three pilots would need an additional 264 multi-engine flight hours per year (3 pilots per year * 88 hours per pilot = 264 hours per year) to act as PICs. The cost to rent an inexpensive multi-engine airplane, such as a Piper Seneca, is about \$200 per hour. So the total cost per hour is about \$286 (\$200 rental cost per hour + \$50 instructor cost per hour + \$36.06 average value of time per hour = \$286.06 per hour). Therefore, the total cost per year is about \$75,521 (264 * \$286.06 = \$75,521), and the total cost over the ten-year analysis period is about \$75,500 (\$75,521 * 10 = \$755,209). As an extremely high cost increase associated with the aeronautical experience proposed rule is likely to deter initial pilots without any multi-engine experience, the FAA requests comments on these costs.

Instruction, Checking and Evaluating

(a) Flight Instructor (Airplane)

(i) Must Meet Pilot Training Requirements

The proposed rule would require that all MU-2B flight instructors (who instruct in the actual airplane) meet the pilot training requirements of this SFAR before giving flight instruction in the MU-2B. Because all MU-2B pilots (including flight instructors) must comply with the pilot training requirements, these costs have already been estimated under the previous section titled "Required Pilot Training," and there are no costs allocated to this section of the proposed rule.

(ii) Must Meet Currency and Flight Review Requirements in a MU-2B Airplane

The proposed rule would require that all MU-2B flight instructors meet the currency requirements of paragraphs (a) and (c) of section 6 of this SFAR (titled "Currency requirements and flight review") before giving flight instruction in the MU-2B. Because all MU-2B pilots (including flight instructors) who fly the airplane must comply with the currency and flight review requirements discussed in section 6 of this SFAR, these costs are allocated to section 6, and there are no costs allocated to this section of the proposed rule.

(iii) Must Meet the Minimum Required Number of Pilot-In-Command (PIC) Hours

The proposed rule would require that all MU-2B flight instructors have a minimum total pilot time of 2000 PIC hours, 800 PIC hours in multiengine airplanes, and 300 PIC hours in the MU-2B. Fifty hours of MU-2B PIC experience must have been within the last 12 months. All of the MU-2B flight instructors (airplane) meet these requirements. Hence, there are no additional costs associated with this proposed regulation.

(b) Flight Instructor (Simulator / Flight Training Device)

(i) Must Meet Pilot Training Requirements

The proposed rule would require that all MU-2B flight instructors (who instruct in a MU-2B flight training device or simulator) meet the pilot training requirements of this SFAR before giving flight instruction in the MU-2B. Because all MU-2B pilots (including flight instructors) must comply with the pilot training requirements, these costs have already been estimated under the previous section titled "Required Pilot Training," and there are no costs allocated to this section of the proposed rule.

(ii) Must Meet Flight Review Requirements in a MU-2B Airplane

The proposed rule would require that all MU-2B flight instructors meet the currency requirements of paragraph (c) of section 6 of this SFAR (titled "Currency requirements and flight review") before giving flight instruction in the MU-2B. These costs are allocated to section 6, and there are no costs allocated to this section of the proposed rule.

(iii) Must Meet the Minimum Required Number of Pilot-In-Command (PIC) Hours

The proposed rule would require that all MU-2B flight instructors have a minimum total pilot time of 2000 PIC hours and 800 PIC hours in multiengine airplanes. In addition, within the last 12 months, these flight instructors must have either fifty hours of MU-2B PIC experience or fifty hours providing simulator or flight training device instruction for the MU-2B. All of the MU-2B flight instructors (simulator / flight training device) meet these requirements. Hence, there are no additional costs associated with this proposed regulation.

(c) Checking and Evaluating

The proposed rule would require that for the purpose of checking, Designated Pilot Examiners (DPEs), Training Center Evaluators (TCEs), and Check Airmen must have completed the appropriate training in the MU-2B in accordance with this SFAR. For MU-2B checking,

there are two or three DPEs, no TCEs currently, and about 11 MU-2B Check Airmen among nine Part 135 operators that own MU-2Bs (as of Spring 2006). Regarding TCEs, the intent of the proposed rule is to include requirements for TCEs in the event that there might be TCEs in the future. Because all MU-2B pilots (including Designated Pilot Examiners, Training Center Evaluators, and Check Airmen) must comply with the pilot training requirements, these costs have already been estimated under the previous section titled "Required Pilot Training," and there are no costs allocated to this section of the proposed rule.

The proposed rule would require that DPEs and Check Airmen have 100 hours pilot-incommand flight time in the MU-2B and maintain currency. Based on information from industry, the FAA estimates that all MU-2B DPEs and Check Airmen would meet this proposed requirement. Hence, there are no additional costs associated with this proposed requirement.

(d) Mandatory Training Procedures

(i) MU-2B Pilot Training Program and Airplane Flight Manual

The proposed rule would require that all pilot training conducted in the MU-2B be done in accordance with the MHI MU-2B Training Program and the MHI Airplane Flight Manual. Mitsubishi would provide these items free to MU-2B owners and operators. Hence, there are no additional costs associated with this proposed requirement.

(ii) MU-2B Cockpit Checklist

The proposed rule would require that all flight training conducted in the Mitsubishi MU-2B series airplane be done using the Mitsubishi Heavy Industries Airplane Cockpit Checklist. The cost of a cockpit checklist for each MU-2B airplane has been considered in the section titled "Operating Requirements." So no additional costs are allocated to this section.

Currency Requirements and Flight Review

(a) Landing Currency

The proposed rule would require that the landing currency requirements of section 61.57 (e.g., 3 takeoffs and landings within 90 days in order to carry passengers) be maintained also in the Mitsubishi MU-2B series airplane. Landings in other multi-engine airplanes do not meet the landing currency requirements for the Mitsubishi MU-2B series airplane. Landings in either short or long body Mitsubishi MU-2B model airplane may be credited toward landing currency in both MU-2B model groups.

The MU-2B flight instructors and Part 135 pilots fly frequently, so they already meet this requirement. The FAA estimates that nearly all, if not all, Part 91 pilots and Check Airmen would also meet this requirement. Based on this information, the FAA estimates that there would be no additional costs associated with this proposed regulation. The FAA requests comments on this proposed regulation.

(b) Instrument Currency

The proposed rule would clarify that instrument experience obtained in other category and class of aircraft may be used to satisfy the instrument currency requirements of section 61.57 for the Mitsubishi MU-2B series airplane. This proposed requirement is a clarification of the existing rule. Hence, there are no costs associated with this proposed rule.

(c) Flight Review

The proposed rule would require that satisfactory completion of a flight review to satisfy the requirements of section 61.56 is valid for operation of a MU-2B airplane only if that Flight Review is conducted in a MU-2B airplane. In other words, a flight review must be conducted in a MU-2B airplane at least once every two years.

The FAA estimates that existing MU-2B pilots would not incur any additional costs because they already are required to comply with section 61.56. The FAA estimates that Part 91 pilots own one airplane (the MU-2B), and would get their flight reviews in the MU-2B. Existing Part 135 pilots would not incur any additional costs because the MU-2B airplane is its own family of aircraft.⁷ Hence, MU-2B pilots are not allowed to rotate the MU-2B airplane flight review with other airplanes because there are no other airplanes in its family of aircraft. So Part 135 MU-2B pilots already must comply with section 61.56 with respect to the MU-2B. Hence, there are no additional costs associated with this proposed rule.

Operating Requirements

The safety evaluation team and the FSB conducted a pilot workload evaluation to determine if safety would be enhanced with the use of an autopilot during single-pilot instrument flight rules (IFR) operations. Many of the recent accidents involved single pilot, night-time, IFR operations, in high-density terminal areas, with high workloads. Using techniques developed by National Aeronautics and Space Administration, testing showed a significant reduction in single pilot workload and stress, and improved performance when an autopilot, a standardized user-friendly pilot checklist, and revised AFM procedures were used in actual flight conditions.

(a) Autopilot

The proposed rule would require that no person may operate a MU-2B series airplane with a single pilot under Instrument Flight Rules (IFR), in IFR conditions, or night Visual Flight Rules (VFR) conditions unless that airplane has a functioning autopilot. Based on information

⁷ The MU-2B is considered a separate type of aircraft as described in 14 CFR 135.293(b) for the purpose of recurrent testing. (Mitsubishi Model MU-2B Flight Standardization Board Report, January 23, 2006, page 11)

from industry, all of the MU-2Bs already have functioning autopilots in the airplanes. Hence, there would be no additional costs associated with this proposed regulation. The FAA requests comments on these costs.

(b) Airplane Flight Manual

The proposed rule would require that no person may operate a MU-2B airplane unless a copy of the appropriate Mitsubishi Heavy Industries Airplane Flight Manual (AFM) is carried on board the airplane and the airplane is operated in accordance with the procedures included within the AFM. Mitsubishi would provide the AFM free to MU-2B owners and operators. Hence, there are no additional costs associated with this proposed rule.

(c) Airplane Cockpit Checklist

The proposed rule would require that no person may operate a MU-2B airplane unless a copy of the Mitsubishi Heavy Industries Airplane Cockpit Checklist is carried on board the airplane and is used. Mitsubishi has indicated that it would probably charge about \$175 - \$200 for its cockpit checklist. Based on this information, the FAA estimates that the cost of a checklist would be about \$200. Assuming that it takes an operator 10 minutes to order a checklist, the total cost of this proposed rule would be about \$64,000 (311 MU-2B airplanes * (\$200 per checklist + \$36.06 hourly value of time * 10/60 hours) = \$64,069).

There is no additional cost (or time involved) in using the checklist because MU-2B pilots previously had developed their own MU-2B checklists for use. Hence, the use of the MHI Cockpit Checklist will not add any time while sitting at the end of a runway.

D. GRAND TOTAL COSTS

In summary, the FAA estimates the compliance costs of this proposed rule to be a grand total of about \$40.6 million. Table 11 below shows a breakdown of these total costs by category. The present value of these costs at a 7 percent discount rate is approximately \$27.1 million, and the present value at a 3 percent discount rate is approximately \$33.8 million. Refer to Appendix A for more detailed information on the grand total costs.

| Category | Total |
|---|--------------|
| Pilot Training Costs | \$39,761,000 |
| Aeronautical Experience | \$755,000 |
| Instruction, Checking and Evaluating | \$0 |
| Currency Requirements and Flight Review | \$0 |
| Operating Requirements | \$64,000 |
| Grand Total Costs (undiscounted) | \$40,580,000 |

Table 11: Grand Total Costs

V. BENEFITS

We estimate the proposed rule would provide present value benefits of \$55.4 million from 2008 through 2017 in 2006 dollars. In the absence of a new rule, it is likely that future accidents will occur on MU-2B airplanes in a manner similar to what has happened in the past. A key benefit of the proposed rule would be the avoidance of these accidents. An examination of the accident history and root causes revealed that changes in the training and operating requirements are needed to avert future accidents.

As mentioned earlier, there were 35 MU-2B accidents in the U.S. from 1996 – 2005, and there were 15 accidents that could have been prevented if this rule had been in effect. Table B1 shows these accidents resulted in 24 fatalities, 2 serious injuries and 4 minor injuries. In addition, all of the airplanes involved in the accidents were either destroyed or substantially

| | Table B1 | | | | | | | | |
|------------|--|---------------|----------|-----|-----|-----|--|--|--|
| | | MU- | 2 Accide | nts | | | | | |
| | 1996 to 2005 | | | | | | | | |
| Year | Year Aircraft Series City State Fatalies Serious Injuries Minor Inju | | | | | | | | |
| 2005 | MU-2B-36 | West Memphis | AR | 1 | | | | | |
| 2004 | MU-2B-60 | Ferndale | MD | 1 | | | | | |
| 2004 | MU-2B-36 | Pittsfield | MA | 1 | | | | | |
| 2002 | MU-2B-35 | Carolina | PR | 2 | | 2 | | | |
| 2001 | MU-2B-40 | St. Paul | MN | | | | | | |
| 2001 | MU-2B-20 | Cerrillos | NM | 2 | | | | | |
| 2000 | MU-2B-26A | Edgartown | MA | 4 | | | | | |
| 2000 | MU-2B-60 | Lewiston | ID | 1 | | | | | |
| 2000 | MU-2B-26A | San Antonio | TX | 2 | | | | | |
| 1998 | MU-2B-60 | Rock | KS | 2 | | | | | |
| 1996 | MU-2B-30 | Chillicothe | OH | | | | | | |
| 1996 | MU-2B-40 | Houston | TX | | | 1 | | | |
| 1996 | MU-2B-60 | West Columbia | SC | | 2 | | | | |
| 1996 | MU-2B-6 | Allentown | PA | | | 1 | | | |
| 1996 | MU-2B-36 | Malad City | ID | 8 | | | | | |
| Total Casu | alties: | | | 24 | 2 | 4 | | | |
| Average C | asualties: | | | 1.6 | 0.1 | 0.3 | | | |

Source: NTSB

damaged.⁸ MU-2B accidents have also occurred in several foreign countries, but are not considered in the calculation of the rule's benefits because they did not occur in the United States.

The expected future averted accident cost is based on the historic accident history and FAA accident cost standards. Table B1 lists the airplanes, fatalities, serious and minor injuries, as well as the average number of casualties per accident. Table B2 shows the economic values assigned to these losses. The minimum value of a statistical aviation fatality avoided is set at \$3.0 million, that of a serious injury (assumed to be the average of a severe, serious, and moderate injury) at \$260,500, and that of a minor injury at \$6,000. The associated medical and legal costs for a fatality is \$132,700, a serious injury (assumed to be the average of a severe, serious, and moderate injury) \$46,633.33, and that of a minor injury, \$2,500.⁹ In addition, the average replacement cost of a destroyed MU-2B airplane is assumed to be \$517,788.¹⁰ Finally, a regular NTSB field office accident investigation costs about \$38,300; a regular FAA field

| Table B2 | | | | | |
|--|---------------|-------------|-------------|--|--|
| Average Benefit of Preve | enting One Ac | cident | | | |
| Category | Value | Number | Total | | |
| Fatalities | \$3,000,000 | 1.6 | \$4,800,000 | | |
| Serious Injuries | \$260,500 | 0.1 | \$34,733 | | |
| Minor Injuries | \$6,000 | 0.3 | \$1,600 | | |
| Medical and Legal Costs - Fatality | \$132,700 | 1.6 | \$212,320 | | |
| Medical and Legal Costs - Serious Injury | \$46,633 | 0.1 | \$6,218 | | |
| Medical and Legal Costs - Minor Injury | \$2,500 | 0.3 | \$667 | | |
| NTSB Investigation | \$38,300 | 1 | \$38,300 | | |
| FAA Investigation | \$25,700 | 1 | \$25,700 | | |
| Private Investigation | \$57,400 | 1 | \$57,400 | | |
| Airplane Replacement | \$517,788 | 1 | \$517,788 | | |
| Total | | \$5,694,726 | | | |

⁸ National Transportation Safety Board (NTSB) Accident Reports.

⁹ "Treatment of Value of Life and Injury In Economic Analysis," (FAA APO Bulletin, February 2002).

¹⁰ "Economic Values for Evaluation of Federal Aviation Administration Investment and Regulatory Programs" (Draft Final Report), December 31, 2004, Table 5-5 (Turboprop airplanes 1 to 9 seats two-engine).

office accident investigation costs about \$25,700; and a regular private field office accident investigation costs about \$57,400.¹¹ The number of fatalities, serious injuries and minor injuries represents the average number of such casualties in the 15 accidents. Based on the above information and the MU-2B accidents from 1996 to 2005, the FAA estimates the average value of avoiding an accident, where the airplane is destroyed, is about \$5.7 million.

In the absence of the proposed rule, the FAA expects that over the 2008 through 2017 analysis period, this rule would avert approximately 15 MU-2B accidents, 24 fatalities, 2 serious injuries, and 4 minor injuries. The FAA estimates that the total benefits of preventing these accidents and casualties would be approximately \$85.4 million. Assuming these averted accidents would be uniformly distributed across the 10-year analysis period, then the present value benefits (using a 7% discount rate) of preventing these accidents and casualties would be approximately \$55.4 million (2006 \$). For comparison purposes, the present value benefits using a 3% discount rate would be \$70.4 million. Refer to Table B3.

| | Table B3 | | | | | | | | | |
|-----------|--|----------------------------|-----------------------|--------------------------------|-----------------------|--------------------------------|--|--|--|--|
| Accidents | Accidents and Casualties Avoided Over The 10-Year Analysis Period As A Result Of The MU-2 NPRM | | | | | | | | | |
| Year | Accidents Prevented | Benefits (undiscounted) | 7% Discount Factor | Benefits (discounted at 7%) | 3% Discount Factor | Benefits (discounted at 3%) | | | | |
| 2008 | 1 | \$5,694,726 | 0.8734 | \$4,973,994 | 0.9426 | \$5,367,825 | | | | |
| 2009 | 2 | \$11,389,452 | 0.8163 | \$9,297,185 | 0.9151 | \$10,422,962 | | | | |
| 2010 | 1 | \$5,694,726 | 0.7629 | \$4,344,479 | 0.8885 | \$5,059,690 | | | | |
| 2011 | 2 | \$11,389,452 | 0.7130 | \$8,120,522 | 0.8626 | \$9,824,641 | | | | |
| 2012 | 1 | \$5,694,726 | 0.6663 | \$3,794,636 | 0.8375 | \$4,769,243 | | | | |
| 2013 | 2 | \$11,389,452 | 0.6227 | \$7,092,778 | 0.8131 | \$9,260,666 | | | | |
| 2014 | 1 | \$5,694,726 | 0.5820 | \$3,314,382 | 0.7894 | \$4,495,469 | | | | |
| 2015 | 2 | \$11,389,452 | 0.5439 | \$6,195,107 | 0.7664 | \$8,729,066 | | | | |
| 2016 | 1 | \$5,694,726 | 0.5083 | \$2,894,910 | 0.7441 | \$4,237,411 | | | | |
| 2017 | 2 | \$11,389,452 | 0.4751 | \$5,411,046 | 0.7224 | \$8,227,982 | | | | |
| Total | 15 | \$85,420,887 | | \$55,439,039 | | \$70,394,956 | | | | |

¹¹ "Economic Values for Evaluation of Federal Aviation Administration Investment and Regulatory Programs" (Draft Final Report), December 31, 2004, Table 8-2.

VI. COST BENEFIT ANALYSIS OF THE PROPOSED RULE

We estimate the present value (2006 \$) benefits of the proposed rule to be about \$55.4 million using a 7% discount rate. In the absence of this proposed rule, it is highly likely that additional MU-2B accidents would occur. The FAA believes that MU-2B accidents would continue to occur in the future without this rule. The estimated \$55.4 million benefits results from averting 15 future accidents.

It is estimated that the present value (2006 \$) cost of the proposed rule would be \$27.1 million. These costs include additional required pilot training, aeronautical experience, flight instructors, currency requirements and flight reviews, and operating requirements.

The estimated \$55.4 million benefits of this proposed rule easily exceeds the estimated \$27.1 million costs. Hence, if this rule prevents 8 or more accidents (at least 49% effective), benefits will exceed costs. As currently estimated, the FAA believes the estimated costs are very likely to exceed actual compliance costs. Thus, the FAA concludes that the benefits of the proposed rule do justify the costs.

VII. REGULATORY FLEXIBILITY DETERMINATION

The Regulatory Flexibility Act of 1980 (Public Law 96-354) (RFA) establishes "as a principle of regulatory issuance that agencies shall endeavor, consistent with the objectives of the rule and of applicable statutes, to fit regulatory and informational requirements to the scale of the businesses, organizations, and governmental jurisdictions subject to regulation. To achieve this principle, agencies are required to solicit and consider flexible regulatory proposals and to explain the rationale for their actions to assure that such proposals are given serious consideration." The RFA covers a wide-range of small entities, including small businesses, not-for-profit organizations, and small governmental jurisdictions.

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

However, if an agency determines that a proposed or final rule is not expected to have a significant economic impact on a substantial number of small entities, section 605(b) of the 1980 RFA provides that the head of the agency may so certify and a regulatory flexibility analysis is not required. The certification must include a statement providing the factual basis for this determination, and the reasoning should be clear.

The FAA believes that this proposal would result in a significant economic impact on a substantial number of small entities. The purpose of this analysis is to provide the reasoning underlying the FAA determination.

Under Section 603(b) of the RFA, the analysis must address:

- **<u>+•</u>** Description of reasons the agency is considering the action
- **<u>+•</u>** Statement of the legal basis and objectives for the proposed rule
- **<u>+•</u>** Description of the record keeping and other compliance requirements of the proposed rule
- <u>All federal rules that may duplicate</u>, overlap, or conflict with the proposed rule
- **<u>A**</u> Description and an estimated number of small entities to which the proposed rule will apply
- **<u>Analysis</u>** of small firms' ability to afford the proposed rule
- ▲● Analysis of disproportionate impact
- ▲ Analysis of competitive impact
- **<u>+•</u>** Estimation of the potential for business closures
- Description of the alternatives considered

Under Title 49 of the United States Code, the FAA Administrator is required to consider

the following matters, among others, as being in the public interest:

- ▲ Assigning, maintaining, and enhancing safety and security as the highest priorities in air commerce. [See 49 U.S.C. §40101(d)(1).]
- Promoting the safe flight of civil aircraft in air commerce by prescribing regulations that are necessary for safety [See 49 U.S.C. §44701(a)(5).]
- Additionally, it is the FAA Administrator's statutory duty to carry out his or her responsibilities "in a way that best tends to reduce or eliminate the possibility or recurrence of accidents in air transportation." [See 49 U.S.C. §44701(c).]

Accordingly, this proposed rule would amend Title 14 of the Code of Federal Regulations

to address the increasing number of accidents involving the Mitsubishi Heavy Industries

America MU-2B series airplane. The proposed rule would require additional special training,

aeronautical experience, and operating requirements for pilots that operate the Mitsubishi

MU-2B.

A. PROJECTED REPORTING, RECORD KEEPING AND OTHER REQUIREMENTS

We expect no more than minimal new reporting and record-keeping compliance

requirements to result from this proposed rule.

<u>E.B.</u> OVERLAPPING, DUPLICATIVE, OR CONFLICTING FEDERAL RULES

We are unaware that the proposed rule will overlap, duplicate or conflict with existing Federal Rules.

C. ESTIMATED NUMBER OF SMALL FIRMS POTENTIALLY IMPACTED

Using the size standards from the Small Business Administration for Air Transportation and Aircraft Manufacturing, we have defined companies as small entities if they have fewer than 1,500 employees.

We considered the economic impact on small-business part 91, 121, and 135 operators. The MU-2B's operating in part 91 are not for hire or flown for profit. The part 91 operators primarily operate the MU-2B either as a personal-use airplane or companies operate them where aviation is not their primary business. We found no part 121 operators of the MU-2B airplane.

We then obtained a list of part 91 and 135 MU-2B operators¹² from the Flight Standards division of the FAA and from the FAA Aviation Safety Information Analysis and Sharing (ASIAS) Center (formerly known as the National Aviation Safety Data Analysis Center (NASDAC)).

Using information provided by the World Aviation Directory and ReferenceUSA, operators that are subsidiary businesses of larger businesses and businesses with more than 1,500 employees were eliminated from the list of small entities. For the remaining businesses, we obtained company revenue from those two sources. In many cases the data was not public.

We were unable to obtain employment or annual revenue data for the following MU-2B operators:

¹² AFS-260; April 5, 2006 and "Review of Aviation Accidents and Incidents involving the Mitsubishi MU-2 Aircraft", October 2005; NASDAC

| FAR | | Number of |
|------|-----------------------------------|-----------|
| Part | Operator Name | MU-2s |
| 91 | Templeton Aircraft LLC | 1 |
| 135 | Bohlke International Airway, Inc. | 1 |
| 135 | Howell Enterprises, Inc. | 1 |
| 135 | Jetprop, Inc. | 1 |
| 135 | LRA Group, LLC | 1 |
| 135 | McNeely Charter Service, Inc. | 1 |
| 135 | Mid-Coast Air Charter, Inc. | 1 |
| 135 | Panther Aviation Inc. | 2 |

The methodology discussed above resulted in the following list of 14 U.S. MU-2B

operators, with less than 1,500 employees, who operate 61 airplanes.

| Operator Name | Number of MU-2s |
|--|--------------------|
| Air Flight Enterprises Inc. | 2 |
| Arrow Services | 2 |
| Professional Aviation Services | 4 |
| Royal Air Freight, Inc. | 3 |
| Anaconda Aviation Corp. | 2 |
| Aircraft Charter Services Inc. | 2 |
| Premier Jets Inc | 1 |
| Northeast Aviation, Inc. | 1 |
| Air 1ST Aviation Companies of Oklahoma, Inc. | 9 |
| Copper Station Holdings, LLC | 1 |
| Bankair Inc. | 10 |
| EPPS Air Service, Inc. | 11 |
| American Check Transport Inc. | 11 |
| Samaritan's Purse | 2 |
| Total | 61 |

The FAA has determined that it is essential that all flight training be conducted per a single standardized training program that reflects piloting procedures as found in the Airplane Flight Manual (AFM). In order to accomplish this, the companies that train pilots would themselves have to train their current MU-2B instructors to this new standard. Based on our discussions with MU-2B pilot training centers we established that they would continue providing

their MU-2B instructors with the latest training available. We believe that most MU-2B pilot training centers are small business entities according to the Small Business Administration for Air Transportation. We also believe the rule would result in offsetting training revenue for the MU-2B pilot training centers.

D. COST AND AFFORDABILITY FOR SMALL ENTITIES

To assess the cost impact to small business part 91 and 135 MU-2B operators, we estimated the pilot training costs and the number of pilots per operator that needed training. The training costs have a large and immediate impact on the operator. As noted in the cost section of this evaluation, the following table summarized the per pilot costs over the 10-year analysis period:

| Training Costs per Pilot | Initial Cost | Requalification Cost | Annual Recurrent Cost | Total 10-Year Cost |
|---|-----------------|-------------------------|-----------------------------|--------------------------|
| Additional Costs for pilots who have been getting MU-2 training | | \$12,604 | \$1,937 | \$30,036 |
| Costs for pilots who have not been getting MU-2 training | | \$12,604 | \$9,889 | \$101,603 |
| Costs for Pilots with no MU-2 training | \$22,961 | | \$9,889 | \$111,960 |
| Note: Slight discrepancies in the addition of figures are due to roun | ding. | | | |

Because insurance companies currently require all businesses to provide training for their MU-2B pilots, we determined the 14 US small entity companies identified above would incur an additional \$12,604 requalification cost and annual recurrent training costs of \$1,937 per pilot. We assumed every company would have two pilots for each MU-2B they operate. We are also assuming that the final rule will become effective in two years. On that basis, the present value of the pilot training cost for an MU-2B pilot would be about \$22,032, or an annual average training cost of \$2,203 (discounted at seven percent).

| | 2006\$ | P.V . | P.V. | |
|------|----------|--------------|-------------|------------|
| Year | Cost | 7% | Cost | Average |
| 1 | \$12,604 | 0.8734 | \$11,009 | |
| 2 | \$1,937 | 0.8163 | \$1,581 | |
| 3 | \$1,937 | 0.7629 | \$1,478 | |
| 4 | \$1,937 | 0.7130 | \$1,381 | |
| 5 | \$1,937 | 0.6663 | \$1,291 | |
| 6 | \$1,937 | 0.6227 | \$1,206 | |
| 7 | \$1,937 | 0.5820 | \$1,127 | |
| 8 | \$1,937 | 0.5439 | \$1,054 | |
| 9 | \$1,937 | 0.5083 | \$985 | |
| 10 | \$1,937 | 0.4751 | \$920 | |
| | \$30,036 | | \$22,032 | \$2,203.16 |

We estimated each operator's total compliance cost by multiplying the average annual discounted pilot training cost by the number of MU-2B pilots employed. We estimate the number of pilots by assuming each firm employs two pilots per MU-2B airplane. Next, we took this product and multiplied it by the number of MU-2B airplanes the small business operator currently has in their fleet. We then measured the economic impact on small entities by dividing the estimated average annual present value compliance cost for their fleet by the small entity's annual revenue. For this analysis, if the cost of compliance exceeds two percent of an operator's annual operating revenue, we determine that as a significant economic impact. As shown in the following table, the pilot training cost is estimated to be greater than two percent of annual revenues for three small entity operators.

| | | | | | Average Annual | Number of | Cost of | P.V. Cost As |
|------|--|-----------|-----------|---------------|----------------|--------------|----------|--------------|
| FAR | | Number of | Number of | Annual | P.V. Cost | Pilots | Proposed | A % of |
| Part | Operator Name | Employees | MU-2s | Revenue | Per Pilot | per Operator | Rule | Revenue |
| 91 | Professional Aviation Services | 2 | 4 | \$500,000 | \$2,203 | 8 | \$17,625 | 3.53% |
| 135 | Royal Air Freight, Inc. | 3 | 3 | \$500,000 | \$2,203 | 6 | \$13,219 | 2.64% |
| 135 | Air 1ST Aviation Companies of Oklahoma, Inc. | 15 | 9 | \$1,750,000 | \$2,203 | 18 | \$39,657 | 2.27% |
| 135 | Air Flight Enterprises Inc. | 2 | 2 | \$500,000 | \$2,203 | 4 | \$8,813 | 1.76% |
| 91 | Arrow Services | 2 | 2 | \$500,000 | \$2,203 | 4 | \$8,813 | 1.76% |
| 135 | Anaconda Aviation Corp. | 3 | 2 | \$750,000 | \$2,203 | 4 | \$8,813 | 1.18% |
| 135 | Aircraft Charter Services Inc. | 3 | 2 | \$750,000 | \$2,203 | 4 | \$8,813 | 1.18% |
| 135 | Premier Jets Inc | 6 | 1 | \$1,000,000 | \$2,203 | 2 | \$4,406 | 0.44% |
| 135 | Bankair Inc. | 100 | 10 | \$13,000,000 | \$2,203 | 20 | \$44,063 | 0.34% |
| 135 | EPPS Air Service, Inc. | 150 | 11 | \$15,000,000 | \$2,203 | 22 | \$48,470 | 0.32% |
| 135 | American Check Transport Inc. | 160 | 11 | \$15,500,000 | \$2,203 | 22 | \$48,470 | 0.31% |
| 135 | Northeast Aviation, Inc. | 15 | 1 | \$1,500,000 | \$2,203 | 2 | \$4,406 | 0.29% |
| 135 | Copper Station Holdings, LLC | 7 | 1 | \$7,500,000 | \$2,203 | 2 | \$4,406 | 0.06% |
| 91 | Samaritan's Purse | 380 | 2 | \$242,000,000 | \$2,203 | 4 | \$8,813 | 0.00% |

Thus, the FAA determined that small entities would be significantly affected by the proposed rule.

E. BUSINESS CLOSURE ANALYSIS

For MU-2B operators, the ratio of average annual present-value costs to annual revenue shows that three of the 14 U.S. small business air operator firms analyzed would have ratios in excess of two percent, and such a ratio may have a significant financial impact when this proposed rule becomes effective. The remaining operators have an average annual present-value cost to annual revenue ratio less than two percent. To fully assess whether this proposed rule would force a small entity into bankruptcy requires more financial information than is readily available.

We performed a cost of compliance analysis by dividing the economic impact costs by the average value of the fleet for each part 135 operator. We first conducted an Internet search for MU-2Bs on the market. From this search we obtained the selling price for 19 MU-2Bs currently on the market. Summing the 19 MU-2B's selling price, then dividing by 19, we computed the average selling price of \$510,250. In order to validate this average cost, we then computed a weighted average price by age and hours flown. These weighted average prices were both within 2.5% of the average selling price. The following table shows the results of the average selling price and the weighted average price:

| | | | | | | Weighted | Weighted |
|---------|-----|----------|--------------|-------|---------------|-----------------------|----------------------|
| Year | AGE | Aircraft | Registration | Hours | Selling Price | Average Price by Hour | Average Price by Age |
| 1968 | 38 | MU-2B-20 | N54CK | 9450 | \$325,000 | \$12,350,000 | \$3,071,250,000 |
| 1969 | 37 | MU-2B-20 | N900TV | 7100 | \$355,000 | \$13,135,000 | \$2,520,500,000 |
| 1969 | 37 | MU-2F | N22MZ | 6600 | \$425,000 | \$15,725,000 | \$2,805,000,000 |
| 1970 | 36 | MU-2F | N140CM | 7595 | \$399,000 | \$14,364,000 | \$3,030,405,000 |
| 1972 | 34 | MU-2 | N107SB | 8812 | \$325,000 | \$11,050,000 | \$2,863,900,000 |
| 1972 | 34 | MU-2J | N776CC | 7477 | \$519,000 | \$17,646,000 | \$3,880,563,000 |
| 1974 | 32 | MU-2B-25 | N666SP | 6330 | \$795,000 | \$25,440,000 | \$5,032,350,000 |
| 1974 | 32 | MU-2B-35 | N375CA | 8543 | \$399,000 | \$12,768,000 | \$3,408,657,000 |
| 1974 | 32 | MU-2B-35 | N621TA | 5025 | \$475,000 | \$15,200,000 | \$2,386,875,000 |
| 1974 | 32 | MU-2K | N460FS | 6533 | \$519,000 | \$16,608,000 | \$3,390,627,000 |
| 1974 | 32 | MU-2B-25 | N50K | 5380 | \$750,000 | \$24,000,000 | \$4,035,000,000 |
| 1975 | 31 | MU-2L | N59KS | 6898 | \$575,000 | \$17,825,000 | \$3,966,350,000 |
| 1977 | 29 | MU-2N | N857MA | 3255 | \$475,000 | \$13,775,000 | \$1,546,125,000 |
| 1977 | 29 | MU-2P | N140CP | 4300 | \$479,000 | \$13,891,000 | \$2,059,700,000 |
| 1978 | 28 | MU-2K | n/a | 4500 | \$450,000 | \$12,600,000 | \$2,025,000,000 |
| 1978 | 28 | MU-2P | n/a | 2668 | \$475,000 | \$13,300,000 | \$1,267,300,000 |
| 1979 | 27 | MU-2B-60 | N175CA | 7565 | \$595,000 | \$16,065,000 | \$4,501,175,000 |
| 1980 | 26 | MU-2B-40 | N575CA | 3690 | \$895,000 | \$23,270,000 | \$3,302,550,000 |
| 1981 | 25 | MU-2B-60 | N3MA | 6525 | \$975,000 | \$24,375,000 | \$6,361,875,000 |
| Average | 30 | | | | \$510,250 | \$523,184 | \$519,723 |

We calculated the economic impact costs by dividing the product of the average annual present value cost per pilot by the number of pilots by the product of the average selling price by the number of MU-2Bs the small-entity operates. As shown in the following table, the pilot training costs of the small entities is estimated to be 0.86 percent of the average selling price of the small entities fleet.

| | | | Average Annual | | P.V. Cost As |
|--|-----------|----------------------|----------------|-----------|--------------|
| | Number of | Average | P.V. Cost | Number of | A % of |
| Operator Name | MU-2s | Selling Price | Per Pilot | Pilots | MU-2 value |
| Premier Jets Inc | 1 | \$510,250 | \$2,203 | 2 | 0.86% |
| Northeast Aviation, Inc. | 1 | \$510,250 | \$2,203 | 2 | 0.86% |
| Copper Station Holdings, LLC | 1 | \$510,250 | \$2,203 | 2 | 0.86% |
| Air Flight Enterprises Inc. | 2 | \$510,250 | \$2,203 | 4 | 0.86% |
| Arrow Services | 2 | \$510,250 | \$2,203 | 4 | 0.86% |
| Anaconda Aviation Corp. | 2 | \$510,250 | \$2,203 | 4 | 0.86% |
| Aircraft Charter Services Inc. | 2 | \$510,250 | \$2,203 | 4 | 0.86% |
| Samaritan's Purse | 2 | \$510,250 | \$2,203 | 4 | 0.86% |
| Royal Air Freight, Inc. | 3 | \$510,250 | \$2,203 | 6 | 0.86% |
| Professional Aviation Services | 4 | \$510,250 | \$2,203 | 8 | 0.86% |
| Air 1ST Aviation Companies of Oklahoma, Inc. | 9 | \$510,250 | \$2,203 | 18 | 0.86% |
| Bankair Inc. | 10 | \$510,250 | \$2,203 | 20 | 0.86% |
| EPPS Air Service, Inc. | 11 | \$510,250 | \$2,203 | 22 | 0.86% |
| American Check Transport Inc. | 11 | \$510,250 | \$2,203 | 22 | 0.86% |

We do not believe that these additional compliance costs, relative to the value of the asset, would cause any of the impacted firms to go into bankruptcy, but seek comment, with supportive justification, to determine the degree of hardship the proposed rule will have on these businesses.

F. COMPETITIVE ANALYSIS

In order to determine the competitive impact of the rule on small entities, we looked at the type of market for each of the affected small entity's business. The following table details these results.

| | Number of |
|-----------------------------|-----------|
| Line of Business | Companies |
| Aerial Photographer | 1 |
| Air Ambulance Service | 1 |
| Air Cargo Services | 1 |
| Air Courier Service | 2 |
| Aircraft Charter and Rental | 2 |
| Aircraft Dealers | 1 |
| Charity | 1 |
| FAA repair station | 1 |
| Holding Company | 1 |
| MU-2 Sales and Service | 1 |
| Real Estate Inspection | 1 |
| Services NEC | 1 |

Since markets of the 14 small entities cover 12 distinctly different areas, we believe the diversity of the companies' business lines would not create a competitive disadvantage. From the Business Closure Analysis above, we do not believe this proposal will cause any of the impacted small entity firms who operate MU-2B's to go into bankruptcy. We invite public comment on the potential competitive impact of the proposed rule.

G. DISPROPORTIONALITY ANALYSIS

Given the sparse firm and market data publicly available, we cannot discern the small firm competitive impact relative to large firms from this proposed rule.

We invite public comment on the disproportional potential impact of the proposed rule on small entities versus large entities. Affected small entities are invited to discuss:

(a) The size of their business and how the proposed regulations would result in a significant economic burden upon them as compared to larger organizations in the same business community; and

(b) How the proposed regulations could be modified to take into account small entities' differing needs or capabilities versus large entities.

Comments received on regulatory flexibility issues are addressed in the statement of considerations for the final rule.

H. ANALYSIS OF ALTERNATIVES

Alternative One

The "baseline," "do nothing," or *status quo* alternative has no compliance costs but would not accomplish the intent of Congress' recommendation. The FAA rejected this "do nothing" alternative because the proposed rule would enhance safety and prevent more MU-2B related accidents.

Alternative Two

This alternative would prohibit all operations of the MU-2B series airplane within the National Airspace System. The FAA has determined that there is little justification to ground the airplane. The airplane meets its original type certification basis as found in three type certification analyses (Special Certification Reviews conducted in 1984, 1997, and the Safety Evaluation of 2005 that found that the airplane complies with the applicable certification regulations).

Alternative Three

This alternative would keep the proposed SFAR, except that it would require an aircraft type rating for the MU-2B, but remove requalification training. This alternative would not meet the FAA's goal of ensuring that all MU-2B pilots receive <u>continued</u> training in the correct procedures for <u>normal</u>, abnormal, and emergency operations.

Alternative Four

This alternative would keep the proposed SFAR, and in addition, require a second pilot. Requiring a second pilot for all MU-2B airplanes would be a substantially more costly option than the proposed SFAR training and autopilot requirements (single-pilot IFR operations would be required to have a functioning autopilot). In addition, the FAA has determined that use of an autopilot provides a level of safety comparable to a two-pilot crew and therefore does not propose requiring a second crew member. The FAA invites comment on whether there are advantages to requiring two crew members that exceed the safety benefits of requiring an autopilot. An operator has the option of running a two-pilot crew to enhance safety, but the FAA would not require it.

In summary, the FAA believes that this proposal would have a significant impact on a substantial number of small entities. We were able to obtain employment and annual revenue data for 14 small entities that operated MU-2B airplanes. The pilot training cost is estimated to be greater than two percent of annual revenues for three of these small entities. Therefore, the FAA certifies that this rule would have a significant economic impact on a substantial number of small entities.

VIII. INTERNATIONAL TRADE IMPACT ASSESSMENT

The Trade Agreements Act of 1979 (Public Law 96-39) prohibits Federal agencies from establishing any standards or engaging in related activities that create unnecessary obstacles to the foreign commerce of the United States. Legitimate domestic objectives, such as safety, are not considered unnecessary obstacles. The statute also requires consideration of international standards and, where appropriate, that they be the basis for U.S. standards. The FAA has assessed the potential effect of this proposed rule and determined that it responds to a domestic safety objective and is not considered an unnecessary barrier to trade.

IX. UNFUNDED MANDATES ASSESSMENT

Title II of the Unfunded Mandates Reform Act of 1995 (Public Law 104-4) requires each Federal agency to prepare a written statement assessing the effects of any Federal mandate in a proposed or final agency rule that may result in an expenditure of \$100 million or more (adjusted annually for inflation with the base year 1995) in any one year by State, local, and tribal governments, in the aggregate, or by the private sector; such a mandate is deemed to be a "significant regulatory action." The FAA currently uses an inflation-adjusted value of \$128.1 million in lieu of \$100 million.

This proposed rule does not contain such a mandate. The requirements of Title II do not apply.

X. PAPERWORK REDUCTION ACT ASSESSMENT

The Paperwork Reduction Act of 1995 requires that the FAA consider the impact of paperwork and other information collection burdens imposed on the public. The requirements for information collection associated with this proposed rule are as follows:

- A certificated flight instruction (CFI) must complete the form "Training Course Final Phase Check" at the end of each training course. The FAA estimates that it would take a CFI five minutes per pilot to complete the form. Since there are about 600 MU-2B pilots, this would take a total of 50 hours per year. At an average CFI hourly rate of \$50 and an average value of time at \$36.06 per hour, the total yearly cost of this requirement is \$4,303 (600 pilots * 5/60 hours * (\$50 per hour + \$36.06 value of time per hour) = \$4,303).
- A CFI must endorse a MU-2B pilot's logbook upon successful completion of training. The FAA estimates that it would take a CFI five minutes per pilot to endorse a pilot's logbook. Since there are about 600 MU-2B pilots, this would take a total of 50 hours per year. At an average CFI hourly rate of \$50 and an average value of time at \$36.06 per hour, the total yearly cost of this requirement is \$4,303 (600 pilots * 5/60 hours * (\$50 per hour + \$36.06 value of time per hour) = \$4,303).

Total PRA Results for the Proposed Rule:

Average Total Annual Cost Burden: Approximately \$8,606

Average Total Annual Hour Burden: Approximately 100 hours

| APPENDIX A: [| DETAILED | INFORMATION (| ON GRAND TOTAL | COSTS |
|---------------|----------|---------------|----------------|-------|
|---------------|----------|---------------|----------------|-------|

| Category | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | Total |
|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|---------------|
| Additional Costs for MU-2 pilots with training | \$6,427,801 | \$987,863 | \$987,863 | \$987,863 | \$987,863 | \$987,863 | \$987,863 | \$987,863 | \$987,863 | \$987,863 | \$15,318,567 |
| Costs for MU-2 pilots without training | \$1,134,318 | \$889,995 | \$889,995 | \$889,995 | \$889,995 | \$889,995 | \$889,995 | \$889,995 | \$889,995 | \$889,995 | \$9,144,273 |
| Costs for Initial/Transition Pilots | \$711,787 | \$1,018,341 | \$1,324,895 | \$1,631,448 | \$1,938,002 | \$2,244,556 | \$2,551,110 | \$2,857,664 | \$3,164,218 | \$3,470,771 | \$20,912,791 |
| Cost Savings from pilots that discontinue flying | (\$390,709) | (\$194,045) | (\$291,068) | (\$388,091) | (\$485,113) | (\$582,136) | (\$679,159) | (\$776,181) | (\$873,204) | (\$970,227) | (\$5,629,933) |
| Differences Training | \$4,693 | \$1,173 | \$1,173 | \$1,173 | \$1,173 | \$1,173 | \$1,173 | \$1,173 | \$1,173 | \$1,173 | \$15,252 |
| Total Pilot Training Costs (undiscounted) | \$7,887,889 | \$2,703,327 | \$2,912,858 | \$3,122,389 | \$3,331,920 | \$3,541,451 | \$3,750,982 | \$3,960,514 | \$4,170,045 | \$4,379,576 | \$39,760,950 |
| Aeronautical Experience | \$75,521 | \$75,521 | \$75,521 | \$75,521 | \$75,521 | \$75,521 | \$75,521 | \$75,521 | \$75,521 | \$75,521 | \$755,209 |
| Instruction, Checking and Evaluating | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Currency Requirements and Flight Review | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Operating Requirements | \$64,069 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$64,069 |
| Grand Total Costs (undiscounted) | \$8,027,479 | \$2,778,847 | \$2,988,379 | \$3,197,910 | \$3,407,441 | \$3,616,972 | \$3,826,503 | \$4,036,034 | \$4,245,566 | \$4,455,097 | \$40,580,228 |
| 7% discount rate | 0.8734 | 0.8163 | 0.7629 | 0.7130 | 0.6663 | 0.6227 | 0.5820 | 0.5439 | 0.5083 | 0.4751 | |
| Grand Total Costs (discounted at 7%) | \$7,011,511 | \$2,268,367 | \$2,279,820 | \$2,280,065 | \$2,270,522 | \$2,252,468 | \$2,227,060 | \$2,195,335 | \$2,158,230 | \$2,116,584 | \$27,059,963 |
| 3% discount rate | 0.9426 | 0.9151 | 0.8885 | 0.8626 | 0.8375 | 0.8131 | 0.7894 | 0.7664 | 0.7441 | 0.7224 | |
| Grand Total Costs (discounted at 3%) | \$7,566,669 | \$2,543,039 | \$2,655,136 | \$2,758,545 | \$2,853,678 | \$2,940,929 | \$3,020,677 | \$3,093,284 | \$3,159,100 | \$3,218,457 | \$33,809,514 |