



## **U.S. Department of the Interior Office of Inspector General**

# **FLASH REPORT**



DOI-OIG Photo

**Department of the Interior: Risking People and  
Property by Flying Airplanes in Excess of Federal  
Aviation Administration and Manufacturer Specifications**

**WR-EV-OSS-0005-2008**

**February 2009**



# United States Department of the Interior

## OFFICE OF INSPECTOR GENERAL

Washington, D.C. 20240

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### Memorandum

To: Secretary Salazar

From: Earl E. Devaney  
Inspector General

Subject: **Flash Report** — Department of the Interior: Risking People and Property by Flying Airplanes in Excess of Federal Aviation Administration and Manufacturer Specifications (Report No. WR-EV-OSS-0005-2008)

This report describes conditions of eight Department-owned aircraft that pose vital risk to people and property. The National Business Center Aviation Management Directorate (NBC-AMD) has allowed these aircraft to be flown over maximum takeoff gross weight in excess of FAA regulations and manufacturer specifications.

We discovered this situation while conducting our ongoing evaluation of aviation safety. In addition, we learned that the U.S. Fish and Wildlife Service (USFWS) Division of Migratory Bird Management is performing mission work using an uncertificated aircraft. Although Departmental policy requires all fleet aircraft be FAA certificated, one is not.

For over a decade, NBC-AMD has granted waivers to fly eight aircraft over maximum takeoff weight. The waivers were originally requested because 1) the missions were flown in remote areas of the Continental United States, Alaska, Canada, and Mexico, where airports, fuel, and weather reporting stations are limited, and 2) no aircraft in production could meet the combination of load carrying capacity and endurance needed to safely fly service missions in those environments. The latter no longer holds true.

Although FAA rules do not apply to Federal agencies and the Department has taken some actions to mitigate the risks associated with exceeding the FAA maximum takeoff weight, risks still exist and other options are available.

We ask that you direct the USFWS and the NBC to inform us of their course of action within 30 days. If you have any comments or questions regarding this report, please do not hesitate to contact me at (202) 208-5745.

cc: Doug Bourgeois, Director, National Business Center  
Jane Lyder, Acting Assistant Secretary for Fish and Wildlife and Parks  
Pamela K. Haze, Acting Assistant Secretary for Policy, Management and Budget

## **Cessna 206 Amphibious Airplanes**

In 1996, the USFWS began replacing their Cessna 185s with used Cessna 206 aircraft to eliminate the risks entailed in flying aircraft over certificated<sup>1</sup> gross weight limitations. Today, their average age is 29 years.

Shortly after taking delivery of the Cessna 206s, it was discovered that missions could not be conducted within certified gross weight limits. Consequently, these aircraft have been flown in excess of FAA regulations and manufacturer specifications over the past 10 years.

Clearly, the decision to acquire Cessna 206s was a poor one. The error was compounded when NBC-AMD (which manages the planes for USFWS) and USFWS decided to mitigate the problem rather than solve it.

In July and October 1998, USFWS requested and received a special FAA flight permit to conduct ferry flights at gross weights up to 4,200 pounds. This exceeded maximum takeoff gross weight in two Cessna 206 aircraft. Months later, the FAA revoked the permit, indicating that its intent had been to permit “one-time ferry flights and definitely not to allow potentially hazardous flights with vastly increased gross weight conditions on a regular basis.”

Then, in 1999, NBC-AMD granted USFWS a waiver to operate at the extended gross weight of 4,021 to 4,200 pounds or 229 to 400 pounds over the

FAA certificated maximum takeoff weight of 3,792 to 3,800 pounds. The waiver was granted on the condition that USFWS 1) conduct analysis of the airframe structure and aircraft performance and 2) acquire aircraft capable of performing its mission within FAA certificated limits. In April of 2001, USFWS completed the analysis and concluded that modified Cessna 206 amphibious airplanes “have adequate, but not surplus, performance for the survey mission.”

Also in April 2001, USFWS contracted for an engineering structural study, which provided several recommendations but no conclusions. Most importantly, the report provided no determination of ultimate load limits or conclusions indicating that the USFWS modified Cessna 206 aircraft have the structural strength to operate safely at 4,200 pounds. The ultimate load limits determine how much weight an aircraft can carry without structural or mechanical damage. Without knowing those limits, it is difficult to determine an equivalent level of safety.



One of the Cessna 206s flown overweight

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<sup>1</sup>Certificated: An airworthiness certificate is an FAA document that grants authorization to operate an aircraft in flight.

One recommendation was that the USFWS record and download g-load data<sup>2</sup> to a laptop computer on a regular basis to assess future fatigue. The engineer who conducted the study recommended “a system that could be programmed to record date, time, and any g-load events over a given threshold (say 2 g’s or more).” He stated this would give a running structural history of the aircraft, and the USFWS could use the data to schedule special inspections and maintenance.

USFWS and NBC-AMD are not fully implementing this recommendation. In a memo dated February 26, 2002, the NBC-AMD Acting Aviation Safety Manager voiced concerns that no assessment of fatigue or ultimate load limits had been done on the Cessna 206 airplanes. G-meters are installed in all seven Cessna 206s, but the information is not directly downloaded to a computer, nor is any formal analysis being done.

Instead, USFWS pilots record all operations at or above certificated gross weight, which is 3,800 pounds. Repetitive loads or high g-loads occurring below weights of 3,800 pounds are not currently recorded. Not only did USFWS and NBC-AMD fail to meet the study’s recommendations for fatigue assessment, the NBC-AMD Acting Safety Director stated in February 2002 that inspections are not a reliable source because metal fatigue can occur without being visually detectable.

In addition, the April 2001 structural



Another Cessna 206 flown overweight

DOI-OIG Photo

study found wing spar<sup>3</sup> failures on at least two of the Cessna 206s with extended wing tips. The rear wing spar had damage at the attach point and indicated an overload in negative bending. Because the damage was discovered during routine inspections, we have no knowledge of the incidents that produced the damage.

Shortly after this discovery, an inspection of all Cessna 206s was conducted. This inspection uncovered another spar fracture in a different aircraft. The NBC-AMD Acting Aviation Safety Manager stated, “The cause of wing spar failures on both aircrafts could not be determined nor has any information been found to eliminate overweight operations as a cause or contributing factor.”

After operating these aircraft overweight for several years, USFWS contracted with Quest Aircraft Company to

<sup>2</sup>G-Load Data: Data from a G-meter that tells a pilot how many G forces they are pulling in particular maneuvers.

<sup>3</sup>Wing Spar: Any of the main longitudinal members of the wing of an airplane that carry the ribs.



provide five to eight new Kodiak Quest aircraft.

Replacement of the Cessna 206s began when the first of the five Kodiak aircraft was delivered the first week of this year. Three additional aircraft purchases are optional under the current contract.



Kodiak Quest Aircraft

NBC-AMD Photo

USFWS expects delivery of one more aircraft this year, two aircraft in 2010, and the fifth aircraft in 2011. However, we have not seen a definitive delivery timetable for all the Kodiak aircraft.

USFWS and NBC-AMD agreed that the waiver to operate the Cessna 206s would sunset no later than the end of fiscal year 2010, which is beyond the anticipated delivery date of the remaining Kodiak replacement aircraft. USFWS expects NBC-AMD to extend the sunset date.

Another safety concern is the future of the Cessna 206s after they are replaced with the Kodiaks. NBC-AMD and USFWS provided a variety of answers regarding the future of these planes.

The options included selling the

aircraft with or without their airworthiness certificates, selling them for scrap, and selling a few of them but rotating the rest back into the USFWS fleet where they would no longer be flown over takeoff weight. One NBC-AMD official said that “these planes should be crushed,” in effect, taken out of service and scrapped.

### Turbine Beaver Airplane

Built in 1952, the Department’s Turbine Beaver aircraft was modified in the early 1970s to its current configuration. The work was done at NBC-AMD’s Lake Hood Seaplane Base facility in Anchorage, Alaska.

The extensive modifications associated with the aircraft’s turbine conversion prevented it from being certificated by the FAA. Because the Turbine Beaver is an uncertified Government-owned aircraft, no maximum takeoff gross weight is set. However, the Turbine Beaver does operate at a takeoff weight in excess of that allowed for Beaver aircraft certificated by the FAA.



Turbine Beaver

NBC-AMD Photo

NBC-AMD official correspondence reports that this aircraft is more than 55 years old and has been operated at higher than standard Beaver takeoff weight for over 30 years. NBC-AMD has stated that it has no intention of intervening to stop use of the Turbine Beaver as long as the aircraft continues to pass required airworthiness inspections.

and the Director of NBC immediately halt the use of these airplanes and remove them from service as non-airworthy assets.

We are issuing this flash report to notify both NBC and USFWS management of serious safety issues so that immediate action can be taken. Our aviation safety evaluation will address other management safety issues that came to our attention.

### **Overall OIG Assessment**

NBC-AMD and USFWS officials are clearly aware of the risks associated with flying aircraft over their maximum takeoff gross weight limits. They have stated in justifications for replacement aircraft that “a critical risk has been identified with flying low-level surveys with aging aircraft, particularly Cessna 206 amphibious aircraft.” In addition, NBC-AMD has indicated increasing liability concerns over operation of aircraft above certified weights.

While both organizations have acknowledged the risks, neither agency has taken immediate, effective actions to resolve these safety issues. The NBC-AMD and USFWS steps taken to purchase new Kodiak airplanes are commendable, but they do not eliminate the risks associated with flying the remaining Cessna 206 planes over takeoff weight in a timely manner or deal with the replacement of the Turbine Beaver. These eight airplanes continue to be flown when other suitable aircraft services are available, through purchase or lease, in the open market that would meet USFWS mission requirements.

### **Recommendation**

We recommend that the Assistant Secretary for Fish and Wildlife and Parks

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