

Log 1422

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

ISSUED: January 25, 1982

Forwarded to:

Honorable J. Lynn Helms
Administrator
Federal Aviation Administration
Washington, D.C. 20591

SAFETY RECOMMENDATION(S)

A-81-163 through -169

On April 17, 1981, Air U.S. 716, HP-137 (Jetstream), and Sky's West Parachute Center's Cessna TU-206 collided in midair at 13,000 feet m.s.l. near the Ft. Collins/Loveland Airport, Loveland, Colorado. 1/ The midair collision illustrates certain Safety Board concerns related to air traffic control procedures and existing regulations with respect to parachute jump operations.

FAA Regulation 14 CFR 91.24(b)(4) prohibits flight above 12,500 feet without a Mode-C encoding altimeter unless deviation has been authorized by the FAA in accordance with 14 CFR 91.24(c). Sky's West had been conducting parachute jump operations from the Ft. Collins/Loveland Airport since November 1979 at the rate of more than 10,000 jumps per year. The great majority of these operations involved flight above 12,500 feet for jump purposes. None of the Sky's West aircraft was equipped with Mode-C altitude encoding transponders and no continuing waiver had been issued to Sky's West to permit such operations above 12,500 feet without a transponder as required by 14 CFR 91.24. Rather, the Denver Center controllers on a routine basis allowed these flights to operate at altitudes above 12,500 feet. The controllers testified that they believed that they were not granting permission to these flights, but were simply acknowledging advisories that they were, in fact, operating at these altitudes. The Board believes that this routine practice of the Denver Center in not questioning such operations or in any way restricting these aircraft from operating above 12,500 feet without a Mode-C transponder indicated tacit approval. The permissiveness of the Denver Center created a situation wherein Sky's West believed that they had a standing waiver from the regulatory requirements for operations of this type, and it became an acceptable practice not only to Sky's West but also to Denver Center personnel. It is further believed that this permissiveness generated an atmosphere of complacency both at the Center and within the Sky's West operation which led to laxity, even with respect to the existing communications procedures. This was exemplified by the communications between the Sky's West pilot and the Denver Center during the flight about 2 hours before the accident flight, when the pilot advised the Center that he was going to 15,500 feet and the controller simply replied with "roger."

1/ For more detailed information, read Aircraft Accident Report — "Air U.S. Flight 716, HP-137, N11360, and Sky's West Cessna TU-206, N4862F, Midair Collision, Ft. Collins/Loveland Municipal Airport, Loveland, Colorado, April 17, 1981" (NTSB-AAR-81-18).

It should also be noted that the pilot of the Cessna had frequently been assigned code 1-2-3-4 by the controllers for use during parachute jump operations. Consequently, the pilot believed that this was a permanently assigned code and that by merely squawking 1-2-3-4 positive radar identification was provided for the aircraft. This misconception created an unsafe condition in that it provided a false sense of security for the Cessna pilot.

The Safety Board believes that the FAA should prohibit jumping on or within a specified distance from airways or in congested airspace. (This accident occurred about 1 nmi off airways in airspace normally used for aircraft departing Denver's Stapleton International Airport.)

Additionally, the Board believes that FAA should direct their ATC facilities to notify the appropriate General Aviation District Office when any of its control facilities become aware of violations of regulations or safety issues concerning parachute jumping. Had this occurred prior to the accident, a better understanding of their respective responsibilities on the part of the jump school operator and the FAA facilities would have been effected.

In view of the information developed during the investigation of this accident, the Safety Board believes that the United States Parachute Association should immediately make their members aware of this accident and encourage them to communicate on the aircraft radio with the control facility having jurisdiction of the airspace in which the jump is to be initiated. This communication should include a request for VFR traffic advisories as soon as practicable after takeoff and should be done in addition to the 5-minute notification required by 14 CFR 105.14.

The Board also believes that the intent of 14 CFR 105.14 would be better served if 105.14 (a) (1) (ii) were to require that radio communication be established between the jump aircraft and the air traffic control facility having jurisdiction of the airspace in which the jump is to be initiated. The present regulation states the "nearest FAA air traffic control facility or FAA flight service station." It should be noted that the nearest facility may not necessarily be the facility having control jurisdiction over the airspace in which the jump is conducted. Also, according to this regulation in its present form, Sky's West could have contacted a flight service station and satisfied the requirements of the regulation. However, the flight service station would not have been able to provide traffic advisories.

To cover the situation of a jump being initiated in one control facility's airspace and descending into another facility's airspace, the facility contacted should be the air traffic control facility which has jurisdiction of the airspace in which the jump is to be initiated. Air Traffic Control Handbook 7110.65B should then be revised to require that the controller in communication with the jump aircraft, when the jump is initiated, coordinate with the control facility having jurisdiction over the airspace into which jumpers will descend. This would then enable a complete exchange of traffic information between the pilot of the jump aircraft, the jumpers, and all additional potentially conflicting aircraft involved. The Board believes that these changes to 14 CFR 105.14 would enhance aviation safety.

The Board realizes that the primary intent of Part 105 is to provide protection to parachute jumpers from collision with transiting aircraft. However, the circumstances of this accident dramatize the fact that an aircraft in a parachute jumping operation is in effect an "elevator in the sky." It is generally not "straight and level" but is circling in a

climb or descent altitude. This reduces cockpit visibility and makes the sighting of other potentially conflicting traffic more difficult. When we consider the number of times per year such operations occur, the magnitude of the problem becomes quite evident. It is because of this potential that we believe the concept or intent of 14 CFR 105 should be expanded to include an increased level of safety via traffic advisories while a jump aircraft is proceeding to and departing from the location where jumpers are released.

The effectiveness of a pilot's detecting airborne targets depends upon his expectations in finding a target that he has been alerted to, his physical well-being, how he time-shares the instrument scanning and outside scanning, and the techniques used in searching for airborne targets. Obviously, if a pilot assumes that he is protected by ATC and/or is fatigued, bored, preoccupied, or distracted, his ability to scan the airspace while simultaneously watching cockpit displays, flying the aircraft, and monitoring ATC communications will be seriously impaired.

In this accident, there was no evidence to indicate that the Jetstream pilots were fatigued or physically unfit. It is not possible to determine how much time during the final 120 seconds of flight each pilot could have devoted to outside scanning, nor is it known what each pilot's scanning habits or techniques might have been.

A recent NASA study of data from the Aviation Safety Reporting System (ASRS) on near midair collisions indicated that half of 78 near midair collisions in Terminal Controlled Airspace (TCA's) involved one aircraft not known to ATC. "If ASRS reports are representative, many pilots under radar control believe that they will be advised of traffic that represents a potential conflict and behave accordingly. They tend to relax their visual scan for other aircraft until warned of its presence; when warned of a conflicting aircraft, they tend to look for it to the exclusion of within-cockpit tasks and scanning for unreported traffic." The report continues: "The air traffic controller cannot inform the pilot of traffic that is not visible on his radar scope, nor can he provide separation from such traffic. It is plain that at least some pilots receiving Stage III services believe that they will be told about all traffic that represents a threat, yet controllers can handle traffic only with regard to threats they can see"

The authors of the 1980 NASA study concluded that: "A variety of human and system factors was found to be associated with these near midair collisions. Flightcrew workload, limited visual scan while under radar control, misunderstanding of the limitations of the ATC system, and failure to utilize transponders were observed. A substantial number of reported near midair collisions in Stage III terminal airspace involved at least one aircraft not participating in Stage III services. For these reasons, pilots must exercise the highest level of vigilance for other traffic, regardless of airspace or radar services being utilized." Although the Safety Board could not determine precisely why the Jetstream flightcrew did not see the Cessna 206, these conclusions are applicable to the present accident situation as likely explanations for the failure of the "see and avoid" concept to have prevented this collision. The Safety Board recognizes the inherent limitations of the see and avoid concept and have cited them in numerous Board reports involving midair collisions. Although the FAA has published considerable data regarding the need for continued pilot vigilance in order to minimize the collision hazard, the Board believes that there is still insufficient, detailed information available for the enlightenment of pilots and controllers regarding the limitations associated with this concept. Notwithstanding the above cited limitations, the Safety Board believes that strict adherence by all concerned to existing rules contained in 14 CFR 91 and 105 and applicable procedures set forth in the Airman's Information Manual could possibly have prevented this accident.

As a result of this investigation, the National Transportation Safety Board recommends that the Federal Aviation Administration:

Direct ATC facilities to notify the appropriate General Aviation District Office when any of its control facilities become aware of violations of regulations or safety issues concerning parachute jumping. (Class I, Urgent Action) (A-81-163)

Revise 14 CFR 105.23 to prohibit parachute jump operations in or near Federal airways and determine an acceptable safe distance from such airways at which jump operations can be conducted without conflict with other air traffic. (Class II, Priority Action) (A-81-164)

Establish a special transponder code with an appropriate and readily identifiable radar display for all parachute jump operations. (Class II, Priority Action) (A-81-165)

Revise Advisory Circular 90-48B, "Pilot's Role in Collision Avoidance" to include detailed information regarding the psychophysiological factors affecting pilots' ability to see and avoid other aircraft. (Class II, Priority Action) (A-81-166)

Amend 14 CFR 105.14 to require that a parachute jump aircraft contact the air traffic control facility having jurisdiction of the airspace in which the jump is to be initiated rather than the "nearest FAA air traffic control facility or FAA flight service station." (Class II, Priority Action) (A-81-167)

Amend 14 CFR 105 to require that the pilot of a jump aircraft contact all control facilities having jurisdiction of the airspace in which the aircraft will transit during the operation for the purpose of receiving traffic advisories while proceeding to and departing from the location where jumpers are released. This should be in addition to the requirement of 104.14 (a) (1) (ii) for a 5-minute notification before jump operations are begun. (Class II, Priority Action) (A-81-168)

Amend Air Traffic Control Handbook 7110.65B to require a controller who receives a notification from a jump aircraft, required by 14 CFR 105.14, that the jumpers will descend into another facility's airspace coordinate with that facility so that a complete exchange of traffic can be effected between the jump aircraft, the jumpers, and all potentially conflicting aircraft involved. (Class II, Priority Action) (A-81-169)

KING, Chairman, DRIVER, Vice Chairman, and McADAMS, and BURSLEY, Members, concurred in these recommendations. GOLDMAN, Member, did not participate.


By: James B. King
Chairman