

NATIONAL TRANSPORTATION SAFETY BOARD
Southwest Regional Office
Gardena, CA

March 11, 2007

Operations Factual Report

A. ACCIDENT

Location: Phoenix, AZ

Date: July 27, 2007

Time: 1246 Mountain Standard Time

Aircraft: N613TV (Ch 3), Eurocopter AS350B2
N215TV (Ch 15), Eurocopter AS350B2

Operator: N613TV, KTVK TV
N215TV, US Helicopters, Inc.

NTSB Number: LAX07MA231A/B

B. Operations Participants

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B. SUMMARY

On July 27, 2007, about 1246 mountain standard time¹, KTVK-TV Channel 3 (Ch 3) and KNXS-TV Channel 15 (Ch 15) news helicopters, N613TV and N215TV, respectively, collided in mid air while maneuvering in Phoenix, Arizona. Each helicopter was a Eurocopter AS350B2. KTVK-TV and US Helicopters, Inc., were operating the helicopters under the provisions of 14 *Code of Federal Regulations* (CFR) Part 91. The commercial pilots of both helicopters and one photographer in each helicopter were killed. The helicopters were destroyed. Ch 15 departed Scottsdale, Arizona, at 1222, and Ch 3 departed Scottsdale at 1232, as local electronic news gathering (ENG) flights. Visual meteorological conditions prevailed, and no flight plans had been filed.

C. DETAILS OF THE INVESTIGATION

1.0 HISTORY OF FLIGHT

The ENG helicopters were covering a police pursuit on local streets. The suspect's vehicle had been moving; he then stopped, abandoned it, and acquired another vehicle. The collision occurred during this transition. Both main wreckagees came to rest approximately 160 feet apart in Steele Indian School Park.

2.0 PERSONNEL INFORMATION

2.1 Ch 3 Pilot

The pilot was 42 years old. A review of Federal Aviation Administration (FAA) airman records revealed that he received a private pilot certificate for airplane single-engine land on December 13, 1982. He obtained a commercial pilot certificate on August 24, 1987, with a rating for rotorcraft-helicopter. The pilot held a certified flight instructor (CFI) certificate with a rating for rotorcraft-

¹ All times in this report are mountain standard time based on a 24-hour clock.

helicopter; he obtained his most recent certificate on April 27, 2007. The FAA reported that they had no record of accidents, incidents, or enforcement actions in their database involving this pilot².

The FAA issued the pilot a second-class medical certificate on August 8, 2006; it had no limitations or waivers.

The pilot was the Director of Operations (DO) for Westcor Aviation³, and worked as a back up pilot for Ch 3. He started with Westcor as a pilot on April 6, 1998. He reported that he had 9,768 hours at the date of hire. Westcor reported that the pilot filled out a yearly resume for the company. On September 6, 2006, he noted that his total time was 13,578 hours.

The chief pilot for Ch 3⁴ reported that the accident pilot flew 79 flights for a total of 124.2 hours in ENG operations between January 2, 2007, and July 5, 2007. Westcor reported that he didn't necessarily fly ENG flights every day. He last worked as a pilot on Wednesday, July 25. He flew a 1.5-hour Westcor charter flight, and was scheduled from 0745 to 0900. He usually started late on Fridays; he started at 1000, and worked for Ch 3 from 1600 to 1830. He would take breaking news stories for Ch 3 during the day, which was the reason he was flying on the day of the accident. His work schedule on the day of the accident was normal. He had no flights scheduled, and came in about 0900. Westcor's current DO saw him at that time, and noted that he seemed very normal; he had a positive attitude.

The training required for Westcor's Part 135 operations was done in house. Their two pilots took turns instructing each other, and the FAA did the proficiency checks. On April 27, 2007, the accident pilot had check rides in the AS350B2 and the AS355N.

A private company provided additional training. This company was based at Grand Prairie, Texas, but went to the client's location to provide the training in the client's aircraft. The training lasted 2 days; the first day

² See Operations Attachment A-Record of conversation with FAA inspector

³ See Operations Attachment B-Record of conversation with current Westcor Director of Operations

⁴ See Operations Attachment C-Record of conversation 22008 with Ch 3 chief pilot

consisted of 8 hours of ground school for that particular model. The second day consisted of preflight procedures and 1.5 to 3.0 hours in the air. The accident pilot completed training in the EC120 on May 16, 2007, and the AS355N on June 27, 2007.

The pilot lived alone and close friends did not know his exact schedule over the previous 72 hours. He did not smoke or drink, and had been in good health.

2.3 Ch 15 Pilot

The pilot was 47 years old. A review of FAA airman records revealed that he received a private pilot certificate with a rating for rotorcraft-helicopter on May 23, 1990. He obtained a commercial pilot certificate with a rating for rotorcraft-helicopter on December 7, 1990. The FAA reported that they had no record of accidents, incidents, or enforcement actions in their database involving this pilot⁵.

The FAA issued the pilot a second-class medical certificate on December 27, 2006. He held a Statement of Demonstrated Ability (waiver) for defective color vision⁶.

The operator reported⁷ that the pilot had a total flight time of 8,006 hours, all in rotorcraft, with 907 hours in this make and model. He had 122 hours in the last 90 days, 28 hours in the last 30 days, and 3 in the last 24 hours. His last flight review, which was a Part 135 check ride in an AS350 helicopter, was on December 7, 2006.

The pilot's primary job was as a pilot for US Helicopters⁸. They had employed him since October of 2005. He had been working in the Phoenix area since his hire date. Since his arrival, he had flown about 1,000 hours, with an average of 45 hours per month. He owned a house in the Phoenix area, and normally had weekends off. He was not married, and he did not have children. US Helicopters indicated that he had not been involved in any previous accidents, nor had he been disciplined for performance.

⁵ See Operations Attachment A-Record of conversation with FAA inspector

⁶ See NTSB Medical Officer's factual report

⁷ See US Helicopter's pilot/operator report

⁸ See Attachment D-Record of Conversation with US Helicopters Vice President

For the 72 hours leading up to the accident, he worked a standard schedule from 0530 to 1430. His activities outside of work were unknown.

3.0 COMMUNICATIONS

All aircraft were on the same common frequency (123.025). They were also monitoring Phoenix air traffic control tower frequency 118.7.

4.0 MEDICAL AND PATHOLOGICAL INFORMATION

The Maricopa County Coroner completed an autopsy for the pilots, and determined that the cause of death for both was "multiple blunt force injuries." No autopsy reports were obtained for the photographers.

The FAA Forensic Toxicology Research Team, Okalahoma City, performed toxicological testing of specimens of both pilots.

4.1 Ch 3

Analysis of the specimens for the Ch 3 pilot⁹ contained no findings for tested drugs. The team did not perform tests for carbon monoxide or cyanide. The report contained the following findings for volatiles¹⁰: 25 (mg/dL, mg/hg) ethanol detected in the muscle and 13 (mg/dL, mg/hg) ethanol detected in kidney. The report noted putrefaction.

4.2 Ch 15

Analysis of the specimens for the Ch 15 pilot¹¹ contained no findings for tested drugs. The team did not perform tests for carbon monoxide or cyanide. The report contained the following findings for volatiles: 20 (mg/dL, mg/hg) ethanol detected in the liver and 35 (mg/dL, mg/hg) ethanol detected in muscle. The report noted putrefaction.

5.0 ORGANIZATIONAL AND MANAGEMENT INFORMATION

5.1 Ch 3

⁹ See toxicology report for Ch 3 pilot

¹⁰ See Attachment E-NTSB Interpretation Of Blood Alcohol Levels Found In Transportation Operators

¹¹ See toxicology report for Ch 15 pilot

Ch 3 owns and operates its helicopter¹². The parent company has other stations; however, each station owns and operates its helicopter independently. The parent company does annually assure currency of flight training, medical compliance, and insurance of all pilots.

The chief pilot was the only full time pilot. The accident pilot worked part time for Ch 3 as the primary back-up pilot; he and two other pilots were on a roster as backup pilots. Two of them, including the accident pilot, worked for Westcor Aviation, and the other worked elsewhere.

Westcor Aviation performs contract maintenance on the helicopter. They have other helicopters of their own, and have their own charter operations. Channel 5, channel 10, channel 12, and Ch 3 all park their helicopters in Westcor's hangar. Ch 15 is in a separate hangar.

The Ch 3 helicopter had a SkyWatch[®] Traffic Advisory System on board¹³. It worked when the Ch 3 chief pilot flew the helicopter earlier on the day of the accident. Turning it on was part of the power up checklist. He and the accident pilot both used it. It provided audio warnings and displayed targets on the helicopter's Garmin 430 navigation unit. If there was a lot of traffic in close, the Sky Watch system audio alert will emit a constant "traffic, traffic" advisory. After making positive visual and verbal contact on the air-to-air helicopter frequency with that traffic (pilot), sometimes they would turn the volume on the audio alert down lower than the air traffic control and air-to-air helicopter radio volumes so that the alert didn't overpower the communications frequency.

Ch 3's pilots follow the manufacturer's training plan, and complete yearly training and flight checks at the manufacturer's training facility in Grand Prairie, Texas. The syllabus is specific for their make and model.

The chief pilot briefs management directly on safety issues, meetings of local ENG pilots, and what they are going to do. There is indoctrination for new photographers. The station teaches them the see and avoid concept when the photographers first start to fly, and talk about their

¹² See Attachment F-Record of Conversation 21208 Ch 3 Chief Pilot

¹³ See Operations Attachment B-Record of conversation 22008 with Ch 3 chief pilot

responsibilities to keep an eye out for traffic while flying.

Ch 3 has changed their operation since the accident; they have two full time pilots plus one backup, and are adding other backups. One pilot flies with a photographer if they are just filming video. However, if the mission includes reporting, two pilots fly together, plus they have the photographer on board. One pilot reports, and the other pilot flies.

5.2 Ch 15

US Helicopters has been in business since 1981. The company owns and operates 46 aircraft in 25 locations. They operate one helicopter in the Phoenix area. The staffing at each location varies and management performs routine visits. Over the last several years, the company has added new programs and more equipment.

US Helicopters has a training program and performs annual flight checks. The FAA accepts the training program. Flight and duty times all comply with FAR Part 135 regulations.

US Helicopters does not have a safety committee, but has a safety office incorporated into the operations office. They maintain the safety and operations manuals and report directly to the Chief Information Officer. Safety information is communicated to employees via email, company memos, and person to person. Employees report problems directly to the chief pilot or Director of Operations. There is a way for employees to bring up safety related issues without fear of retribution. Recent safety issues include wind limits, weather minimums, and rotor blade tie downs; the company enacted policies for each of these issues.

Company maintenance personnel normally do maintenance with 1-2 mechanics at each location. If maintenance is not done through US Helicopters, local contractors or maintenance facilities are used. The maintenance is performed in accordance with FAA and manufacturer standards.

6.0 ADDITIONAL INFORMATION

6.1 All aircraft working the pursuit squawked a secondary beacon code of 0400; the accident site elevation was 1,100 feet.

6.2 Advisory Circular (AC) 90-48C Pilots' Role in Collision Avoidance

According to AC 90-48C, the flight rules prescribed in Part 91 of the Federal Aviation Regulations (FARs) set forth the concept of "See and Avoid." It points out that this concept requires that vigilance shall be maintained at all times by each person operating an aircraft. This is regardless of whether the operation is conducted under Instrument Flight Rules (IFR) or Visual Flight Rules (VFR).

The AC notes that pilots should also keep in mind their responsibility for continuously maintaining a vigilant lookout regardless of the type of aircraft being flown. It also emphasizes that most MAC (mid-air collision) accidents and reported NMAC (near mid-air collisions) occur during good VFR weather conditions, and during the hours of daylight.

The AC further states that pilots should remain constantly alert to all traffic movement within their field of vision. They should also periodically scan the entire visual field outside of their aircraft to ensure detection of conflicting traffic. It points out that the probability of spotting a potential collision threat increases with the time spent looking outside, but certain techniques may be used to increase the effectiveness of the scan time. The human eyes tend to focus somewhere, even in a featureless sky. In order to be most effective, the pilot should shift glances and refocus at intervals. Pilots should also realize that their eyes might require several seconds to refocus when switching views between items in the cockpit and distance objects. It states that peripheral vision can be most useful in spotting collision threats from other aircraft. It reminded pilots of the requirements to move one's head in order to search around the physical obstructions, such as door and window posts.

In addition, the AC advises that pilots should execute gentle banks to the left and right at a frequency that permits continuous visual scanning of the airspace during climbs and descents if flight conditions permit visual detection of other traffic.

6.3 Group meeting with Phoenix area pilots

The news pilots for the Phoenix area met with investigators¹⁴ regarding the midair collision. The group reported that they were a close-knit community, and were in communication daily. All pilots except for Ch 15 operated out of the same hangar; Ch 15 operated out of a nearby hangar. The pilots reported that the following procedures were in place and effective within the Phoenix area.

The pilots indicated that when they receive a call of an event, the helicopter(s) is dispatched. The first pilot to arrive on scene establishes a position. All aircraft are on the same discreet frequency (123.025), which law enforcement also monitors. As additional pilots enter the area, the pilots transmit their altitudes and positions to each other. If someone is going to change position, they transmit how and where they are changing. In the case of the accident flight, the other news pilots flying believed that the communication was adequate between the two accident pilots. When pilots are broadcasting live, they advise the other pilots on the local frequency, and depending on the length of the broadcast, will also notify the tower. During the broadcast, the pilot continues to monitor the common frequencies.

The pilots indicated that car chases were not a common occurrence in the Phoenix metro area. Many had been discontinued by the Phoenix Police Department due to safety concerns. Over the year leading up to the accident, they had covered about two car chases over the last 8 months, both commenced the week of the accident.

Each operator flies about 1,200 hours per year. Except for Channel 12, all operators use a combination pilot/reporter. Channel 12 uses a photographer/reporter. All helicopters are equipped with a photographer, who operates the camera; the pilot has access to a monitor that is mounted near the instrument panel. The monitor has four screens. One shows what the station is broadcasting, another shows the picture that is leaving the helicopter. The other two are pilot choice, and could the picture from any of the other cameras on the helicopter. There are typically cameras on the nose and tail, a tape deck with file footage, and sometimes a

¹⁴ See Attachment G-Notes from Phoenix ENG pilots interview

camera to focus on the pilot or reporter (called a talent camera). The picture on the monitor is the only indication of what the helicopter is broadcasting. Throughout the flight, the pilots scan the monitor as they would their flight instruments. The monitor is used to signal to the pilots when they are live, and to assist in positioning the helicopter for the best camera angle. The pilots indicated that they do not tell the photographer how to film, and they will respond to the photographer, based on what is needed. There were times when the pilot would have another person in the left seat, but that person created more of a workload than help because of additional information the pilot needed to provide. The pilots also stated that they had never been involved in a near midair collision (NMAC) with another helicopter, but they have been involved in a NMAC with a fixed wing aircraft. Typically, the fixed wing made an early turn or did something unexpected.

During missions involving the police helicopter, the media helicopters remain 500 feet above it. There is constant chatter on the discreet frequency regarding positions. There are times when a pilot will lose sight of another helicopter over the city, because the helicopter blends into the ground clutter making it difficult to discern. At night, they use more vertical separation; 99 percent of the time, the pilots will fly with the landing light illuminated to allow others to see them.

The media pilots have a letter of agreement (LOA)¹⁵ with the air traffic control tower for Phoenix International Airport. This letter of agreement provides media pilots with standardized procedures to facilitate their movement in and out of the airspace. It also reduces the workload for the controllers. Other tower facilities, like Falcon Field and Scottsdale have LOAs, but only for noise abatement procedures. In addition to the LOA, the pilots indicated that they have given familiarization flights to the tower controllers in order to give them a better understanding of helicopter operations. In conjunction, pilots have been able to tour the air traffic control tower and understand the operations from the air traffic control tower controller's perspective. This relationship has proven invaluable in successful working relationships with the controllers.

¹⁵ See the ATC Group Chairman Report for details of the LOA

Annual Meetings

In the NTSB/FAA post accident meeting with the Phoenix area pilots, they noted that they had been having yearly meetings with the United States Forest Service aviation group. They also have a yearly seminar with Arizona law enforcement air crews and medivac crews at the Mesa Police department.

United States Forest Service (USFS)

The media pilots attend an annual meeting with personnel from the USFS aviation group to facilitate their operations in and around forest fires. Through these meetings, pilots and their dispatchers learn how to obtain permission to operate within the area of the forest fires, without causing traffic flow problems with fire fighting personnel.

Mesa Police Department

The Mesa Police Department holds an annual meeting that helicopter pilots statewide attend. The pilots include law enforcement, media, emergency medical services, and flight schools. Through this meeting, pilots are able to meet other pilots, and go over procedures in order to standardize operations. In addition, air traffic controllers are also in attendance.

Safety Suggestions

The pilots suggested the following safety improvements:

1. High visibility main rotor and tail rotor blades
2. LED anti-collision strobe lights
3. Improved position lights
4. Quarterly meetings
5. Helicopter Association International (HAI) support

The pilots did not have any further suggestions to improve their operational procedures.

6.4 Phoenix Area Changes

The chief pilot for Ch 3 discussed the changes that the local ENG pilots have made¹⁶. The first quarterly meeting

¹⁶ See Attachment F-Record of Conversation 21208 Ch 3 Chief Pilot

was just media pilots. They invited local law enforcement to the next meeting, and had a very large turnout. They have now expanded the group to include EMS pilots; it has gotten so large that they are going to have to change their meeting venue.

The group decided at the first meeting to establish guidelines for dispute resolution. If two pilots have an issue with the other pilot's flying, the two pilots talk to each other about the incident first. Then, through email, they brief the other pilots on the issues and the resolution. If one pilot feels that the conflict is not resolved, then a call should be made to the other station's news director. Beyond that, a call will be made to the FAA.

Since the midair, pilots are doing a lot more talking air-to-air. They are making positive callouts of their position more often. In a static situation, no one moves until all other helicopters in the group respond. Pilots are also providing a lot more distance between each other, and checking clearance with the photographer more often. The common frequency of 123.025 has gotten busier so, when necessary, pilots now switch to 123.4 if they want to talk to each other about a situation.

Westcor's current DO indicated that since the accident, one media company has spent the money to paint their rotor blades with high visibility paint. All stations have made some changes to their operations to enhance safety since the accident.

6.5 HAI

HAI hosted meetings in Los Angeles, California, and at the HAI HeliExpo in Houston, Texas¹⁷. Attendees included ENG pilots, ENG operators, public service pilots, news directors, FAA personnel, and NSTB staff. The groups discussed current industry practices. All ENG participants indicated a willingness to get together to develop and publish best practices guidelines. HAI is reactivating their ENG group, which will coordinate formation of an industry work group to develop industry guidelines.

6.6 Professional Broadcast Pilot's Association (NBPA)

¹⁷ See Attachment H-Record of conversation with HAI representative

An interview¹⁸ with the president of the NBPA revealed that they have published a guide¹⁹ that recommends procedures and guidelines for ENG operations. Its topics include passenger briefings, dispatching, and weather. It also discusses the duties and responsibilities of managers, pilots, reporters, photographers, and assignment editors. The interview disclosed that numerous ENG groups around the country hold periodic meetings to discuss local ENG operations. The president felt that these meetings are useful and promote safety. He indicated that NBPA would participate on an industry work group to develop standardized procedures and guidelines for the ENG industry.

6.7 Radio and Television News Directors Association (RTNDA)

A representative²⁰ of the RTNDA indicated that they would participate on an industry work group to develop standardized procedures and guidelines for the ENG industry. Their organization will hold a discussion on ENG operations at their annual convention.

6.8 American Federation of Television and Radio Artists (AFTRA)

An interview²¹ with a representative from AFTRA revealed that there are numerous NMACs, and they typically are not reported to any agency. There is no standardized training for pilots, reporters, and photographers. There are no written policies or guidelines on ENG operations. A major concern is weather encounters where the pilot inadvertently goes into instrument conditions or loses sight of other aircraft. AFTRA would participate on an industry work group to develop standardized procedures and guidelines for the ENG industry.

6.9 National Press Photographer's Association (NPPA)

A representative²² of the NPPA indicated that they have procedures and guidance for ground operations, but not for air operations. They would participate on an industry work

¹⁸ See Attachment I-Record of conversation with NBPA representative

¹⁹ See Attachment J-*Manual Recommended Procedures and Guidelines For Electronic News Gathering*

²⁰ See Attachment K-RTNDA representative statement

²¹ See Attachment L-Record of conversation with AFTRA representative

²² See Attachment M-Record of conversation with NPPA representative

group to develop standardized procedures and guidelines for the ENG industry.

6.10 Airborne Law Enforcement Association (ALEA)

A representative²³ of ALEA indicated that several law enforcement agencies meet with their local ENG pilots. A Los Angeles ENG pilot's group publishes a booklet describing safety guidelines for public service and ENG pilots. ALEA would participate on an industry work group to develop standardized procedures and guidelines for the ENG industry and public safety operations.

6.11 ENG Operations

A review by Safety Board staff did not reveal any FAA advisory circulars regarding ENG operations. Additional review failed to reveal human factors literature regarding the workload of a pilot engaged in ENG operations, whether pilot or pilot/reporter. The FAA Civil Aeromedical Institute published a document (FAA-AM-78-29)²⁴ that assessed the conspicuity of selected propeller and tail rotor paint schemes.

6.12 Related Events

Midair Niagara Falls

The Transportation Safety Board of Canada investigated a midair collision over Niagara Falls²⁵. In its report, the TSB indicated that two safety measures that had already been implemented as a result of the accident were (1) air tour flights operating in the Niagara Falls area were required to operate with anticollision (as well as position and rotating beacon) lights illuminated and (2) all helicopters were to have approved conspicuous paint schemes on the upper surface of their blades²⁶. An official from

²³ See Attachment N-Record of conversation with ALEA representative

²⁴ See Attachment O- FAA-AM-78-29

²⁵ See Transportation Safety Board of Canada, *Mid-Air Collision Between Niagara Helicopters Limited, Bell Helicopter Textron 206B Jetranger, C-GFXX, and Rainbow Helicopters Incorporated, McDonnell Douglas MD369E, N588DB, Niagara Falls, Ontario, Canada, 29 September 1992*, Aviation Occurrence Report A92H0029 (Quebec, Canada: Transportation Safety Board, 1993).

²⁶ The U.S. Forest Service (USFS) acknowledged the importance of helicopter visibility in its requirements for contractors providing helicopters to the USFS for fire-fighting. See Operations Attachment P.

Transport Canada (TC)—the FAA's counterpart in Canada—indicated that the authorization to conduct flight operations in the Niagara Falls area includes a requirement for alternating bands of contrasting color on helicopter blades²⁷. The TC official stated that one Canadian Niagara Falls operator uses black and white on its helicopters' blades and that another uses red and white on its helicopters' blades²⁸. The TC official further indicated that, according to the acting operations manager at one of these operators, this equipment was especially effective when looking out for aircraft operating at lower altitudes.

The TC official noted that they have hosted annual meetings since 1993 of the interested parties, operators, and regulatory officials from both Canada and the United States. The meetings are a mandatory requirement of the authorization to conduct flight operations in the Niagara Falls area. He also stated that the meetings "greatly" benefit flight safety because operators can discuss operational and safety issues in a proactive environment. An FAA inspector from the Rochester, New York, FSDO²⁹ reported that FAA inspectors, TC officials, and U.S. and Canadian companies with flight operations in the Niagara Falls area participate in annual meetings that are hosted by TC. The FAA inspector indicated that the meetings were worthwhile and that they provided a forum to discuss any deviations from the regulations and clarify any misinterpretations of the regulations.

D. EXHIBITS

The following documents are contained with this report as the following Attachments:

- A. Record of conversation with FAA inspector
- B. Record of conversation with Westcor current Director of Operations
- C. Record of conversation 22008 with Ch 3 chief pilot

Air tour operators also included these safety measures in their program called Tour Operators Program of Safety (TOPS). See Operations Attachment Q

²⁷ See Operations Attachment R-TC Ops Specs

²⁸ See Operations Attachment S - Report from Transport Canada Official

²⁹ See Operations Attachment T-Report from Rochester, New York, FSDO - The Rochester FSDO provides oversight of U.S. companies with flight operations in the Niagara Falls area.

- D. Record of conversation with US Helicopters Vice President
- E. NTSB Interpretation Of Blood Alcohol Levels Found In Transportation Operators
- F. Record of conversation 21208 with Ch 3 chief pilot
- G. Notes from Phoenix ENG pilots interview
- H. Record of conversation with HAI representative
- I. Record of conversation with NBPA representative
- J. *Manual-Recommended Procedures and Guidelines For Electronic News Gathering*
- K. RTNDA representative statement
- L. Record of conversation with AFTRA representative
- M. Record of conversation with NPPA representative
- N. Record of conversation with ALEA representative
- O. FAA Civil Aeromedical Institute (FAA-AM-78-29)
- P. US Forest Service Requirements
- Q. Tour Operators Program of Safety (TOPS)
- R. Transport Canada Operations Specifications for Niagara Falls
- S. Report from Transport Canada Official
- T. Report from Rochester FSDO Inspector

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