U.S. Forest Service
National Transportation Safety Board
Briefing Paper

Date: November 29, 2010

Topic: Weaverville Helicopter Accident Investigation

Issue: Public Use

Key Points: The Forest Service (FS) desires to ensure a greater margin of safety even when flights are public use and therefore require that operators that transport FS personnel be FAR Part 135 compliant. However, the FS is well aware that the agency has no regulatory authority over aviation, and at times operators are confused over requirements in the FAA FAR Part 135 and FS mission requirements, such as operational control.

The FS would welcome the opportunity to work with the FAA and the NTSB to bring clarity to the Public Use issue.

Background: The FS relies solely on the FAA's authority to regulate aviation operations. The FS is a land management agency and contracts for most of its aviation needs. The FS has no regulatory authority over aviation and administers its aviation operations through contracts and agency policy.

The FS contracts for 130 Exclusive Use (EU) helicopters (Type 1, 2, and 3) and a total of approximately 200 Call When Needed (CWN) and EU helicopters, in addition to hundreds of fixed wing aircraft. The bulk of aviation is associated with fire fighting operations with some administrative aviation needs (insect and disease detection, mapping, etc.).

Language in the law and agency directives may contribute to the confusion around Public Use. For example: Civilian operators contend that even though they are contracted to under Public Use, they must still retain operational control of their aircraft. If an operator has been issued a FAR Part 135 Certificate, they will also have Operations Specifications (OpSpecs). Paragraph A008 of the OpSpecs states that, "The certificate holder retains all responsibility for the operational control of aircraft operations, and thus the safety of each flight conducted…". "This responsibility is not transferable to any other person or entity and the certificate holder's responsibility for operational control supersedes any agreement, contract, understanding or arrangement, either oral or written, expressed or implied, between any persons or entities." However, the FS is considered to have operational control of the aircraft while under contract to the agency

Contact: Janette Kaiser, FS SAIT Team Lead, [redacted]

U.S. Forest Service

NTSB Board Member

Briefing Paper

Date: November 29, 2010

Topic: NTSB Identification number LAX08PA259
Sikorsky S-61N

Issue: Forest Service Post-accident Actions

Summary:
The mishap which occurred near Weaverville, CA on August 5th 2008 was the worst helicopter fatality accident in the history of the US Forest Service (FS). The FS greatly appreciates the NTSB Party Investigation process and the dedication of the Investigation Team in determining the facts associated with this incident. Tremendous time and resources have yielded an excellent product and the FS will benefit greatly from the information. The FS has taken aggressive action from lessons learned to improve the safety of our operations.

Background:

The US FS responds to all aviation accidents seriously. The Chief deploys a Serious Accident Investigation Team (SAIT) led by a Senior Executive Service (SES) official to investigate all accidents involving fatalities. The SAIT is reliant on the NTSB determination for the cause of the aircraft accident. The scope of the FS SAIT team is two-fold:

1) To participate in the NTSB Party Investigation fully.
2) To learn from the incident and make management recommendations to avoid such an accident from ever happening again.

The FS has taken aggressive action in response to this accident. The list of Post-accident Actions is attached for your review.

Key Points:

- ✓ FS relies on the NTSB determination for cause of aircraft accident.
- ✓ FS SAIT investigation is conducted on all accidents involving fatalities, lead by SES official.
- ✓ The FS has taken aggressive action from lessons learned to improve the safety of our operations.
- ✓ The list of Post-accident Actions is attached for your review.
- ✓ FS is currently writing Directives to implement a Safety Management System.

Contact: Janette Kaiser, FS Serious Accident Investigation Team Lead, [redacted]

USDA Forest Service (FS)
N612AZ (Weaverville)
Post-accident Actions to Date

Initial Response:
The FS conducted a mandatory compliance check for all Type I passenger transport contracted aircraft within days of the incident as a standard safety measure.

Contract Changes:
The FS incorporated several changes (contract language) in the FY 2010 Heavy (Type I) and Medium (Type II) Exclusive Helicopter – National Fire Support Contract:

1. Single-lift lever latch type seat belt for heavy transport helicopters

2. All seats, seatbelts and shoulder harnesses for all helicopters must either be:
   a. In accordance with an OEM installation
   b. Installed in accordance to a Supplemental Type Certificate (STC)
   c. Approved for installation by and FAA form 8110-3 with all DER supporting engineering substantiation documentation attached or
   d. Field approved for installation with supporting FAA Form 8110-3 and all DER supporting engineering substantiation documentation attached

3. ICS was installed for all passenger stations in all Type I & II aircraft

4. Contract requirements updated to include a internal PA and a siren

5. FAA approved internal cargo area net restraints or barriers, which extend from floor to ceiling isolating the passenger compartment from the cargo area. The netting shall not compromise passenger ingress or egress. (Type 1)

6. FAA approved internal cargo area restraints or barriers, which extend from floor to ceiling isolating the passenger compartment from the cargo area (transmission wells) and sliding door area.

7. The FS has implemented a requirement, as a separate task in the Practical Test Standards (PTS) for Firefighter Passenger Transport and HOGE Power Check for all helicopter pilots.

8. Instituted Contract compliance team assurance checks during the contract mandatory availability period

9. Instituted spot-checks which may include inspections/weighing/tests as deemed necessary to determine the contractor's equipment and or personnel currently meet specifications. This will be witnessed by FS Maintenance Inspector.

10. After proposal evaluations and prior to or post award all aircraft weights shall be witnessed and validated by agency aircraft inspectors. The objective of the second and separate weighting is to validate the contractor's proposed weight as configured to comply with the solicitation requirements.

11. The contract Operations Section dictates that performance shall be based upon minimum engine specification. Performance enhancing data (power assurance checks, wind charts, etc.) shall not be used. Only FAA approved charts based upon minimum specification engine performance shall be used.

12. The contract operations section has been strengthened to re-confirm that performance shall be based upon minimum engine specification. Performance enhancing data (power assurance checks, wind charts, etc.) shall not be used. Only FAA approved charts based upon minimum specification engine performance shall be used.

Operational Policy Changes for Helicopter Inspector Pilots:

The following two actions are being implemented by the FS and are being considered for use by our interagency partners.

1. Task: Hover Out Of Ground (HOGE) Effect Power Check
   PILOT OPERATION

   a. Objective. To determine that the applicant:
   1) Exhibits knowledge of the elements related to a vertical takeoff to a hover OGE and landing from a hover OGE.
   2) Positions the helicopter in the vicinity of the takeoff point and in the direction of takeoff.
   3) Ascends to and maintains OGE hovering altitude, and descends from OGE hovering altitude in headwind, crosswind, and tailwind conditions.
   4) Maintains RPM within normal limits.
   5) Establishes OGE hovering altitude, ±5 feet.
   6) Avoids conditions that might lead to loss of tail rotor/anti-torque effectiveness.
   7) Keeps forward and sideward movement within 2 feet of a designated point, with no aft movement.
   8) Descends vertically to within 2 feet of the designated touchdown point.
   9) Maintains specified heading, ±10°.
   10) Does not exceed any helicopter operating limitation.
   11) Make smooth and coordinated control inputs.
   12) Determines that the power required does not exceed the power available.
      i. For multi-engine helicopters determine if single-engine hover capability exists
      ii. For helicopters requiring more than one pilot, the pilot not flying performs proper crew coordination functions.
         (a) Monitoring torque and operating limitations..

(b) Warnings before exceeding any operating limitation.
(c) Assisting with clearing the helicopter.
(d) Offering of other appropriate assistance not requested by the pilot flying.

iii. If helicopter performance is sufficient to complete the mission.
iv. If sufficient fuel exists to complete the mission
v. Ensure no helicopter operating limitations are exceeded.
vi. Uses good judgment in making a competent decision on whether the required performance is within the operation limitations of the helicopter.

13) Will not attempt the tasks or task elements listed below when HOGE power is not available and adjust the mission, as required:
i. Special Use Passenger Transport
ii. External load operations.
iii. Retardant/Water dropping.
iv. Special use flights below 500' AGL
v. Decelerations below ETL or slowing below speeds given for any critical wind azimuths when OGE.
vi. Confined area, pinnacle and ridgeline operations.
vii. Any task requiring hovering flight in OGE conditions.

b. Action. The inspector will:
1) Ask the applicant to explain the elements of the HOGE power check operations and determine that the applicant's knowledge meets the objectives.
2) Ask the applicant to perform the HOGE power check operation and determine that the applicant's performance meets the objectives.

2. Task: Special Use Passenger Transport
PILOT OPERATION

a. Objective. To determine that the applicant, when transporting passengers in special use activities:
1) Exhibits knowledge by explaining the elements of takeoffs from and approaches to confined area, pinnacle, ridgeline, and/or platform operations.
2) For multi-engine and transport certificated helicopters exhibits knowledge of Category A and Category B flight operations.
3) For single engine and multi-engine, transport and standard certificated helicopters, exhibits knowledge of Hover-Out-of-Ground-Effect (HOGE) power check procedures and determination if power available is sufficient for power required for takeoff.
4) Properly performs a HOGE power check before landing at or departing from helispots located in confined areas, pinnacles, or ridgelines.
i. Prior to landing the pilot shall perform an OGE power check over a suitable area at an altitude and outside air temperature comparable to the site or greater. A positive rate of climb must be established without exceeding aircraft limitations.
ii. Prior to takeoff the pilot shall perform an OGE power check over the takeoff area so that the helicopter can return to, and stop safely on, the takeoff area if the HOGE power check cannot be safely completed.
5) Properly determines the landing decision point (LDP) and/or takeoff decision point (TDP) before the landing and/or takeoff is attempted.

6) Computes weight and balance, including adding, removing, and shifting weight, and determines if the weight and center of gravity will be within limits during all phases of flight.
7) Demonstrates proficient use of load calculations for the mission locations with reference to the correct performance charts and current weight and balance information.
8) Accurately describes the effects of atmospheric conditions on helicopter performance.
9) Uses good judgment in making a competent decision on whether the required performance is within the operation limitations of the helicopter.
10) Exhibits the ability to perform a thorough pre-flight briefing of passengers to include
    i. Approach and departure paths:
        (a) Always approach and depart from the down slope (lower) side as directed by Pilot/Helicopter crewmember
        (b) Approach and depart helicopter in a crouch position, do not run
        (c) Keep in pilot's field of vision at all times
        (d) Stay clear of landing area when helicopters landing or departing
        (e) Stay away from the main and tail rotors especially on sloping terrain
        (f) Do not chase any item that has become unsecured
        (g) Never go near the tail of single main rotor helicopters
        (h) How to determine the lowest portion of any operating rotor system
    ii. Helicopter doors and emergency exits
        (a) Location, emergency and normal operation
        (b) Normally do not open, wait for helicopter crewmember personnel or instructions to open
    iii. Use of seatbelts and shoulder harnesses
    iv. Emergency seating position and emergency egress procedures
        (a) Move clear of the helicopter only after the rotor blades stop or when instructed
        (b) Assist injured personnel with egress
        (c) Assess situation, follow pilot/helicopter crewmember instructions, render first aid, remove first aid kit, survival kit, radio, ELT and fire extinguisher
    v. Location of first aid kit, survival kit, fire extinguisher, ELT (Emergency Locator Transmitter), fuel and battery shutoff switch location and operation, radio operation, oxygen use (if available)
    vi. No smoking rules in and around aircraft
    vii. Tools and Equipment:
        (a) Securing of hand tools and equipment being transported
        (b) Carry tools/long objects parallel to the ground, never on shoulder, when approaching and departing the helicopter
        (c) Portable radios and cell phones turned off

b. Action. The inspector will:
1) Ask the applicant to explain the elements of Special Use Passenger Transport operations, and determine that the applicant's knowledge meets the objective. Ask the applicant to perform a simulated Special Use Passenger Transport operation and determine that the applicant's performance meets the objective.

The FS is currently writing directives to implement a Safety Management System/Quality Assurance program for FS Aviation Operations with the following components:

Strategic Risk Assessment of Passenger Transport by Type I Helicopter

Objective: Determine if the transport of passengers in existing Type I helicopters can be conducted with an acceptable level of risk. The following process was completed in May 2009.

a. Conducted the Risk Assessment (RA).
b. Identified significant hazards and mitigations.
c. Developed an action plan to implement the mitigations
d. Type I passenger transport stood down until the action plan is satisfactorily completed and the acceptable level of risk is achieved.

Quality Assurance (QA) Program Development

Objective: Develop and implement a comprehensive QA program in accordance with the intent of FAA Advisory Circular (AC) 120-92. The 5 year strategy is to achieve International Standard for Business Aircraft Operations (IS-BAO) certification in the FS, and transition to pre-award contractor quality audits. The following process was initiated in February 2010.

a. Design a QA organization and process
b. Established 11 new positions for Aviation Maintenance Inspector (AMI), Helicopter Inspector Pilot (HIP) and airworthiness engineer.
c. Implement the reorganization and hiring for the QA branch (Boise, ID)
d. Initiated Safety Technical Assistance Teams to assess field operations, conducted individual helicopter weighing
e. Initiated a new maintenance inspection checklist (SMS Audit) procedure
f. Subscribe to the Aircraft Research Group United States (ARGUS)-PRISM SMS program. Using PRISM tools for QA and IS-BAO quality improvement.

Training and Standardization

Objective: Address the cultural change necessary for improved decision-making and higher quality standards throughout the aviation program. This includes a comprehensive plan to verify all aviation service providers under exclusive contract to the FS possess SMS by 2013. The following process was initiated in February 2010.

a. Conducted QA training for inspectors and Regional Aviation Officers
b. Standardized maintenance inspection procedures across all regions
c. Standardized regional helicopter crew training for heavy helicopter management

d. Strategic risk assessment of the rappel program, stand-down all regions, recertify and standardize through a central training academy approach.
e. Exclusive use contracts specify that the service provider possess and demonstrate implementation of their Safety Management Systems.
f. Initiated risk assessment training for Incident Command System teams and ground safety managers.