

Interior Alaska Search & Rescue and Law Enforcement Helicopter



11/28/2011

DPS Aircraft Section Proposal

The Department of Public Safety proposes to purchase a new turbine helicopter to meet the search and rescue and mission-critical operational needs in the Interior of Alaska.

Issue (statement of the problem)

The Department of Public Safety is statutorily responsible to provide law enforcement to the citizens of Alaska. This duty includes search and rescue (SAR), emergency law enforcement response, crime detection and prevention, surveillance, narcotics interdiction, traffic management, and civil disorders/public events.

Interior and Northern Alaska's geography and extreme weather conditions create enormous challenges for the Alaska State Troopers (AST) to quickly and effectively respond to emergencies. The lack of suitable equipment can put Alaskans living in this region at dire risk. It is critical for AST to have the capability to rapidly access remote areas during adverse weather conditions with a helicopter that is adequately equipped and has the payload to fulfill its mission.

Historical Information

The Department recognized this critical operational need and purchased a turbine Bell Jet Ranger helicopter that was based in Fairbanks from 1982 to 1995. This first helicopter was used extensively but was destroyed by fire after a fuel line separated in flight. It was subsequently replaced by a used helicopter which was removed from service in 2002 due to airframe fatigue and, to date, has not been replaced.

In 2001, the Department based a piston driven helicopter (R-44) in Fairbanks to conduct wildlife patrols in the Interior. This helicopter is not equipped or performance-capable as a SAR platform because of its limited range, payload capacity, speed, and its inability to operate at high altitudes and in cold temperatures. Nevertheless, being the only Department helicopter available in the region, the R-44 is frequently utilized in SAR and routine law enforcement missions. As an example, the R-44 was used to transport SERT personnel to the scene of a shooting of the Trans-Alaska Pipeline in October 2001 which required multiple round trips to ultimately get all team members on-scene. Following this incident, the R-44 flew almost daily missions guarding the Trans-Alaska Pipeline; a nationally designated critical infrastructure. Anytime this resource is used for SAR missions, it is diverted from the operational needs of the Alaska Wildlife Trooper (AWT) division.



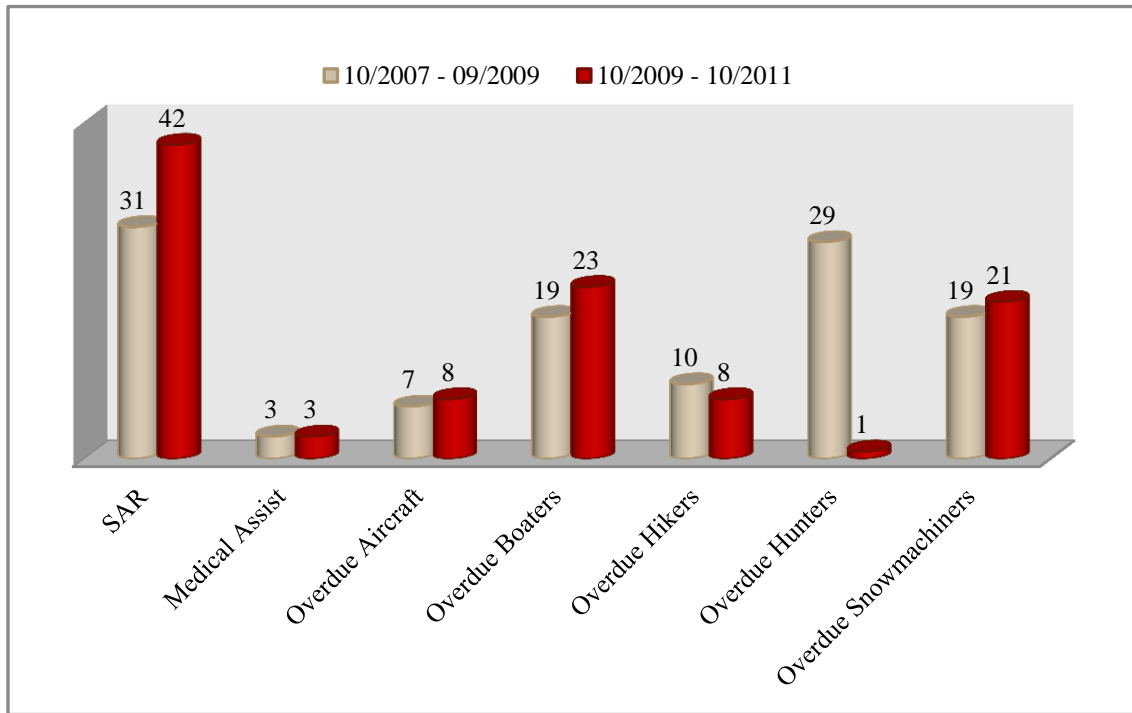
Fairbanks R-44

Background of Search and Rescue Operations

SAR operations continue to be one of AST's highest-risk, regularly performed missions. These activities account for a significant amount of time, money and man hours spent by detachment personnel and the consequence of failure could be life threatening. With the increasing use and availability of cell phones, SPOT beacons and satellite phones, troopers are receiving more and more calls for assistance from people who might not have been considered lost or in need of assistance in the past. Unfortunately the criticality of these calls is difficult to assess until after the fact, meaning that all SAR's must be treated as an emergency.

Virtually every report of a missing person starts a process in motion whereby troopers begin to gather information, identify resources and start to organize volunteer searchers. Oftentimes, a quick aerial search of the area is the fastest, least expensive and most effective way to locate the missing person. For this reason a significant number of the SAR or missing persons cases AST/AWT receives each year result in at least a preliminary aerial search by helicopter or fixed-wing aircraft.

The following chart represents the number of SAR and related cases undertaken by “D” Detachment (*see Figure 1 on page 6*) during the period from October 2007 through September 2009 in comparison with SAR and related cases during the period from October 2009 through October 2011.



The R-44 has conducted numerous searches for missing people, recovered bodies, and provided medical transport. Although it is capable of responding readily, it is extremely concerning to not be able to bring necessary immediate resources to help, or to be able to extract people from dangerous circumstances because the R-44 is not adequate. There have been cases where the R-44 just couldn't conduct missions because of its limitations; it was never meant to do these types of missions. For example:

- ◆ In September 2010, the R-44 responded with a medic to an ATV accident near Donnelly Dome in which the victim suffered a severely broken femur. The R-44 was not able to transport the medic with the victim due to altitude and weight restrictions. Additionally, the badly injured victim had to be loaded into the front seat of the R-44 which was very painful for the victim. A larger helicopter would have enabled medics to load the victim on a stretcher and be transported with the victim.
- ◆ In September 2011, the R-44 responded with medics to the scene of an injured hunter near Central but was not able to transport the victim due to the nature of the victim's injuries. Helo 1 was dispatched from Anchorage but was not able to arrive on scene for several hours. The victim would have been at the hospital much sooner if a larger helicopter would have been available in Fairbanks.

The lack of an adequately equipped turbine engine helicopter stationed in Fairbanks for SAR and emergency law enforcement response means that the assistance of the Alaska Air National Guard's 210th Rescue Squadron based at Joint Base Elmendorf-Richardson in Anchorage is often required to undertake search or rescue missions in Interior Alaska. Missions flown by the 210th Air National Guard routinely involve the use of HH-60 Pave Hawk helicopters or a C-130 aircraft, which requires expensive in-flight refueling. A turbine engine helicopter based in Fairbanks would provide a faster and less expensive alternative for most non-medical emergency rescues.

However, the more important concern is the length of time required to recall the National Guard assets and subsequently deploy them from Anchorage to Fairbanks. Every search and rescue is considered an emergency due to the potential loss of life. The delay in response times that result from this long distance deployment could be catastrophic.

A common question is, "Can't you charter?" Public safety operations are dramatically different from standard air charter duties. There are also significant limitations to a civilian pilot's ability to fly with Night Vision Goggles (NVGs) and to operate in a tactical environment as required with deployment of SERT personnel. This is often further exacerbated by a civilian pilot's lack of training and experience in flying rescue missions. With the downturn of the economy, the number of air transport vendors have decreased and the availability of those vendors to provide services to the Department become increasingly difficult. A pilot that flies an emergency mission for the Department at night will not be available to the vendor for their use the following day causing disruption and loss of income to those vendors.

State Troopers make efficient use of many of DPS's existing aviation assets during search and rescue operations. The most effective asset in particular is AST's sole day-and-night (IFR) capable helicopter based in Anchorage; a turbine ASTAR 350 acquired in 2002. This aircraft has more than fulfilled our mission requirements in Southcentral Alaska with saves and critical missions being performed on a near weekly basis. However, due to its flight range limits, it is unavailable in most other areas of the state. It is a helicopter with similar capabilities that is desperately needed in the Interior.

Advantages of a Turbine Helicopter

A helicopter that can operate in cold temperatures, at moderate/high altitude and that can haul a load of up to seven personnel on missions is needed. The helicopter should be large/wide enough to accommodate at least one litter patient (a "litter" is a stretcher or basket used to strap a person into for safe evacuation). The advantages of a turbine engine helicopter include:

1. Increased payload
2. Ability to carry a litter (rescue basket)
3. High altitude operations
4. Better night flight capabilities
5. Ability to install equipment such as search light, FLIR and hoist, and still have payload to carry passengers
6. Cold weather operations
7. Turbine engine reliability
8. Faster response times
9. Increased public safety
10. Enhanced officer safety
11. Improved pursuit management and a reduction in the number of dangerous high-speed pursuits

Recommendation 1: Purchase a new turbine helicopter (Approximately \$3M)

There are two available manufactures of helicopters that would meet the Department's mission. They are the ASTAR B3 and Bell 407. Base price fluctuates, but the basic aircraft is priced in the range of \$2.1 to \$2.3 million. To equip it for our mission needs would put the price range at approximately \$3.0 million. This equipment includes the following:

Required Equipment	Explanation
Airframe	
High landing gear	For landing in rough terrain/deep snow to keep tail rotor higher from the ground
Emergency pop-out floats	For emergency landings over water
Tundra pads	For landing on soft surfaces
Litter (rescue basket) kit	For transporting injured citizens
Heavy duty cargo tie down kit	Used for tying down heavy cargo
Airframe and rotor blade tie down	Used to secure rotor blades on the ground
External fuel and engine oil systems	Extra fluid filtering for arctic conditions
Tail rotor guard	Additional protection for tail rotor
All lighting FAA ANVIS certified	Night Vision Goggles requirement
DART cargo cheeks L/R sides	Expands baggage compartment
Big doors forward with high visibility doors	Enhances search visibility from cockpit
External load window in floor on right side	For sling operations
Nightsun lighting system or equivalent and mount	Bright controllable light used for searches
FLIR8500 w/laser, mount and recorder	A gyroscopically stabilized camera as well as thermal imager and laser painter
Geneva P125 pedestal	Removes push buttons and installs switches
Siren/public address system	Powerful loud speaker which allows crew to communicate with citizens on the ground
External load hook (onboard systems)	For sling operations
Avionics	
Law enforcement instrument panel	Reduced size panel so monitor can be installed flush
Cobham glass EFIS synthetic terrain w/ hover vector or standard IFR/HSI	Latest generation flight instrumentation
Garmin 430w	Global Positioning System (GPS) navigation
Technisonic 7000 ALMR/FP/UHF/second COM/NAV radio (King)	Police radio that supports different agency frequencies
Transponder	Discrete radar beacon coding device for air traffic control
Helicopter radar altimeter	Measures above ground altitude
All avionics NVG compatible	Night Vision Goggle compatible
NAT audio panel	National Aviation Technologies radio panel
Becker SAR-ADF 517	Emergency frequency monitoring system/ homing device
Altitude encoder (Blind)	Reports current altitude to air traffic control
Latest ELT 406mhz	Latest Emergency Locator Transmitter required by FAA

Recommendation 2: Civilian Pilot based in Fairbanks and operating costs (\$303K)

The Department is requesting a civilian pilot PCN to fly the helicopter if it is approved. Utilization of a civilian pilot is the most cost effective method found so far. Using a trooper position, while most beneficial, requires constant training and mission time away from other law enforcement needs. It takes time and money to get a trooper up to operational needs, and after a period of time, the process starts over as the trooper moves to a different area of the state or is reassigned to a different assignment.

The combined annual operating cost of a civilian pilot PCN and turbine helicopter is estimated at \$303.5 thousand, based on 237 annual flight hours.

These recommendations are inclusive of each other; they go hand-in-hand toward meeting the SAR and mission-critical operational needs in the Interior region of Alaska.

Summary

- ◆ The number of SAR missions in the Interior demonstrates the need to have a helicopter based in Fairbanks to provide a rapid and capable response to these potentially life-threatening situations.
- ◆ Utilization of Alaska Air National Guard HH-60 Pave Hawk helicopters is expensive, inefficient, hard on the aircrews and aircraft, and much less timely than would be the case if a similarly capable helicopter was based with DPS in Fairbanks.
- ◆ AST's R-44 helicopter has very limited capabilities for SAR missions and is best suited to its primary capabilities as a light-duty, backcountry patrol aircraft.
- ◆ Use of AST's Anchorage-based turbine engine helicopter for Interior SAR missions is impractical and leaves the most populous area of the state uncovered.
- ◆ A Fairbanks-based turbine engine helicopter would provide the Interior with an appropriately equipped resource to capably accomplish DPS mission-critical SAR and law enforcement operations.

The map displays the state of Alaska with five distinct regions labeled A through E. Region A is the southern tip, Region B is the central coastal area, Region C is the central interior, Region D is the northern interior, and Region E is the eastern coastal area. Major cities and towns are marked with yellow dots, including Anchorage, Fairbanks, Juneau, and others. The map also shows the state seal and the motto 'ALASKA STATE TROOPERS'.

The Statewide Search and Rescue office for Alaska State Troopers has statistics on 1,099 search and rescue cases from 2005 to 2012. Of the 1,099 cases, 1,002 of those incidents used some form of air, water or ground asset such as an airplane, helicopter, snowmachine or vehicle. Of 1,002 cases, 333 cases utilized a helicopter during 1,131 sorties and 1,683.18 hours spent rescuing 711 persons.

The request for additional information related to the past use of helicopters in rescues, and the likelihood of a helicopter increasing the effectiveness of a rescue, required that we know the length of time a rescue took place, the location of the rescue and whether or not a helicopter was used. 466 of the cases in the database contained enough information to gather that level of analysis. Cases that were not included: rescue ground team only responses, North Slope Borough cases, and cases where rescue call out and return times was not entered in the database.

In reviewing 466 cases, 399 cases resulted in rescuing person or persons alive with a total of 766 persons in these cases. The hours expressed on Table 1 are the number of hours 'from notification to rescue' not the hours of helicopter time. DPS has made efficient use of its present helicopter assets and responded to over 61% of the search and rescue calls of the 466 sampling reviewed. Based upon these reviewed cases, when comparing the average hours for a rescue where a helicopter has been immediately available, there is a significant increase in the speed with which DPS can respond and rescue the stranded persons versus detachments where a helicopter is not. In the 399 cases where persons were specifically rescued, the breakdown of detachment of rescues is as follows:

TABLE 1	Persons Rescued	Incidents by Detachment	Average Hours for Rescue	Rescues Assisted by Helicopter	Average Hours for Rescues Requiring Helicopter
A Detachment	112	60	14:48 Hours	27	12:00 Hours
B Detachment*	92	50	20:09 Hours	40	1:48 Hours
C Detachment	316	155	10:03 Hours	17	15:31 Hours
D Detachment	55	28	1:42 Hours	11	21:49 Hours
E Detachment	153	90	18:24 Hours	70	16:48 Hours
H Detachment	3	1	2:50 Hours	1	2:50 Hours
W Detachment	35	15	3:12 Hours	6	20:00 Hours
TOTAL/AVERAGE	766 Persons	399 Cases	11:11 Hours	172 Cases	7:40 Hours

The helicopter resources are tracked as follows: DPS, Military, Charter and Other. "Other" encompasses agencies that can assist Troopers with a case and are not a private party, such as National or State Parks Service helicopters. Breaking down the Helicopter hours shows a significant increase in the response time. Response time as a general rule has shown to result in a better likelihood of a live rescue.

HELICOPTER ASSISTED SEARCH & RESCUES	DPS	Military	Charter	Other
CASES	105	42	14	11
TOTAL FLIGHT HOURS	183 HOURS	50 HOURS	18 HOURS	19 HOURS
AVERAGE HOURS PER CASE TO RESCUE	2:44 Hours	4:34 Hours	5:08 Hours	10:54 Hours

*AST's Helo 1 is stationed in Anchorage and the primary helicopter asset for B Detachment. Helo 1 responds frequently to E Detachment as well.