



TVA Helicopter Usage

2005-529I

March 9, 2006



Agenda

- ◆ Background
- ◆ Objectives and Scope
- ◆ Methodology
- ◆ Observations
- ◆ Recommendations



Background

- ◆ TVA's helicopter fleet consists of seven helicopters which TVA owns and self-insures:
 - Four based in Muscle Shoals, Alabama.
 - One each in Nashville, Knoxville, and Chattanooga, Tennessee.
- ◆ There are five types of helicopters in the TVA fleet:
 - Three Bell Jet Ranger models.
 - One Bell 212, Bell 407, Bell L4, and UH-1H.
 - The UH-1H model is only used for heavy lifting purposes--does not have an FAA air-worthiness certificate and does not transport passengers
- ◆ TVA employs four full-time helicopter pilots and uses a contract pilot on an as-needed basis. TVA's Manager of Helicopter Services can also pilot aircraft on an as-needed basis.
 - One full-time pilot and the Manager of Helicopter Services are stationed in Muscle Shoals, Alabama.
 - Each of the satellite locations also has one full-time pilot, each stationed in Knoxville, Chattanooga, and Nashville.
 - The contract pilot is located in Nashville, Tennessee, also.



Background (cont'd)

- ◆ Based on our review of FlightWatch¹ data and discussions with the Manager of Helicopter Services, TVA's helicopters are used for a variety of missions, including:
 - Inspecting TVA's 17,000 circuit miles of transmission lines in a seven-state region.
 - Aerial photography, laser mapping, and river and environmental surveys.
 - Construction support.
 - Clean air testing.
 - Right-of-way inspections.
 - Transportation of TVA executives.
 - Economic development activities, such as aerial tours of industrial megasites.
- ◆ The aircraft can also be deployed for certain emergency contingencies such as floods, tornadoes, and ice storms.
- ◆ Per the Manager of Helicopter Services, other flights such as specific construction duties, transmission repairs, or coal yard flyovers may be contracted out to other flight companies.

¹FlightWatch is the software used by TVA Helicopter Services to record and track flight log data including: equipment flown, pilot, origin, destination, flight purpose, and flight time.



Background (cont'd)

- ◆ Utilities/Aviation Specialists, Inc., performed an Aviation Safety Audit of TVA Helicopter Services located at the TVA hangar in Muscle Shoals, Alabama, from March 2 through March 3, 2005. Per the report:
 - “This is the third audit conducted for TVA’s Helicopter Services by Utilities/Aviation Specialists, Inc., the last having been conducted in September, 1999.”
 - A complete review of all operations, maintenance, and safety-related issues found neither serious defects nor any areas needing immediate attention.
 - Both Auditors who conducted this audit for TVA’s Helicopter Services Operations were very impressed with the overall quality and substantial improvements since the past audit in 1999.
 - TVA Helicopter Services was recommended for the prestigious “PLATINUM” Program of Safety Award offered by the Helicopter Association International.



Objectives and Scope

Objectives:

- ◆ To assess (1) the procedures and control activities used to ensure the TVA helicopter fleet is used for valid business purposes and (2) the operational use of the fleet.

Scope:

- ◆ The scope of our review included policies, procedures, and laws/regulations applicable to TVA helicopters and covered the period of October 1, 2004, through September 30, 2005.



Methodology

To assess the procedures and control activities used to ensure the TVA helicopter fleet is used for valid business purposes, we:

- ◆ Selected and reviewed a random sample of 93 flight logs from flights recorded in the automated FlightWatch system during Fiscal Year (FY) 2005 to determine if adequate documentation is maintained which identifies:
 - The purpose of the helicopter flight.
 - Any passengers on the flight.
- ◆ Interviewed the Manager of Helicopter Services to identify policies and procedures in place to ensure that helicopters were used for valid TVA business.



Methodology (cont'd)

To assess the operational use of Helicopter Services' resources, we:

- ◆ Reviewed documentation provided by Helicopter Services personnel which included:
 - Maintenance records showing helicopter availability.
 - Pilot flight hour reports generated from FlightWatch.
- ◆ Reviewed relevant laws and regulations including 14 CFR 91.1059.
- ◆ Telephonically interviewed the President of Utilities/Aviation Specialist's, Inc., to identify any industry standards/benchmark figures regarding pilot flight hours for utility pilots.
- ◆ Reviewed related communication with the Aviation Safety Manager for Bonneville Power.
- ◆ Toured the main helicopter storage and maintenance facility in Muscle Shoals, Alabama; interviewed the Manager of Helicopter Services; and documented the hangar location of TVA helicopters.

This inspection was conducted in accordance with the "Quality Standards for Inspections."



Summary of Observations

- ◆ It appears that TVA Helicopter Fleet was used for valid business purposes.
 - However, there were no documented guidelines identifying proper uses of the helicopter fleet and approval levels needed to obtain flight services.
- ◆ There has been no cost benefit study of helicopter fleet usage to ensure it is being used effectively.



Observation 1 – Helicopter Fleet Used for Valid Business Purposes

Based on the information in the 93 flight logs, what appears to be a valid business purpose was documented for all but 2 of the 93 flights. Additional explanations provided by Helicopter Services indicated the two exceptions also appeared to be for valid business purposes.

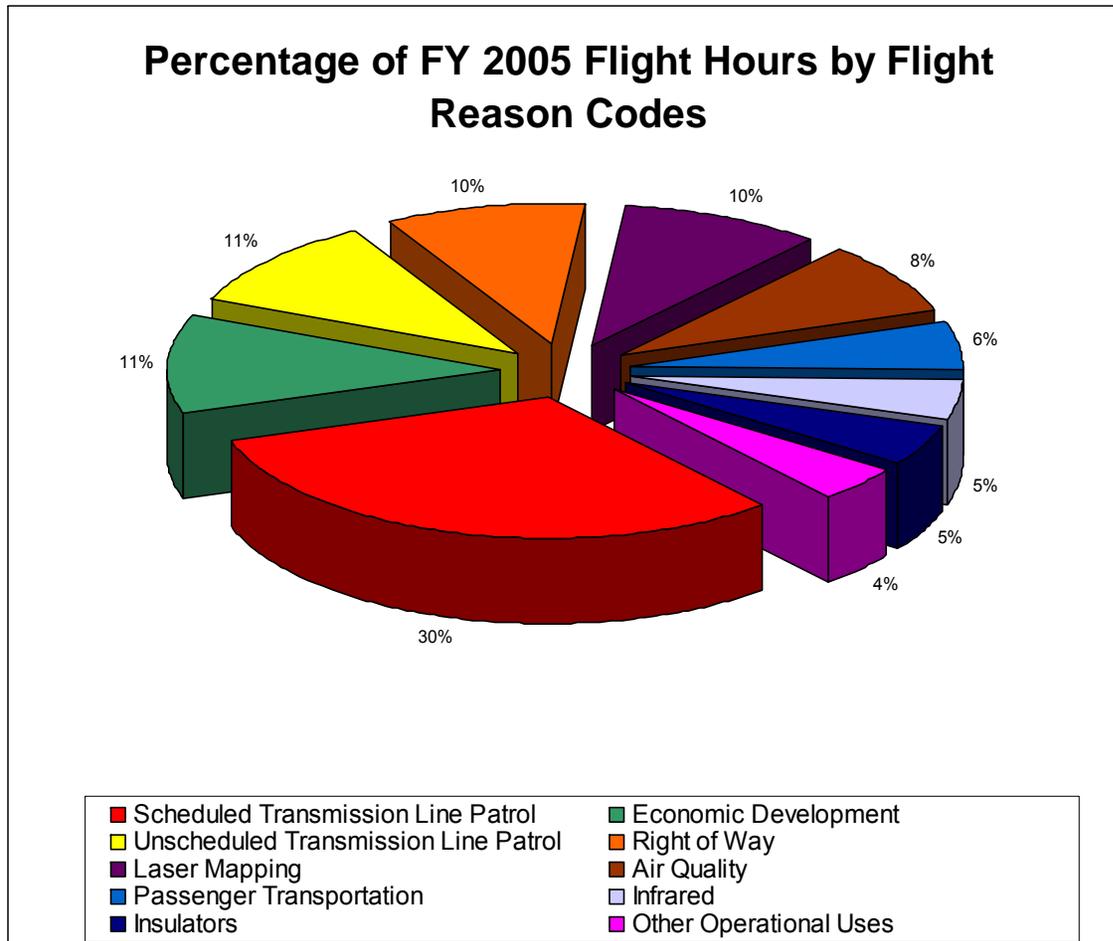
- ◆ Four personnel from the Chief Financial Officer's Office and the Fossil Power Group's Business Services area were transported from Chattanooga to Colbert Fossil Plant and back.
- ◆ The Executive Vice President (EVP) of Transmission Power Services was transported from Chattanooga to a location we were unable to identify from the flight log and then on to Nashville. The Manager of Helicopter Services stated:
 - The flight went from Chattanooga to Booneville, Mississippi, where the EVP spoke at the Rotary Club meeting attended by Distributor personnel and then on to a meeting in Nashville.

Our review of policies and procedures and interview with the Manager of Helicopter Services found no documented policies or procedures that set forth:

- ◆ Valid business uses of the helicopter fleet.
- ◆ The level of supervisory approval required to obtain flight services.



Observation 1 – Helicopter Fleet Used for Valid Business Purposes (cont'd)



Finding 2 - Operational Use of TVA Helicopter Fleet

- ◆ Federal Aviation Administration (FAA) guidelines cite that pilots flying in one or two person flight crews are limited to 500 flight hours per calendar quarter or 1,400 flight hours per year. Additionally:
 - The President of Utilities/Aviation Specialist's, Inc., indicated that the average number of flight hours for full-time pilots flying for a utility's in-house flight service is normally significantly lower than FAA guidelines due to the increased level of stress associated with transmission line inspections.
 - The Aviation Safety Manager for Bonneville Power stated that their operations manual limits pilots to 1,000 hours a year but, in actuality, none of their pilots ever approach those limits.
 - The hours flown by TVA pilots were well below either of these limits on annual flight hours, as shown in the following Table.

Operator	Hours Flown
Pilot	678.3
Pilot	529.8
Pilot	803.5
Manager, Helicopter Services	64.3
Chief Pilot	595.9
Contract Pilot	109



Finding 2 - Operational Use of TVA Helicopter Fleet (cont'd)

- ◆ Based on our review of FlightWatch data, the four full-time TVA pilots averaged 652 flight hours during FY 2005 or a total of 2,608 hours. In addition, the TVA Helicopter fleet was available to fly for 18,406 flight hours.

TVA HELICOPTER FLEET	FROM MAINTENANCE AVAILABILITY SCHEDULES			FROM FLIGHTWATCH
	SCHEDULED MAINTENANCE	UNSCHEDULED MAINTENANCE	AVAILABLE TO FLY	HOURS FLOWN
Bell Jet Ranger 19TV	10.1%	.3%	89.6%	641.9
Bell Jet Ranger 24TV	10.1%	1.9%	87.9%	433.4
Bell Jet Ranger 26TV	5.8%	.3%	94%	507.7
Bell Long Ranger 4 40TV	7.1%	0%	92.9%	701.2
Bell 407 45TV	22.9%	.1%	77.1%	448
Bell 212 102TV	6.5%	4.4%	89.1%	75.5
UH-1 Huey 37TV	0.3%	0%	99.7%	253.6
TOTALS	9%	1%	90%	3,061



Finding 2 - Operational Use of TVA Helicopter Fleet (cont'd)

- ◆ TVA Helicopter Services has not conducted cost/benefit analyses to determine if:
 - Staffing is appropriate for the number of flight hours.
 - The locations of the satellite hangars/offices are the most beneficial for deployment of resources to the TVA region.
 - ◆ Helicopter locations are concentrated in the central portion of the TVA region with the most western site being Muscle Shoals, Alabama, and the most eastern location being Knoxville, Tennessee.
 - Three of the four helicopter locations are circumscribed by a circle with an approximate radius of 94 miles. The greatest distance between any of the three locations is approximately 188 miles.
 - Most weather systems that could cause transmission line damage move from west to east. When significant weather events occur, TVA must wait for the weather system to pass the centralized helicopter locations prior to deployment of helicopter resources.
 - Proper use is being made of contract pilots and third party flight equipment and personnel.
 - ◆ Per the Manager of Helicopter Services, other flights such as specific construction duties, transmission repairs, or coal yard flyovers may be contracted out to other flight companies.



Recommendations

We recommend the Vice President, Transmission Operations and Maintenance Power System Operations:

- ◆ Develop guidelines for use of the TVA Helicopter Fleet that mirror Business Practice 23, Use of Fixed Wing Aircraft, to ensure appropriate approvals and documentation for all helicopter usage.
- ◆ Conduct a cost/benefit analysis to determine if (1) staffing is appropriate for the number of flight hours; (2) the locations of the satellite hangars/offices are the most beneficial for deployment of resources to the TVA region; and (3) proper use is being made of contract pilots and third party flight equipment and personnel.

