

# RotorBreeze

Q1 • 2011



**Bell**  
**412EP**  
**Block Upgrades**

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## A message from **John Garrison**

*Chairman & CEO Bell Helicopter Textron*

**T**his was an incredible year for Bell Helicopter – I am happy to take this opportunity to share some 2010 highlights and some thoughts on going forward in 2011.

Bell Helicopter has seen major accomplishment in all aspects of our balanced business. On the military side, sales have increased and in particular in spares delivery. We continue to scale up production of the V-22 for the U.S. Marine Corps, Air Force Special Operation Forces and other Department of Defense and international customers. Bell Helicopter has applied the latest in aerospace technology and manufacturing processes to ramp up production of the new UH-1Y Yankee from our military’s successful helicopter ever, the Huey, and to create the ultimate in attack helicopters, the powerful AH-1Z Zulu with state of the art avionics.

Bell Helicopter’s commercial business revitalization was strong and continues to progress at an astonishing pace. We have strengthened Bell’s commercial product line by upgrading existing products such as the 412EP, developing derivatives and introducing new models. The 429 has been a real star and its global expansion includes sales in the Ukraine, China, Brazil, Canada, Indonesia and India.

Over the past 12 months we have also grown Bell Helicopter’s global business through a local presence with a stronger sales and marketing and customer support network. We have added significant depth and breadth to our commercial sales and marketing with market segment specialists focused providing customized mission solutions for some of Bell’s key customers from varying cultures, regions and industries. We acquired Aviation Service, a recognized provider of modifications and upgrades, based in Prague, Czech Republic that will support our customers in the European market and extended Bell’s world class Training Academy. Bell

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Helicopter will continue to expand our support capabilities in key global locations in the coming years.

We continue to be ranked Number One in Customer Support Rankings by the readers of Professional Pilot and Aviation International News magazines. Bell Helicopter will maintain and improve that same service level year after year. We will differentiate our Customer Service and Support through solid execution and next generation technologies, and optimize the independent Customer Service Facility network in key emerging countries such as China and Russia. We hope to sustain our business advantage by investing in commercial and military parts, in global technical /field support, leading edge training and in aircraft health and usage technologies.

Building on Bell Helicopter's strong brand recognition, we completed the integration of six of our support and service subsidiaries, officially merging them into Bell Helicopter in early 2011. The operations affected were: Edwards & Associates, Inc and Aeronautical Accessories, Inc (Piney Flats, Tenn.); Rotor Blades, Inc (Broussard, La.); Acadian Composites (Lafayette, La.); Bell Aerospace Services, Inc (Bedford, Texas); and US Helicopter (Ozark, Ala.). Integrating these sub brands and businesses will allow us to offer our customers a more complete support and service solution and also aid in growing Bell's global presence.

Committed to making a 50 percent increase in research and development over the next five years, Bell Helicopter is making a considerable innovation investment in the future. This investment will enable us to streamline our business, and execute on strategies to bring highly differentiated products to market quickly.

This past year was a full one for Bell Helicopter. These accomplishments are due in large part to the dedicated and committed Bell team throughout the world. Let me assure you we are committed to seeing even more success in 2011.

We still face the challenges every business faces in this recovering economy, but I am convinced we will continue our strong performance thanks to our new and our loyal customers.

As I visit the Bell team across the globe, I am confident that we continue to attract the industry's top talent and am confident that the work we do here at Bell Helicopter and the products we create make a difference in saving lives and preserving freedom as our customers complete their missions.



## *On a Mission.*

» *As I visit the Bell team across the globe, I am confident that we continue to attract the industry's top talent and am confident that the work we do here at Bell Helicopter and the products we create make a difference in saving lives and preserving freedom as our customers complete their missions.*



## A message from **Danny Maldonado**

*Sr VP Customer Support and Chief Service Officer*

**A**t Bell Helicopter, our mission for Customer Support and Services (CSS) is to ensure that customers are provided a wide array of products and services with the highest level of service, quality and value. Simple to say, not easy to achieve; in fact Bell Helicopter has been working toward this goal for over 60 years. Achieving this mission requires full backing from both Textron and Bell's leadership teams and requires the dedication of every employee within the organization. It is the people that make CSS's mission a reality; it is this service culture that is core to our business. For the coming year, Bell Helicopter will focus on two major themes (affiliate integration and legacy aircraft support) and will leverage our culture of service to make strides toward transforming the customer support model, not only within Bell Helicopter, but across the industry.

Bell's recent announcement of the formal integration of six affiliate service companies in January 2011 is a major step in adding to Bell's core capabilities. Now that we have legally integrated the companies, the entire Customer Support team will concentrate on ensuring that Bell customers actually experience tangible benefits from this change. Over the next 12 to 24 months Bell is committing to reduce repair turn times, maximizing technical response time, streamlining contracting, expanding service offerings, improving cost competitiveness and generally making it easier to do business through all our service channels. This is my personal commitment and mandate. I have tasked my team to develop specific actions and metrics to achieve these goals. Execution to plan is the key.

Bell Helicopter has already begun to streamline operations and have rebranded the affiliate companies to reduce confusion in the marketplace. In effect, we have a Bell-branded one-stop shop for proven, reliable and customized support solutions. Bell can now provide our customers with the following comprehensive service offerings:

- Engine, blade and panel repair and overhaul
- Aircraft and component repair and overhaul
- Aircraft customization, completions and upgrades
- Genuine Bell parts and accessories
- Customized logistics support and fleet management
- Pilot and maintenance training
- More than 120 independently owned and authorized customer service facilities
- Aircraft maintenance tracking
- Six domestic and international supply centers
- 24/7/365 technical, logistics and product support
- More than 2,700 PMA/STC approved replacement parts and accessories

Bell continues to increase the productivity and cost effectiveness of our legacy fleet so that more missions can be flown. We have several initiatives in development for Bell's legacy light, intermediate and medium models as a result of a detailed product planning regimen. Combined with our previously announced dedicated Legacy Spares department and our renewed focus on obsolescence management we are confident that the foundation for legacy fleet support is even more substantial.

» *It is the people that make CSS's mission a reality; it is this service culture that is core to our business.*



In addition, Bell is holding spares cost and prices in check. The average price increase for spares in 2011 is 2.5 percent across the board. The exception is the Bell 206B which was increased by only 1 percent.

*The following is a general summary of additional initiatives Bell implemented and/or accomplished in 2010:*

- Integrated of our Affiliate network to provide more comprehensive, market-priced services to the worldwide customer base
- Developing industry alliances for helicopter upgrades/STC/PMA development and distribution
- Transferred our Customer Property Return (CPR) repair & overhaul business to our Piney Flats, Tenn. location
- Stood up a Bell service facility located in Prague, Czech Republic
- Transferred the type certificate and support for Bell 47 to Scott's Helicopter Services in Le Sueur, Minn.
- Reduced fatigue lives on certain Bell 407 components to reduce direct maintenance cost (DMC)
- Selected an STC provider for an upgraded engine option on the Bell 206B
- Established and invested in Legacy product improvement plans
- Implemented Rolls-Royce approved RR250 repair and overhaul capability at McTurbine located in Corpus Christi, Texas
- Reduced the 206L1/L3 upgrade kit price
- Reviewing fatigue lives on certain Bell 206B/L components
- Implementing Bell 430 component exchange pool

Bell appreciates the business we have with our loyal worldwide customer base. I believe that actions speak louder than words, Customer Support is on track to improve our service levels and I look forward to hearing feedback from you all in the coming months. My team and I will be available at HAI's Heli-Expo in Orlando, please take the time to visit the Bell booth to voice your issues. We will listen and we will act. I look forward to working with you all for a successful and mutually beneficial 2011.



# Bell Helicopter Merges Affiliates

Recently, Bell Helicopter legally merged several of its existing subsidiaries into Bell Helicopter. As of January 1, 2011, Edwards & Associates, Inc; Aeronautical Accessories, Inc; Rotor Blades, Inc; Acadian Composites; Bell Aerospace Services, Inc; and US Helicopter are now legally part of Bell Helicopter Textron Inc.

Over the past year the Customer Support and Services team, under the direction of Danny Maldonado, has focused on providing Bell customers with a more complete support and service solution that brings enhanced value to their missions.

The initial phase of the integration included the rebranding of all of the six former affiliate sites, changing the names to Bell Helicopter and coordinating with the FAA, EASA, suppliers and customers to help them understand and become comfortable with the change. In addition, Bell Helicopter has been aligning processes and systems throughout the organization to streamline operations and increase efficiencies such as turnaround time and AOG responses.

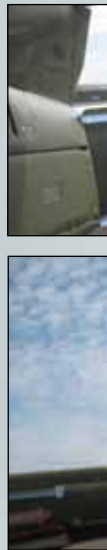
Additionally, Bell's service offerings have been aligned around core capabilities: Parts Fulfillment and Customization, Maintenance, Repair and Overhaul. This reorganization will enable the growth of these businesses, help in developing new integrated solutions and service offerings, and build on the existing, industry-leading product support team.

This integration provides Bell with the capabilities to conveniently support all of its customers' service needs. From completion and customization to component, engine or blade repair and overhaul, or from pilot and technical training to technical and product support, and everything in between, Bell now provides our customers with one stop for proven, reliable and customized service and support solutions.

Although it was legally integrated, Aeronautical Accessories will maintain a separate brand identity. In order to remain competitive in the parts manufacturing authority market, Bell will continue to offer supplemental type certificate parts and accessories under the Aeronautical Accessories brand. Bell Helicopter subsidiaries McTurbine, Inc, SkyBOOKS, Inc and Edwards Rotorcraft Solutions, Inc were not part of the legal integration activity.

By combining our service businesses Bell Helicopter is now able to more effectively leverage the talent, knowledge and resources from each of these organizations across the company – reducing the time it takes for customers to do business with Bell and focus efforts on driving service improvements, cost reductions, increased levels of responsiveness and designing new and improved supplemental type certificates for existing and legacy products and product upgrades.

Merging these integral operations allows Bell to provide customers with a comprehensive support solution and as a result, customers can expect to experience the same or improved levels of responsiveness and service as they have in the past. The only thing that will change is the name.



Product Development Update –

# Bell 412EP Block Upgrade

by Ernie Senn, Product Manager

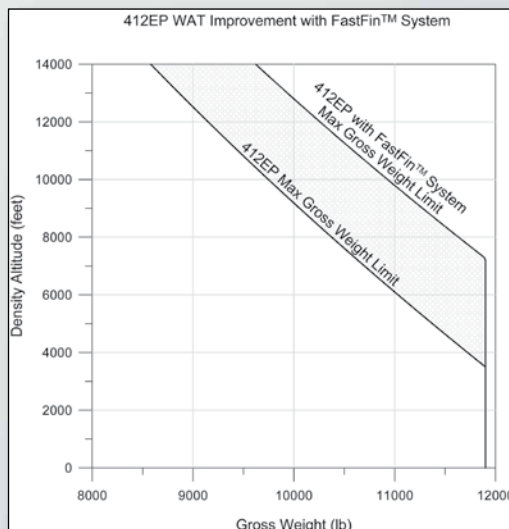
As part of its ongoing strategy, Bell Helicopter is designing and developing a series of Block Upgrades to extend the capability and performance of the 412EP. Three block upgrades are currently planned; the Block 0 Upgrade focuses on improved performance at altitude, the Block 1 Upgrade on improved reliability and functionality and the Block 2 Upgrade is aimed at modernizing the cockpit and improving one engine inoperative (OEI) performance. Future upgrades are also in pre-planning stages.

In support of the Block 0 Upgrade, Bell Helicopter has entered into an agreement with BLR Aerospace in Everett, Wash. with regards to BLR's FastFin® System. On May 27 2010, Bell was issued a Supplemental Type Certificate (STC) for the FastFin® System installation on the Bell Model 412EP and will be including this STC kit as part of the basic 412EP production aircraft by mid-2011. The performance benefits of this system include increased tail rotor effectiveness and higher crosswind speed tolerance at hover in certain conditions. In conditions where the aircraft is currently tail rotor limited, this STC kit will result in increased Weight-Altitude-Temperature (WAT) capability for takeoff, landing and in-ground-effect maneuvers, providing substantial improvement in useful load for hot/high operation of up to ~1,200 pounds at altitude (See performance chart at right).

The STC Modification Kit has been certified by the FAA through Bell

Helicopter's Organization Designation Authorization (ODA) for the 412EP and will be available for purchase to the fielded fleet through Aeronautical Accessories. On August 6 2010, the 412EP STC was amended to include the FastFin® System installation on the Bell Model 412CF and in November, the STC was amended to cover the earlier 412 models. The STC Kit includes a Flight Manual Supplement that will allow operators to take credit for the resulting performance improvements. The 412 team is currently working to identify the appropriate aircraft tail number for introduction into production.

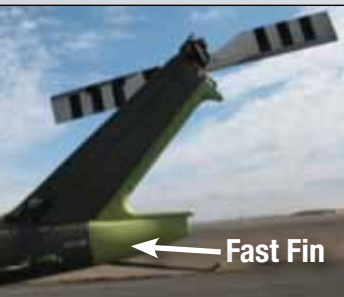
The FastFin® system is a combination of two separate modifications, one to the vertical fin and the other to the tailboom. For clarity, the term "FastFin" refers to the BLR modification that changes the shape and contour of the vertical fin. The term "FastFin® System" refers to the combined FastFin and Dual Tail Boom Strake installation.



The purpose of the Dual Tail Boom Strakes (DTBS) is to disrupt the rotor downwash over the port side of the tailboom. If left undisturbed, the rotor downwash can accelerate around the side of the tailboom and create a resulting pressure gradient that opposes the tail rotor anti-torque, reducing tail rotor effectiveness. The DTBS are positioned at optimum tailboom clock locations to ensure that the airflow is stalled over the port side and allowed to accelerate over the starboard side of the tailboom, resulting in a pressure gradient that works with rather than against the tail rotor.



Tailboom Strakes



Fast Fin

The purpose of the FastFin (vertical fin modification) is to increase tail rotor effectiveness by reducing airflow disruption around the vertical fin. Vertical fin surface area is relocated to below the tail rotor thrust disc creating a cleaner airflow path and increasing airflow efficiency.

Bell Helicopter's 412EP Block 1 Upgrade will include the following: a tail rotor upgrade that eliminates the need for pre-flight visual inspection; improvement on the fatigue lives of certain parts resulting in significant direct operating cost (DOC) savings and a communication system upgrade that will be compatible with civil standard headsets, eliminating the need for military style low-impedance microphones and earpieces.

The target incorporation date for Block 1 aircraft to be available is by mid 2012.

The 412EP Block 2 Upgrade is a Supplemental Type Certificate (STC) project that will extend the wide range of missions that can be performed by the 412EP and is currently underway. This STC consists primarily of an engine and cockpit upgrade and will be available in 3-axis and 4-axis options. The engine upgrade, in partnership with Pratt & Whitney Inc., provides a 15 percent engine SHP increase, improved OEI performance and introduction of Electronic Engine Control. These enhancements will yield a 10-12 percent increase in CAT A / PC1 and PC2 performance, and provides a path for a future upgrade for increased range and payload. The cockpit upgrade will provide a modern 'Glass Cockpit' - leveraging the well-received glass cockpit of the new Bell 429 by utilizing hardware common to that aircraft, specifically Display Units and Aircraft Data Interface Unit (ADIU). This will provide commonality in the cockpits of Bell Helicopter's light twin and medium twin aircraft, simplifying pilot familiarity and maintenance training. Bell Helicopter will introduce to the 412EP capabilities for WAAS GPS precision approaches, integration of H-TAWS, and Traffic display (TCAS and ADS-B), as well as additional weather radar options not previously available to this aircraft. It will allow integration of video inputs (for FLIR, hoist cameras, etc) without having to install additional displays in the cockpit. The system will also carry over popular features from the Bell 429; for example the Power Situation Indicator. The STC will be FAA certified by December 2012 with follow on validation by other airworthiness jurisdictions. A 'sneak peek' at the future cockpit is presented below.



Note: Contributors to this article include: Dave Marone, Vice President, Sales / Marketing BLR Aerospace; Karl Burge, Bell Helicopter Engineering; Joshua O'Neil, Bell Helicopter Engineering and Brandon Thomas, Bell Helicopter Engineering.

# Destroyed Aircraft

The following Bell aircraft have been recently reported as destroyed by various official aviation accident investigation authorities:

## DESTROYED AIRCRAFT

MODEL	SERIAL NUMBER	REGISTRATION
206A	18	C-FJAD
206B	667	C-FMBT
206B	737	C-FBQG
206B	2396	JA9479
206B	28890	C-GFSE
206B	3052	JA9490
206L	45144	C-FKOV
206L-3	51226	VH-OSU
206L-4	52046	N6ZV
206L-4	52071	C-FVEF
206L-4	52144	JA6172
222	47079	C-FFXX
412	33181	JA9991
412	36214	JA99NA
412CF	46420	146420
47G3B2	6699	VH-BMH

In addition, thirteen helicopter data plates from military surplus UH-1s were returned to Bell Helicopter for destruction. They were: 5650, 5769, 5800, 5896, 5914, 5999, 8573, 8606, 9207, 9691, 10839, 11546 and 12507.

Bell Helicopter Textron Inc. furnishes this information as a service to customers, the FAA and Transport Canada. Bell does not represent that this constitutes a list of all of its aircraft which have been destroyed, but only of those aircraft on which it has received final reports from various official aviation accident investigation authorities.



# Commercial Aftermarket Customizing and Data Request (CACDR) PROCESS

by Michael Vautour, Product Support Engineering

» The CACDR service is an added benefit to Bell Helicopter owners and operators, offering them viable solutions to their operation needs and offering third parties the opportunity to do business with Bell Helicopter.

The Commercial Aftermarket Customizing and Data Request (CACDR) process was developed nearly six years ago by Bell Helicopter Product Support Engineering (PSE). The process was designed to respond to aircraft owners, operators, or even third party companies that have solicited Bell Helicopter to provide them with proprietary or intellectual property to assist in customizing aircraft, developing supplemental type certificates (STC), letters of "no technical objection," repairing Bell components and assisting customers in meeting regulatory requirements in their respective areas around the world.

The purpose of this article is to provide a general idea of the process, what it can be used for, and how it can be a benefit to operations.

In 2004 a project was launched to help improve the cycle time of a process in which Bell Helicopter provided specific intellectual property and proprietary data to the customer base. Emphasis was placed on the increasing United States (U.S.) governmental requirements for compliance to International Traffic in Arms Regulations (ITAR), Export Administration Regulations (EAR), and the Treasury Department's Office of Foreign Assets Control (OFAC). As PSE for commercial aircraft is located in Canada, Bell must also meet similar requirements from the Canadian government, which sometimes differ from that of the U.S. Since inception of the CACDR process, response time for these requests have improved significantly.

## The CACDR process has five simple steps:

1. A customer contacts PSE requesting data.
2. PSE evaluates whether it needs to be channeled through the CACDR process or not. If so, sends the customer a form to complete, which will provide the details of the data request.
3. When a completed CACDR form has been approved, the required forms and requested data are submitted to Bell's Contracts department to be processed for export classification and identification as well as providing the customer with a contractual proposal defining the data that will be provided, fees associated, contractual stipulations, and the time delay in providing the data.
4. If the customer accepts the proposal, the

Contracts department will submit a Proprietary Rights Indemnity Agreement (PRIA) for the customer's approval.

5. Provide the data to the end customer.  
*NOTE: It is important to note that requests are also reviewed from a business perspective. There is no guarantee that all data requests will be fulfilled.*

Although this may sound relatively simple, and in most cases it is when the data already exists, it can become more elaborate and time consuming when Engineering man-hours are required to generate the requested data. For instance, Bell has provided simplistic load carrying data for attachment points to actually having to perform flight testing on aircraft to provide a customer with a letter of "no technical objection" for a customized installation.

As requests become more complex, the work involved in processing them increases significantly. A standard processing fee has been established for requests where the data requested already exists. If processing time increases, or additional man-hour requirements are required from Bell Helicopter Engineering, Airworthiness, Contracts, PSE, etc. this will be submitted in the proposal from our Contracts department for approval by the end customer prior to moving forward with the request. In some cases where the data is used to develop commercially available STCs, there will be royalty fees, or similar fees associated with the agreement.

This process is used for any non-public data that would be considered as proprietary or intellectual property of Bell Helicopter, such as Electrical Load Analysis (ELA) reports, load carrying capabilities of "hard points", customizing that Bell has previously accomplished on an aircraft, Bell auxiliary kits not published in a Service or Installation Instruction, letters of "no technical objection", etc. just to name a few examples.

The CACDR service is an added benefit to Bell Helicopter owners and operators, offering them viable solutions to their operation needs and offering third parties the opportunity to do business with Bell Helicopter.

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*If you have any more questions regarding the process please feel free to contact Product Support Engineering.*

# Main Rotor Lead Lag Dampers Degradation and Effects on Ride Quality



by Gino Drouin, Product Support Engineering

When discussing vibrations on a Bell 412, the two most common type of vibrations that come to mind are the 1/rev (vertical, lateral and fore and aft) and 4/rev (vertical); the purpose of this article is to discuss another source of vibration that is often not considered, the main rotor 2/rev.

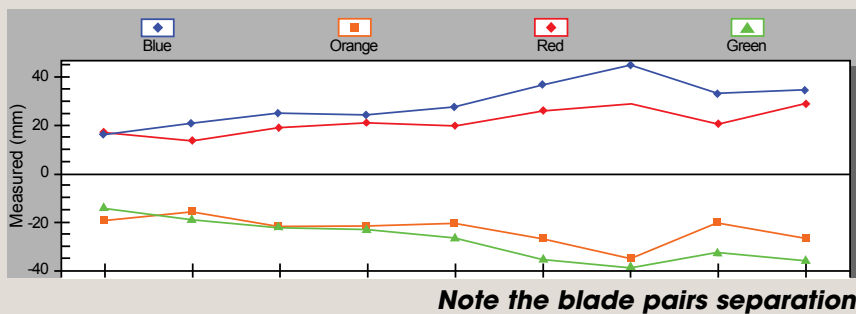
Up until recently, Bell Helicopter had concentrated on lift variations between blade pairs that result from mismatch in blade flight characteristics or flight control bearing wear to explain the source of high 2/rev vibrations. Generally the 2/rev could be minimized by maintaining close to nominal track separation between the pairs at various flight regimes. If this did not result in an acceptable ride, symmetrical adjustment of pitch links on a pair of blades would generally produce acceptable results. In some cases, changing blade position to obtain better match between pairs could also produce acceptable results.

The introduction of more sophisticated vibration monitoring systems such as the Bell Helicopter Vibration Monitoring System (BHVMS) permitted Bell to identify another source of high 2/rev, loss of stiffness or spring rate of opposing lead lag dampers. When one or more lead lag damper loses its spring rate due to degradation of the elastomer members, a geometric unbalance causing blade instability that varies with the degree of degradation takes place. The blade instability that is created has a direct impact on ride quality.

The in-flight indications of high 2/rev due to degradation of two opposing lead lag dampers will be an acceptable ride in both 1 and 4/revs however the ride will still feel marginal. Usually, the 2/rev will be excessive in vertical, fore & aft and lateral. Reviewing the vibration

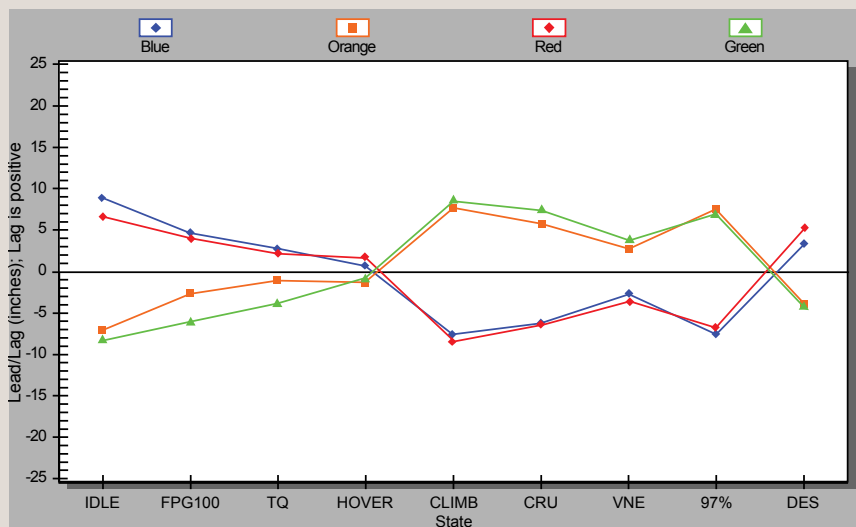
analyzer data, the indications will be blade pair separation (blue/red vs. orange/green) and a cupped shape series of blade height data points when reviewing the lead lag motion graph. Refer to Figures 1 and 2 respectively.

**FIGURE 1. RELATIVE TRACK HEIGHT FOR MAIN ROTOR**



**Note the blade pairs separation**

**FIGURE 2. RELATIVE LEAD LAG FOR MAIN ROTOR**



**Note the "cupped" shape of the data points**

Whenever the indication of an excessive vibration in 2/rev is present, inspect the lead lag dampers for delamination or excessive debonding. Note also that elastomers lose stiffness and damping capability not only with time in service in terms of hours, but also with calendar time in service. For example, a lead lag damper that has only 800 hours but is 12 years old, may have lost sufficient stiffness or damping capability to cause blade instability and consequently, an increase in vibration levels. In such case, the visual indications of an unserviceable lead lag damper will most likely not be present. In such case, review of the vibration data should show some of the indications discussed above. As always, if in doubt, contact the local Customer Service Representative or Product Support Engineering for assistance.



# Should You Outsource Your Records Management?

by Elizabeth Howard, Training Manager - SkyBOOKS

Many helicopter operators who subscribe to SkyBOOKS are advancing from grease boards and spreadsheets. When they transition to an electronic record keeping system they are initially faced with two options: A **Full Service Analyst Supported** package or a **Low Cost User Managed** package. Simply put, Analyst Managed is higher priced while User Managed takes more time. Let's face it; helicopter operations have a limited budget and maintainers and directors of maintenance have limited time.

Operators and maintainers may benefit from an analyst supported program when they do not have personnel to dedicate to the task. Analysts are dedicated account representatives who are familiar with a particular account and are available around the clock.

## Account Representatives:

- Notify customers of Airworthiness Directives (Ads) alerts
- Have the support of a Quality Control department to update ADs and Service Bulletins (SBs)
- Notify customers of newly issued Maintenance Manual Revisions
- Update aircraft status and maintenance tasks
- Tend to special request such as emailing Scheduled Maintenance Reports and Summary Task Cards

Many operators have dealt with complicated maintenance tracking programs that require users to memorize screens and report locations. Fortunately, maintenance tracking programs have evolved and are now easy to learn, easy to navigate, easy to transition to, and are accessible from home or remote sites. Therefore, for operators confident in making updates may be better served by the low cost user managed program.



*Let's face it; helicopter operations have a limited budget and maintainers and directors of maintenance have limited time.*

## User Managed programs:

- Cost less than full service maintenance tracking programs
- Allow users to customize maintenance descriptions
- Display real-time aircraft status by making updates immediately

Those that cannot decide between full service and a user managed system can look for a maintenance tracking program that offers both. Operators can always transition to a service level that better meets their needs. It is not uncommon for a user to upgrade to full service, some users, although proficient, don't have the time to manage their records. They find it more cost effective to upgrade their service plan rather than hire a new employee. Just the opposite, more involved customers slowly transition to become user managed. They realize how easy it is to

enter their own discrepancies and make updates. Tip: Free fleet trials are often usually available to help operators and maintainers make an informed decision.

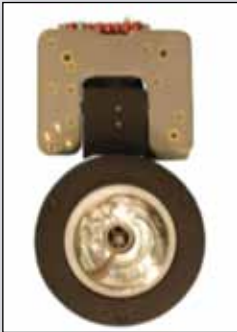


For more helpful tips and record keeping information, contact SkyBOOKS at 866.929.8700 or email [sales@skybooks.com](mailto:sales@skybooks.com).

# Aeronautical Accessories Unveils New Products

Aeronautical Accessories continues to develop new niche products for the rotorcraft market. With developments ranging from lighting, to new Bell 429 accessories, to unique space saving life rafts, Aeronautical Accessories is focused on designing, manufacturing and selling items that are unique to the industry.

## High Intensity Discharge (HID) Nightscanner® Lights



New high intensity discharge lights have been added to Aeronautical's existing family of lighting accessories. The new supplemental type certificate (STC)-certified HID Nightscanner® and HID Nightscanner® Plus lighting products are now available for Bell Helicopter, MD, and Eurocopter aircraft. Both lights offer distinct advantages compared to traditional lighting products in terms of lamp life – lasting 40 to 80 times longer – at significantly less amperage.

The new HID Nightscanner® light provides not only dramatically longer lamp life hours at reduced amps, but is up to 25 percent brighter than the previous Nightscanner light. The new HID Nightscanner® Plus offers even greater candlepower at approximately 700K at 4.5 amps. Both of the new HID lights are compact in size and are available as new kits or can be used as direct replacements for the current Nightscanner light unit. The products can be rotated 360 degrees, can be stowed from any position, provide mounting location options, and offer collec-

tive mounted switches for pilot controls. Both of the new HID Nightscanner lights are Federal Aviation Administration (FAA) approved.

The table at right outlines both new Aeronautical Accessories' HID lighting products compared to previous Nightscanner and Super Nightscanner lights:

	Nightscanner®	New HID Nightscanner®	New HID Nightscanner® Plus	Super Nightscanner®
<b>Candlepower</b>	400K	500K	700K	800K
<b>Lamp Life (hours)</b>	25	2000	1000	25
<b>Amps</b>	18	4	4.5	21
<b>Beam Width</b>	13x14	9x9	9x9	≥13x14

## Bell 429 Accessory Package

A new accessory package for the Bell 429 has been developed by Aeronautical Accessories. The accessory package has received supplemental type certification from the FAA and approvals are in process for other countries, including Japan. Designed and produced with protection, convenience, and easy cleaning in mind, the Aeronautical Accessories Bell 429 Accessory Package includes:

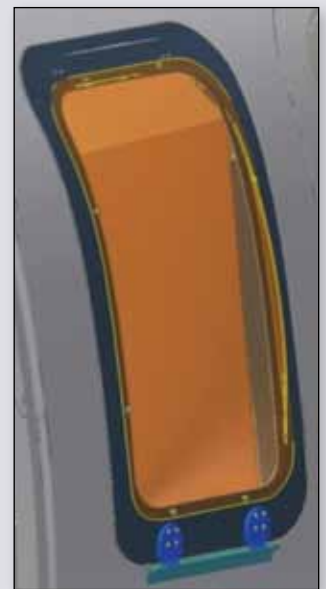
- A Crew Floor Protector Kit
- Passenger Floor Protector Assembly
- Automatic Door Openers, and
- Fuel Filler Area Protector Kit



The components of the 429 Accessory Package are also available individually.

## Bell 407 Survivor Window Raft Kit

Recognizing the need for an emergency life raft that is lightweight and easily accessible, Aeronautical Accessories has now introduced the Survivor Window Raft Kit for the Bell 407. This kit allows for the modification of the window area to be able to store and release a lightweight and durable 6-person/9-overload raft in the event of emergency evacuation of the aircraft. The Survivor Window Raft Kit installs easily in existing aircraft with or without floats currently installed and offers minimal weight increase or loss of cabin space. The kit is patent pending and is JAR-OPS 3 compliant.



For more information on the new HID Nightscanner® lights, Bell 429 Accessory Package, or the Survivor Window Raft, please contact Aeronautical Accessories at 1-800-251-7094.



# Bell Helicopter Service Directives—More than a New Look!

by Bill Thayer, Sr. Project Engineer

Bell Helicopter is dedicated to providing the highest quality service to our customer. Bell Helicopter is continually looking at its processes and procedures for assuring customers are quickly notified of airframe/system improvements, airworthiness, and flight safety concerns. As a result, Bell has standardized and streamlined the process, allowing for more concise and accurate information delivery and quicker notification to customers, owners and operators. Bell Helicopter notifies customers and government agencies of service and technical information using a Service Directive process, which includes authoring and distributing Alert Service Bulletins (ASBs), Technical Bulletins (TBs), Operational Safety Notices and Information Letters. The new procedure standardizes Service Directive templates, individual sections of the bulletins, formatting, language, and even requirements for nomenclatures called out in the Service Directive. Although the physical look only has minor changes, Bell has made improvements to allow a more concise, accurate and timely response to the customer through improved processes.

At first glance, customers will notice that the first page will no longer have red or black frames on the new Service Directives. This allows more usable space for information and simplifies the look of the bulletin. ASBs will retain the red, candy cane border to facilitate high visibility.

One of the more notable changes will be in the “compliance” section. This change is critical to understand because it will affect the compliance window. When applicable, the compliance date will be based on the date of release and not the receipt date of the bulletin, as in the past. As an example, the “compliance” section will now state “...after publication date of this bulletin.” in lieu of “...after receipt of this bulletin.” Regulatory Authorities have requested that Bell Helicopter implement a hard compliance requirement and this change accomplishes that request.

In the new Service Directives, there will no longer be a Revision Notice page for revised Service Directives. The latest revision will be noted below the Bulletin Number on the upper right hand corner and in the footer of each attached page. Revision descriptions will be noted in the actual “Description” section of the Service Directive. Previous revisions will be carried over and continued on the front page, if a new revision is required. Revisions Bars will no longer carry the revision letter beside the bar because they note changes to the latest revision of the document.

Bell Helicopter will give due diligence in assuring that the compliance and description sections will be located on the first page of the Service Directive to help assure that customers have good visibility of the document’s intent. To facilitate this, the content of some sections, like the “Aircraft Affected”, may be placed in tables (if required) and moved to the end of the document.

In addition, there are now three types of compliances that might be noted on Technical Bulletins. In the past, Bell Helicopter only used “Optional” (or “At Customer’s Option”) and “Recommended” compliance statements. Bell has added “Required” to emphasize there are times, due to part discontinuation or improvements, that there may be requirements for customers to comply with the Service Directive for continued operation of the aircraft, new part installations, etc.

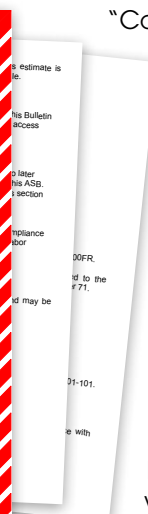
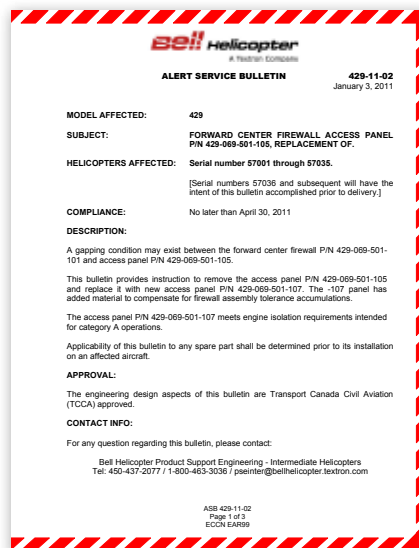
A standardized Contact Information section has been added to facilitate contacting the appropriate support organization for any further information or concerns that may arise. Also, there are new standardized Notes section headers. Borders have been placed around the words “Note”,

“Caution” and “Warning” to better highlight this information. At left is an example of what the new documents could look like.

Remember to sign up for e-mail notifications of Service Directives when they are released and

published to bellcustomer.com. Customers

that have not signed up for this notification should go to bellcustomer.com, click on the “Download Bulletins” icon and then click on the “Subscribe and E-mail Notifications” icon. Follow the instructions as prompted. Assuring customers have the latest and greatest Service Directive information will facilitate product improvement identification, aircraft airworthiness and maintainability requirements, and continued Safe Operation of the aircraft.





# Direct Maintenance Cost Projections for 2011

by Warren Moseley, CSS Program Manager

The first thing you may notice in reviewing the chart at right is a reduction in the Bell 407 direct maintenance cost (DMC) estimate from 2010. As previously published in *RotorBreeze*, there were 14 items removed from the Bell 407 life-limited section (Chapter 4) in 2010. These items were removed as a result of additional review from Bell Helicopter's engineering department and related field history gathered from fleet operators. The removal of these items provided a significant reduction in the published DMC estimate. Additional Bell Helicopter models will be evaluated this year for similar removals and subsequent DMC impact.

In keeping with our commitment to contain maintenance and operating costs, we have limited the spare parts price increase on Bell 206 components to 1 percent over 2010 pricing. Cost control will continue to be a focus on this and other models in 2011.

Bell's 2011 annual price increase for spare parts resulted in an overall adjustment of 2.5% over 2010 pricing. Within DMC estimates, this increase primarily affects costs associated with parts for overhaul, life-limited items and on-condition components.

Fuel cost (price per gallon) and labor estimates (dollars per hour) remain the same as last year. These estimates are intended to be a starting point for establishing what an individual operator's DMC might be; it is highly recommended that these two areas be adjusted to fit each operator.

Bell Helicopter is anticipating, Helicopter Association International's (HAI) revision of "The Guide for the Presentation of Operating Cost Estimates" in 2011. This revision will remove the fuel estimate and provide for manufacturers to present the aircraft's actual fuel burn in gallons per hour. In this instance, operators (if fuel cost per hour is required) will need to add fuel cost per gallon to include as part of hourly operational costs. In addition to the removal of fuel costs, estimates for maintenance labor are also expected to be eliminated from DMC calculations. Instead, labor costs will be represented in maintenance man-hour-per-flight-hour. This will allow the operator to include their own labor and fuel rates to establish a more accurate DMC estimate for their operation. As soon as the HAI guide is revised, Bell Helicopter will reissue these estimates in the new format for our customers.

Bell Helicopter Textron Inc. 2011 Direct Maintenance Cost Estimates + Fuel (3)			
	206L4	407	412
<b>Fuel and Lubricants</b>			
Fuel (1)	152.00	184.00	452.00
Lubricants (3% of fuel costs)	4.56	5.52	13.56
<b>Fuel &amp; Lubr. Sub Total</b>	<b>\$156.56</b>	<b>\$189.52</b>	<b>\$465.56</b>
<b>Labor (2)</b>			
Inspection	26.46	13.17	38.08
Overhaul	7.21	9.63	8.40
Unscheduled and On-Condition	27.90	66.25	46.43
<b>Labor Sub Total</b>	<b>\$61.57</b>	<b>\$89.05</b>	<b>\$92.91</b>
MMH/FH	0.77	1.12	1.18
<b>Parts</b>			
Inspection	1.60	4.18	12.40
Retirement Parts	67.78	46.69	125.05
Overhaul	29.91	60.74	54.45
Unscheduled and On-Condition	74.12	86.21	220.97
<b>Part Sub Total</b>	<b>\$173.41</b>	<b>\$197.82</b>	<b>\$412.87</b>
<b>Airframe Sub Total</b>	<b>\$391.54</b>	<b>\$476.39</b>	<b>\$971.34</b>
<b>Powerplant Direct Maintenance</b>			
Direct Maintenance Costs (4)	73.34	89.25	291.10
Line Maintenance Labor	5.60	5.60	28.56
<b>Powerplant Sub Total</b>	<b>\$78.94</b>	<b>\$94.85</b>	<b>\$319.66</b>
<b>Total Average Cost per FH</b>	<b>\$470.48</b>	<b>\$571.24</b>	<b>\$1,291.00</b>

Notes: (1) Fuel costs calculated at US \$4.00 per gallon  
 (2) Labor calculated at \$80 per maintenance man-hour  
 (3) Basic VFR helicopter  
 (4) Engine DMC represents total costs of maintenance including overhauls, accessory maintenance, unscheduled maintenance and accruals for scheduled maintenance and life limited parts.



# Customer Property Repairs Moved to Bell Helicopter Tennessee

by Paul Cerniauskas, CSS Process Improvement Manager

In an effort to better serve customers, Bell Helicopter has integrated much of its customer support business and expanded capabilities at the Bell Helicopter Piney Flats facility. Piney Flats is home to Bell's Tennessee-based Repair and Overhaul Center of Excellence. Earlier this year, Bell's Customer Property Repair (CPR) process was transferred to the Piney Flats facility.

In the past, when customers sent components for repair or upgrade, the repair was administered from the Roanoke, Texas facility. Customer components sent to Bell Helicopter for repair went through the initial process steps of dock receipt, administrative receipt, purchase order generation, directing parts to the repair center (either at a Bell facility or a vendor), returning parts to Bell Helicopter's Roanoke Logistics facility, and subsequent return-shipment to the customer. Approximately 40 percent of our repair work was done at the Piney Flats, Tenn. facility. By relocating the process, Bell can reduce repair turn-around time by removing two transportation legs of the current repair process for a significant proportion of our repairs and facilitate a quicker return of the repaired part, reduce overall costs of repair and provide additional capacity to repair more parts.

The method of initiating a Return Material Authorization (RMA) in VISTA will remain the same. However, the following changes will impact customers going forward:



The Bell Helicopter Piney Flats repair and overhaul facility serving customer repair needs.

- 1 When requesting to return a part to Bell for repair on a RMA, the Ship-To address will be Bell Helicopter Piney Flats, Tennessee.
- 2 Invoices will originate from Tennessee and the payment remission address will be Bell Helicopter Piney Flats, in Tennessee.
- 3 The Ship-To address for core returns, i.e. unrepaired parts, will be to Bell Helicopter Tennessee.

The Bell Helicopter Piney Flats CPR team is eager to serve all component repair needs. Please see their contact information below:



**April Peltier**  
Manager of Customer Support  
(423) 391-3555  
apeltier@bellhelicopter.textron.com



**Tony Webb**  
Manager of Repair and Overhaul  
(423) 391-3621  
twebb02@bellhelicopter.textron.com



**John Taylor**  
Customer Support Representative, SR.  
(423) 391-3614  
jataylor@bellhelicopter.textron.com



**Becky Lewis**  
Customer Support Representative  
(423) 391-3534  
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**Whitney Leonard**  
Office Assistant, SR  
(423) 391-3615  
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**Danielle Hertzog**  
Customer Support Representative  
(423) 391-3514  
dhertzog@bellhelicopter.textron.com



**Robyn Bednar**  
Customer Support Representative  
(423) 391-3617  
rbednar@bellhelicopter.textron.com

There will be more to come on the improved Repair and Overhaul process. In the meantime, Bell Helicopter is working hard to help ensure this transition is as seamless as possible. For questions or concerns regarding component repair, please contact April Peltier at 800.251.7094, extension 3555.

# Out-of-Production Legacy Bell Helicopters – Program Management Focus

Bell Helicopter Customer Support and Services (CSS) remains focused on supporting the legacy (out-of-production) fleet of helicopters. In fact, in 2011, Bell Helicopter is taking this approach to another level. In addition to the dedicated Legacy Spares Procurement department implemented in 2009, and the dedicated Engineering function implemented in 2010, CSS has created two new Program Management positions to ensure that a comprehensive, cost-effective product strategy (to include but not limited to product development, ret-

rofits, modifications, upgrades, obsolescence management) is brought to the forefront for the legacy fleet.

**Warren Moseley** and **Shawn Long** have assumed the leadership roles of CSS Program Manager (Light) and CSS Program Manager (Medium and Intermediate) respectively, focused on out-of-production aircraft. Both individuals bring in-depth experience in helicopter maintenance and operations along with considerable expertise in technical and logistics support.

CSS Program Management will ensure that the investments Bell Helicopter makes in legacy products add value to the customer. Their primary responsibility is to develop and implement



**Warren Moseley**  
CSS Program Manager (Light)  
817.280.3558  
wmoseley@bellhelicopter.textron.com



**Shawn Long**  
CSS Program Manager  
(Medium and Intermediate)  
450.971.6500 x3541  
swlong@bellhelicopter.textron.com

detailed product plans that reduce direct maintenance cost (DMC) and increase aircraft productivity (mission capabilities). This includes leveraging strategic alliances

within the industry, in particular with our worldwide Customer Service Facility (CSF) network, to develop various fleet retrofit programs, product and service improvements and added service offerings. CSS Program Management currently has several initiatives in-work across the out-of-production legacy model line; both within Bell Helicopter and in partnership with industry.

*Examples of initiatives in-work include, but are not limited to:*

- Reviewing Chapter 4 fatigue lives, as was accomplished on the Bell 407, to determine if certain component lives can be extended across the legacy product line
- Increasing Bell 206 series scheduled inspection intervals
- Creating a more flexible approach to Conditional Inspections
- Developing an engine replacement option on the Bell 206 series
- Developing improved CPC applications for main and tail rotor hub installations
- Reviewing options for extending calendar life on Bell 206 TT-straps
- Working with third party suppliers to develop market-priced critical replacement parts that will be sold through Bell or Aeronautical Accessories (AA).
- Reviewing a weight reduction initiative on medium models

These are a few examples of the efforts underway; however, Bell Helicopter's commitment to its legacy product line will be measured in accomplishments. The role of dedicated Program Management within CSS helps ensure these initiatives become reality and the team looks forward to reporting its progress in this regard.

## Bell Delivers the last **bell** 206B JetRanger

The last Bell 206B JetRanger helicopter (Serial Number 4690) manufactured at Bell Helicopter in Mirabel, Quebec was delivered in December 2010 to Canadian customer, Russ Cmolik. Mr. Cmolik owns two other Bell helicopters.

The JetRanger was first produced in the United States in 1965 with the line being transferred to Canada in 1986. A total of 731 JetRanger helicopters were produced in Canada. The aircraft was the industry standard in the light helicopter class. Although it is no longer in production, Bell Helicopter's worldwide customer support network will continue to support and maintain the aircraft. The Bell 206L LongRanger remains in production.

*Dennis Lacroix, Bell Helicopter Canada Marketing Director (retired) with Russ Cmolik at delivery ceremony.*





# Autopilot...Nightmare or Wonder

by Jimmy Caron, Product Support Engineering

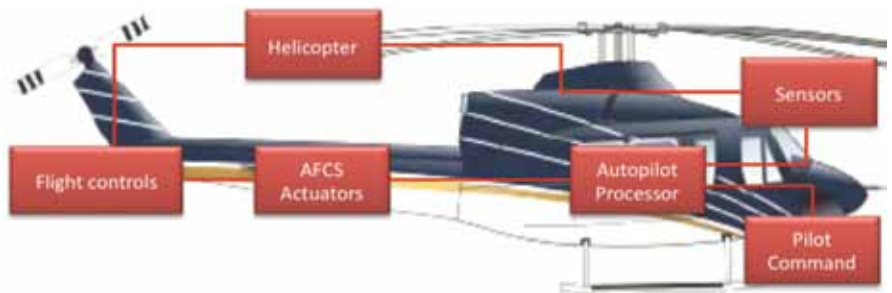
*Today's helicopter pilots and technicians have to deal with highly technical systems such as the Automatic Flight Control System (AFCS) and Flight Director (FD). As an avionics technician, these systems amaze and impress me in terms of lightening a pilot's workload. However, many airframe and power plant mechanics may think differently.*

*Fantastic and amazing may sound like headache and hair-pulling for some operators. By understanding the AFCS concept, operators concerns may be resolved. The following are a few questions and tips that Bell customers can use to look like a "professional sparky" in front of others in that field of expertise. First on the list: What is an AFCS and FD?*

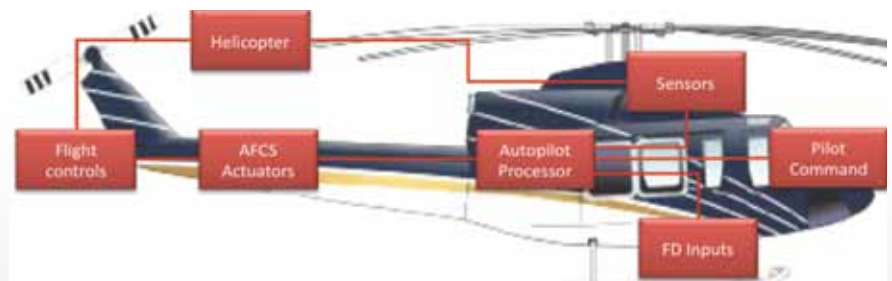
The basic autopilot (AFCS) was designed to reduce pilot work load by controlling 1, 2, 3, and even 4-axis of an aircraft by computing sensed outside disturbances and any pilot inputs.

**Helicopter without the aid of an AFCS** — a pilot manually positions the controls to achieve a desired outcome in the helicopter attitude (flight attitude). The pilot then confirms desired altitude, heading and attitude by the aircraft instrumentation. Aerodynamic variables frequently change so pilot inputs are required. This is particularly the case in a helicopter where flight controls are substantially more sensitive and the pilot must adjust the controls to compensate for ambient and induced aerodynamic variables.

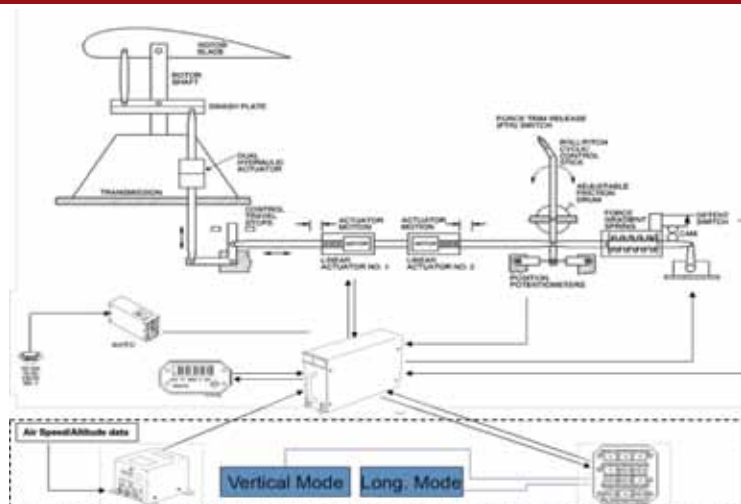
**Helicopter with the aid of the AFCS** — small attitude deviations are sensed and corrective measures are prompted before attitude changes become large enough to be detected by the pilot. The need for continuous corrections, due to ambient or induced deviations, is eliminated. The ability of an AFCS to retain the selected helicopter attitude involves the use of attitude sensors which enable the AFCS to compare actual attitude of the helicopter to the desired attitude selected by the pilot. It does so via the attitude and/or heading reference device, which is constantly monitored by the AFCS sensors. When attitude change is detected, the change is measured in both amplitude and rate then the autopilot processor calculates a command that provides the correction in the form of a flight control changes. The corrective command is sent to appropriate AFCS actuators and incorporated into the flight control system to produce a correction displacement in the control surfaces.



**The Flight Director (FD)** is a system that computes inputs from different sensors, such as navigation system, GPS, air data sensors. They are used to enhance the capability of the AFCS or guide the pilot while flying hand-on-controls. With the use of FD Mode Selector and appropriate instruments, the pilot can select his desired flight path. The FD steer command information is either shown on the appropriate instruments so the pilot can hand fly the aircraft, or the same FD information is sent to and coupled to the autopilot processor. In turn, it is computed so the autopilot may control the aircraft attitude and altitude.



The AFCS has two basic modes of operation. Operators and maintainers should know the differences between these modes.



**SAS (Stability Augmentation System)** mode is basically a rate damper in pitch and roll axis, and is used when the pilot prefers to fly hands-on controls. It makes the aircraft easier to fly by controlling pitch and roll attitude rates while in turbulences (detected by the gyro/AHRS) and by controlling pitch and roll rate response to the pilot's input on the cyclic stick. The cyclic inputs are detected by the use of CMT (Control Motion Potentiometer) physically installed, in parallel, on the cyclic control tubes system.

**ATT (Attitude retention)** mode maintains the pitch and roll attitude of the helicopter, always returning the aircraft to the pilot preset attitude after any disturbances. Normally used hands-off controls. The ATT mode relies mainly on one sensor, vertical gyro that provides real-time pitch and roll information to Autopilot.

SAS can be compared to power steering in an automobile; it will help move the steering wheel and dampen any damage on the road. ATT is similar to cruise control, the driver is setting a speed and removes his or her feet off the pedals.

**The Flight Director (FD)** is a completely separate device (even if it is sometimes part of the same computer box). It is like the GPS fitted in a car that guides the driver around town. The FD may be used coupled to the AFCS or the pilot may decide to hand-fly the A/C using FD information displayed on the applicable instrumentations.

Now that you understand the basic principal of the AFCS and FD, how do we address any snag that we may encounter? You're probably asking yourself this first question...am I stuck with an AFCS snag or with a FD snag?

Answering this simple question will reduced pilot work by 50 percent. By disengaging all FD modes from the Flight Director it will decouple the FD from the AFCS. Should the behavior persist, it is a good indication that the problem is not an FD problem. No need to worry about FD sensors or inputs.

To reduce the work by another 50 percent ask this second question...when the problem existed, were you in Stability Augmentation System (SAS) or in Attitude Retention System

(ATT) mode? Remember...power steering or cruise control? Only the pilot in command will be able to answer this question. Depending on the response operators will need to define which sensor is affecting the AFCS in SAS mode or the ATT mode.

The Vertical Gyro is the primary sensor in the ATT mode and SAS mode. The signal is processed by the autopilot processor and supplied to the linear actuator to control aircraft attitude as needed or commanded by pilot. SAS and ATT mode use some of the same components such as CMT, Gyro, series actuator or linear actuator, LVDT's (via the linear actuators or series actuators) Force gradient and wires/connectors. The rotary actuator (often called the parallel actuator) is a major player in the ATT mode of operation. The rotary actuator (one per axis) has two functions, first as a magnetic brake (force trim ON and OFF) and the second as a trim motor, when trimming of control is requested by the pilot or by the AFCS. In fact, the AFCS will use the rotary actuator as an automatic trim (Autotrim) to keep the series actuator to their center of travel, maintaining maximum authority of the series actuator to achieve demanded change of attitude.

Since the AFCS is a system that was made to drive the cyclic control tube system (remember the power steering and the cruise control), keep in mind that the engine performance and controls friction are primordial. The AFCS computer output that drives these actuators (Linear Actuator and rotary actuator), have limited duty cycle and the sensors used are sensitive to rotor and airframe twist. Keeping the engine well adjusted and the flight control friction within its limits will significantly reduce any cause of problem.

Thousands of other questions may be asked depending on the symptoms, such as: were any flags in view, what was the actuator indicator position, kick/vibration felt in the control system, caution light, what was the altitude and/or airspeed etc.? All of these possibilities cannot be addressed in this article. However, the Automatic Flight Control System course (available through the Bell Helicopter Training Academy) contains a level of detail that addresses all components description and system operation.

Good communication and understanding of the system isn't always easy. However, the more details gathered from pilots or other technicians are the keys to success to become...the Pro-Sparky.

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*For additional support and guidelines on this matter, please contact Product Support Engineering.*

### Bell 429 Category A Helipad Flight Manual Supplement Approved

The FAA has completed its review and approval of the Bell 429 Category A Helipad Flight Manual Supplement, following earlier approvals by EASA and Transport Canada. The finalization of the Category A Helipad Flight Manual Supplement validates the 429's exceptional One Engine Inoperable (OEI) capability. Equipped with two proven Pratt & Whitney Canada 207D1/D2 engines, the 429 provides superior Category A performance, outstanding hover performance and cruise speeds cost effectively. Safety is enhanced by a 30-second OEI of 544kW (729shp), a 2-minute OEI of 523kW (701shp), and an impressive continuous OEI of 488kW (655shp).

The 429 was certified in mid-2009 as a single-pilot instrument flight rules (SPIFR), Category A helicopter under the latest requirements of Part 27 airworthiness rules by Canadian, U.S. and European authorities. It is designed and built to more stringent airworthiness standards than any other light, twin-engine helicopter.

The 429's maintenance program is based on Maintenance Steering Group 3 (MSG-3) practices that are the foundation of airlines' unprecedented reliability. The 429 is the first rotorcraft to have its maintenance program approved by the European Aviation Safety Agency (EASA) to these high standards.

### Bell 429 Helicopter Awarded Brazilian Certification

The National Civil Aviation Agency of Brazil (ANAC) has awarded the Bell 429 helicopter Brazilian certification. This approval follows certification by the U.S. Federal Aviation Administration (FAA), Transport Canada (TC) and the European Aviation Safety Agency (EASA).

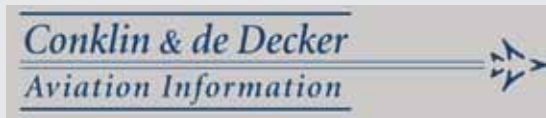
Deliveries of the Bell 429 into Brazil will begin in early 2011. The Bell 429 already has a presence in Latin America with aircraft currently operating in Argentina.

### Bell Helicopter Awarded Contract to Support Canadian Forces

Bell Helicopter has been awarded a 10-year, \$640M (CAN) support services contract for the Canadian Forces CH146 Griffon fleet. This contract, known as the CH146 Optimized Weapon System Support (OWSS) contract includes aspects of management services, engineering and technical publications, aircraft maintenance services and spare and consumable parts. The initial contract will be followed by four one-year options, to be exercised at the Government of Canada's discretion. If exercised, these four one-year options bring the total possible contract value to \$935M (CAN). The execution of the contract will occur out of Bell Helicopter's Mirabel facility and its Canadian Supply Center in Calgary. Bell Helicopter will work with its extensive Canadian aerospace supply base, including authorized Customer Service Facilities, to provide maintenance, repair and overhaul for the

support contract.

The CH146 supports peace-keeping missions and humanitarian relief operations for the Canadian Forces around the globe.



### Conklin & De Decker Introduces Helicopter Maintenance Management Seminar

Conklin & de Decker will offer *Helicopter Maintenance Management - Essential Tools for Your New Role* for the first time in the Dallas/Ft. Worth area on March 28th & 29th, 2011. The program, a seminar aimed at providing helicopter maintenance managers the tools needed to master their challenging position, was presented by Conklin & de Decker for many years through the Helicopter Association International.

The seminar will be presented by Brandon Battles, Vice President for Conklin & de Decker and Gary Potochnik, Vice President in charge of Certification and Quality Management at Rotorcraft Services Group, who have taught the course's content for 15 years. The seminar will focus on:

**The Principles of Management** - Explain what the basic principles are and how to apply certain techniques when working with people and the tasks they perform.

**Financial Management** - Identify the reasons why budgets are important to an organization and how to build a budget for the maintenance department. A general overview of principles of finance and accounting will identify the maintenance department's responsibilities within the overall organization.

**Inventory** - Explore the purpose of inventory and the various techniques that will make an inventory meet the organization's operating objectives more effectively using fewer resources.

**Information Systems** - To manage, one must control. To control, one must measure. To measure, one must have information. Identify the activities in the maintenance organization that typically consume the most resources and offer suggestions to develop systems that will assist in the measurement and control of those areas.

**Regulatory Issues** - The technical aspects of the maintenance organization cannot be ignored due to their complexity and constantly changing nature. Review the latest and more complex issues involving regulations and their effect on your maintenance organization.

The Conklin & de Decker *Helicopter Maintenance Management Seminar* will be held at the Sheraton Grand DFW Airport and costs \$800 per person. To register or to learn more about this seminar go to [www.conklindd.com/HMMS](http://www.conklindd.com/HMMS) or contact Pam Wise at [pam@conklindd.com](mailto:pam@conklindd.com) or call her at +1-817-277-6403.

# Uniflight Completes Overhaul and Refurbishment of Honduran Air Force Bell 412s

Submitted by YES Communications, Inc. on behalf of UNIFLIGHT LLC, Grand Prairie, TX

Uniflight, a North Texas-based, and longtime platinum-level Bell Helicopter customer service facility, has recently completed the overhaul and refurbishment of five Bell 412 helicopters for the Honduran Air Force. La Fuerza Aerea Hondurena, or FAH as it is known, is the largest air force in Central America. An early Bell 412 customer, taking delivery of their first 412SP in 1983 when, now Colonel Suazo, flew the first aircraft from Fort Worth to Tegucigalpa. The Air Force subsequently received eight Bell 412s and is also a longtime operator of the UH-1H with six "Huey" helicopters in the military fleet.

The initial project involved a cooperative effort with Latin American representative, DAR International that ultimately led to a competitive bid award for Uniflight to perform a 5 year/2500 hour overhaul on five of the FAH 412s. Work began in December 2009 when virtually all components, engines and rotor blades were removed in Honduras and sent to the U.S. for inspection, repair and overhaul. Led by Leslie Weikum, Uniflight performed all component work at the main facility located in Grand Prairie, Texas. In-country efforts included Bell 412 maintenance training for the staff of 25 maintainers at the FAH Tegucigalpa base.

After a comprehensive overhaul, the first airframe was returned to airworthy service in April 2010 with the remaining four aircraft finished between June and September 2010. "It is very rewarding to work with an organization such as FAH, both because it reinvigorates a fleet of existing Bell aircraft, and there is a whole new generation of eager young airframe and avionics technicians who are genuinely excited to learn what the state of the art maintenance practices are in the U.S.," said John McCaleb Uniflight FAH program manager,

The Uniflight strategic outlook includes development of foreign military markets with maintenance, repair, and overhaul (MRO) efforts as well as regional support for maintenance, support and inspection programs. Director of Sales, Rick Hinkle commented, "we are see-



Joe Hawke, Uniflight President and chief executive officer, receiving recognition from Honduran Air Force.

“It is very rewarding to work with an organization such as FAH, both because it reinvigorates a fleet of existing Bell aircraft, and there is a whole new generation of eager young airframe and avionics technicians who are genuinely excited to learn what the state of the art maintenance practices are in the U.S.”

—John McCaleb Uniflight FAH Program Manager

ing significant opportunities to work with refurbishing existing fleets especially of foreign militaries that are realizing they have a collection of assets that are valuable if they can be made operational again.”

When asked about the future of Uniflight, company president and chief executive officer Joe Hawke commented, "if you study the global need for asset deployment and resources that can help establish and maintain stability in various regions, it becomes clear that a cost-effective, but critical component of the solution involves resurrecting to operational-readiness the dormant helicopter fleets that have been deployed in prior decades throughout the world, especially those of foreign militaries.”

Restoration and refurbishment of the significant aviation asset investments that were made over the last 30 years has led Uniflight to realize the renewal is significant to a broad spectrum that includes humanitarian considerations, anti-narcotics and drug trade interdiction, as well as efforts to thwart terrorism. Uniflight believes that the key to realizing the benefit of those investments is restoring the operational readiness of the fleet and putting in place a sustainable maintenance program.

**Bell Helicopter**

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