

**BELL 505**

CASE STUDY:

# **THE PROVEN MILITARY TRAINING PLATFORM**





## INTRODUCTION

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## **BELL TEXTRON INC.: A COMMITMENT TO EXCELLENCE**

The foundation of any exceptional military organization is rigorous preparation, comprehensive training and advance equipment tailored for mission success.

For rotary-wing training programs, choosing the right airframe and provider is critical for effective pilot development. Bell Textron Inc., with its cutting-edge Bell 505, is the proven choice for primary training solutions.

The Bell 505 delivers unmatched value for military organizations. The aircraft features the latest Garmin avionics, a FADEC controlled engine, and a large, open cabin which provides the ideal training platform for both primary and advanced training requirements to support tailored curricula for pilots at different skill levels.

Bell Textron Inc. supports its state-of-the-art platform by offering tailored packages to achieve the desired training outcome. These range from equipment and spares packages to turn-key solutions that include computer-based systems and "train the trainer" interactions, or an hourly, fee-based service providing end-to-end training curricula.



## THE AIRCRAFT



## THE BELL 505: THE ULTIMATE TRAINING AIRFRAME

In 2014, the Bell 505, a single-engine, twin-blade helicopter was unveiled to replace the legacy 206 Jet Ranger line - the primary trainer for the US Army and Navy for multiple decades. The 505 carries on the Jet Ranger legacy, delivering unmatched technical advantages in rotorcraft training, embodying Bell's dedication to innovation and excellence for the rotorcraft training market.

### ROTORCRAFT TRAINING CUSTOMERS



Bahrain



Iraq



Jamaica



Jordan



Montenegro



South Korea



United Arab Emirates

+ Multiple civilian  
flight schools  
globally

# 100+

airframes currently committed to  
pilot training around the world

## THE AIRCRAFT

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### "CLASSROOM IN THE SKY"

The Bell 505 offers a unique "classroom in the sky" experience. Elevated rear seats provide excellent visibility and an optional cockpit camera provides the ability for comprehensive post-flight debriefings. This setup allows students an enhanced understanding of key procedures and enables instructors and auditors to closely guide, monitor and evaluate trainees for CRM training.

### EXCELLENT VISIBILITY AND SITUATIONAL AWARENESS

The Bell 505's large windscreens deliver exceptional visibility—crucial for situational awareness in training missions. This design supports trainees by developing their environmental awareness, a critical skill for military operations.

### DUAL-CHANNEL FADEC

The Bell 505 is equipped with a dual-channel Full Authority Digital Engine Control (FADEC) system, which enhances engine performance and reliability. This technology simplifies engine management, allowing trainees to focus on mastering flight techniques.

**WITH THE INTEGRATION OF THE GARMIN G1000H NXI AND DUAL-CHANNEL FADEC, THE BELL 505 STREAMLINES PILOT OPERATIONS AND ENHANCES TRAINING EFFICIENCY:**

- Automated engine start sequence eliminates common training delays and reduces the risk of hot start
- Smooth, reliable start-up with minimal risk of engine damage
- FADEC continuously manages rotor RPM, even during high-demand or dynamic maneuvers
- Protects against common overspeed/underspeed conditions
- Integrated exceedance monitoring and diagnostics support long-term engine health tracking
- Rapid engine cool-down cycle (30 secs) minimizes turnaround time.



**“We decided on the Bell 505 because of the price, quality and technical specifications like the FADEC and modern avionics ... it's exceeding our expectations.”**

- Bell 505 Military Trainer Customer





## **GARMIN G1000H NXi AVIONICS**

The Bell 505 is equipped with the Garmin G1000H NXi avionics suite, the industry's leading glass cockpit system. It's also featured in select Cessna piston aircraft such as the 172 and 182. This commonality ensures a seamless transition for pilots moving between fixed-wing and rotary-wing platforms.

The G1000H NXi delivers a fully integrated flight deck experience that provides intuitive access to critical flight data, streamlined engine start-up, radio frequency management in regulatory airspaces, and simplified flight planning. The G1000H NXi also offers enhanced navigation tools with situational awareness features that support training mission efficiency while building core pilot competencies in communication, systems management and navigation.

## **PROVEN DRIVETRAIN AND TRANSMISSION**

The Bell 505 incorporates the drivetrain and transmission of the renowned Bell 206L, a highly reliable platform. With over 13.9 million flight hours, this system infuses the Bell 505 with decades of proven engineering and operational excellence.

## **SUPERIOR AUTOROTATIONAL CHARACTERISTICS**

With its outstanding autorotational performance and predictable handling characteristics, the Bell 505 is engineered for optimal emergency procedures training. Its responsive flight dynamics provide an ideal environment for pilots to develop and hone critical auto-rotation skills—essential for safely managing engine-out scenarios and other in-flight contingencies.

## **READY FOR RUGGED TERRAIN**

Engineered for optimal performance in extreme environments, the Bell 505 is equipped to excel in desert and other harsh operating conditions. Powered by the Safran Arrius 2R engine with an advanced inlet barrier filtration system, it minimizes foreign object damage and maximizes engine longevity.

Available skid height configurations enhance operational flexibility, while the extensive use of composite materials and corrosion-resistant components ensures long-term durability and reduced maintenance in abrasive and corrosive settings.

## THE AIRCRAFT

### READY FOR MULTIPLE MISSIONS

The Bell 505 can be equipped with advanced Electro-Optical/Infrared (EO/IR) sensor systems, enabling enhanced target acquisition and situational awareness for both training and operational mission scenarios.

The platform supports a range of mission-specific configurations, including Night Vision Goggle (NVG)-compatible cockpit, high resolution mission cameras and cargo hook rated for 2,000 lbs (907 kg). An optional stretcher kit provides critical support for medevac and casualty evacuation roles.

Designed for low maintenance and high reliability, the Bell 505 is well suited for multi-role operations beyond flight training, including surveillance, border security, emergency response, and light utility transport.

#### Max Gross Weight

1,669 kg/3,680 lb

#### Useful Load

(standard configuration)

680 kg/1,500 lb

#### Max Sling Load

907 kg/2,000 lb

#### Altitude Performance

(service ceiling)

6,096 m/20,000 ft

#### HIGE Altitude Performance

(Maximum GW, ISA)

4,404 m/14,450 ft

#### HOGE Altitude Performance

(Maximum GW, ISA)

3,188 m/10,460 ft

#### Maximum Cruise Speed ( $V_H$ )

125 knots

#### Take Off Power

505 shp (377 kW)

#### Max Continuous Power

459 shp (342 kW)

#### Engine

Safran Arrius 2R

#### Engine Control

Dual Channel FADEC

w/automatic backup

#### Standard Fuel Capacities

84.85 US Gal/321 L



### EXCEPTIONAL VALUE: IMPRESSIVE STANDARD EQUIPMENT AND TOTAL LIFECYCLE COST

The Bell 505 comes equipped with a comprehensive suite of standard features, delivering outstanding value and operational readiness. Key equipment includes the Garmin G1000H NXi integrated avionics suite, dual flight controls, dual-channel Full Authority Digital Engine Control (FADEC), lithium-ion battery, flat cabin floor with integrated hard points, removable passenger seats, and high-visibility main rotor blades for enhanced safety and situational awareness.

**“The modern equipment helps the ease of use. The dual channel FADEC, main drive system, vibration dampening systems all increase comfort and situational awareness, showcasing the important information in different color schemes. It is important in the initial training phase to decrease workload, allowing more time for other decisions.”**

- Bell 505 Military Trainer Customer



## GLOBAL CUSTOMER SOLUTIONS

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### OUR LEGACY OF PROVEN ROTORCRAFT IN THE MIDDLE EAST AND AFRICA

Bell Textron Inc. has a long-standing history in the Middle East as one of the most recognized aircraft OEMs in the region. Because of this established legacy, most pilots, operators, and rotorcraft enthusiasts are familiar with Bell aircraft, like the Bell 206 and Bell UH-1 platforms and their decades of military training and operations. Bell's ability to understand the needs of operators in the Middle East makes training more relatable and easier for instructors starting up military training programs.

### INDUSTRY-LEADING CUSTOMER AND TECHNICAL SUPPORT

#### 24/7 CUSTOMER SERVICE ENGINEERS (CSEs) AND PRODUCT SUPPORT ENGINEERS (PSEs)

Bell Textron Inc. offers unparalleled customer support with a team of dedicated CSEs and PSEs available 24/7. This means any technical issues or maintenance needs are addressed promptly, minimizing downtime and maximizing training efficiency.

When Bell built the training program for the Royal Jordanian Air Force, it offered additional pilot and maintenance training at the BTA, or Bell Training Academy, a two-year contract for an in-country 505 field service representative, and a one-year contract for the provision of an in-country flight training device field service representative. Given the complexity of new training programs, Bell stands ready to serve its customers and provide an array of tailored solutions.

#### Customer Service Engineers

Your regional technical support and liaison to other Bell departments for in-production and legacy aircraft.

##### CAPABILITIES

- Direct link to Bell engineering
- Post-delivery aircraft support
- Spares fulfillment assistance
- Liaison between customer and key suppliers
- Aircraft maintenance consultation
- Troubleshooting
- On-job training assistance
- On-site support

#### Product Support Engineers

Around-the-clock OEM support with extensive product knowledge for in-production and legacy aircraft.

##### CAPABILITIES

- In-depth troubleshooting
- Technical Publications Support
- Service Directives
- Structural repairs
- Customizing and configuration support
- Continuous improvement
- Design input on new models
- Aircraft evaluation

**45+** CSEs regionally located throughout the world

**30+** PSEs located throughout our three global offices (U.S.A., Canada and Singapore)

### CUSTOMER SERVICE FACILITIES (CSFS) WORLDWIDE

Bell's CSFs are located globally, ensuring efficient and effective service for Bell aircraft. Along with the spare parts that operators receive, our CSFs keep an additional inventory of parts tailored to your Bell fleet.



## **BELL TRAINING ACADEMY (BTA) "TRAIN THE TRAINER"**

With a legacy of training more than 130,000 pilots and mechanics, our award-winning training academy sets the standard for preparing both pilots and maintainers. Our locations around the globe offer the ability to "train the trainer" by using Bell experts to train your staff providing them the skills needed to develop internal training for your respective unit.

- Bell can take your existing training curriculum and digitize it.
- Bell offers tailored training – with curriculum such as Night Vision Goggle (NVG) training, maintenance training by platform, and several other options.
- We offer a variety of add-on capabilities in-house and through vendor partnerships, such as the ability to record flights and SIM flights, allowing your unit to review and debrief for training purposes.

## **FULL TURN-KEY SOLUTIONS OR CUSTOMIZABLE OPTIONS**

Bell Textron Inc. offers the flexibility to deliver full turn-key solutions through a menu of customizable options tailored to meet specific training needs. Whether you require a complete training program from primary to advanced operational or specific components to enhance your existing operation, Bell can provide the right solution for your rotary wing training program. In the case of the Royal Jordanian Air Force, Bell developed a full, turn-key solution to launch a next-generation flight school. By combining the Bell 505 platform with in-country parts inventory, program support, simulator, and courseware/software, the RJAF worked with Bell to tailor their specific mission needs.

# ENHANCING MILITARY TRAINING WITH ADVANCED TECHNOLOGY

Together, the Veris VR Simulator and VIPER platform offer unparalleled training capabilities and primary training capabilities, making Bell the perfect solution for military customers seeking advanced, flexible and cost-effective training solutions.

## VERIS VR SIMULATOR BY TRU SIMULATION

The Veris VR Simulator is a state-of-the-art training tool designed to elevate military training to new heights.

### KEY FEATURES INCLUDE:

- **Portability:** Easily transportable with no disassembly required, the Veris VR Simulator can be relocated using a standard forklift, making it adaptable to various training environments.
- **Multi-Device Linking:** Capable of linking multiple trainers, including different aircraft types, for synchronized training missions. This allows for comprehensive training scenarios involving both fixed-wing and rotorcraft, even if located in separate facilities.
- **Advanced Visuals:** Utilizing Unreal Engine software, the simulator offers hyper-realistic visual scenes. Customers can also develop and integrate their own resources into the visual environment.
- **Future-Proof Design:** Simplified maintenance and adaptability for future upgrades ensure the simulator remains cutting-edge as technology advances.

## VIPER PLATFORM

The VIPER (Visual Interactive Presentation Enhancing Retention) platform revolutionizes aircraft training with its immersive, interactive courseware system.

### KEY FEATURES INCLUDE:

- **Bell-Certified 3D Models:** Accurate, scalable 3D models derived from Bell engineering data provide realistic and manipulable content for enhanced learning.
- **Interactive Learning:** Users can manipulate views, zoom, rotate, and interact with components in real-time, improving comprehension and retention.
- **Standardized Instruction:** Integrated instructor notes and system-specific callouts ensure consistent, high-fidelity education across all training sessions.
- **Scenario-Based Training:** Supports procedural training and real-world use-case demonstrations, allowing for precise and effective instruction.



**TRU**  
SIMULATION

VIRTUAL REALITY FLIGHT SIMULATOR

**VERIS**



## CONCLUSION

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## CONCLUSION

Since the widespread introduction of military rotorcraft in the 1940s, rigorous training programs have been vital for operational safety and mission readiness. Specialized training aircraft and carefully-designed curricula significantly improve mission readiness and success.

Bell Textron Inc. and the Bell 505 lead the rotary-wing training environment.

The Bell 505's proven performance and state-of-the-art systems make it the definitive platform for training programs developing elite military helicopter pilots and equipping the next generation of military aviators with the skills and confidence required to excel in today's demanding situations.







**Learn more about  
Bell and the 505 for  
military pilot training.**



**Take a look  
inside the  
Bell 505.**



**Hear from  
our existing  
customers.**

**[bell.co/505trainer](https://bell.co/505trainer)**