



# Centre for Air Power Studies (CAPS)

Forum for National Security Studies (FNSS)

134/16

## IS TEXTRON INC. ASSISTING THE CHINESE ROTARY UNMANNED AERIAL VEHICLE (RUAV) PROGRAMME?

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### The Agreement

On the sidelines of the Zhuhai airshow on November 1, 2016 a framework agreement was announced by Bell helicopters with the Chinese Shaanxi Aviation Industry Development Company Limited (SAIDC) for the establishment of an assembly line for at least 100 Bell 407GXP helicopters at Xi'an, which is also the capital of the Chinese Shaanxi province. The \$768 million agreement also includes provisions for establishing a helicopter training centre, as well as provisions for assistance in terms of Research & Development (R&D) related to drones.<sup>1</sup>

For executing the agreement, Bell helicopters (a subsidiary of the American Textron Inc. conglomerate), would be working with SAIDC as well as the Xi'an Helicopter Company Limited (XHC Ltd.).<sup>2</sup> The XHC appears to be a new subsidiary of the SAIDC specifically established for this purpose.

Notably, Xi'an is also home to the Aviation Industry Corporation of China (AVIC) Xi'an Research Institute and the Xi'an ASN Technology group. Both of these have played an important role in the development of the Chinese UAV capabilities with both military and civil entities as their target clientele. While the former has contributed to the development of the V750 RUAV programme the latter has the virtual monopoly over the fixed wing tactical UAV programme and has been the supplier of the ASN series of UAVs since 1980s.<sup>3</sup> The maturing of the RUAV programme overseen by AVIC has also had specialised inputs from the R&D into helicopter Rotor Dynamics being undertaken at the Nanjing University of Aeronautics and Astronautics (NUAA).<sup>4</sup>

But with the framework agreement between Textron Inc. and SAIDC the future developments of the dual use Chinese RUAV capabilities are poised for a significant



transformation. This is even more significant as the virtually indistinguishable civil-military complex in China is already marketing the V750 Unmanned helicopter and had also displayed its militarised variant the “QY-1” during the recent Zhuhai airshow.<sup>5</sup>

### **The V750/QY-1 RUAV**

The manufacture of the V750 RUAV presently being marketed by the Weifang Tianxiang Aerospace Industry Co. Ltd. began by a China based Qingdao Haili Helicopters Manufacturing Company Ltd. acquiring the Brantly-Hynes Helicopter Inc. in 2007.<sup>6</sup> The Brantly-Hynes Helicopter Inc. owned the manufacturing rights of several designs of Brantly helicopters, which were initially manufactured in early 1950s. Five of those, designated YHO-3, were even procured by the US Army.<sup>7</sup>

In 1986 Brantly-Hynes helicopters had also developed the H-5T variant of the earlier Brantly B-2 helicopter. The H-5T was developed as a remotely piloted reconnaissance platform and a gunnery target with United States (US) Army as its intended customer. The US Army however purchased only the gunnery target fiberglass version, which was shaped to resemble the Soviet Mi-24 Hind-D gunship.<sup>8</sup>

Presently, the V750 employing a dual redundancy flight control system with a dual-channel data link, a payload of 120 kgs and a control radius of 150 kms has been certified with

a special flight permit for operations by the civil aviation administration of China.<sup>9</sup> The military version designated the QY-1 as well as the V750 are most likely powered by the piston engine supplied by “Superior Air Parts” which is an engine manufacturing company based in Coppell, Texas USA, and which was purchased in 2010 by the Beijing based Superior Aviation-which again is an alias of the Qingdao Haili Helicopter company.<sup>10</sup>

The Chinese RUAV programme intends to build upon the experience gained through developing the V750/QY-1 and it is in this context the proposed R&D venture with Bell Helicopters/Textron Inc. assumes significance.

### **The Northrop-Grumman-Bell MQ-8C Fire Scout RUAV**

Built upon the manned Bell 407 helicopter platform, the MQ-8C RUAV has an endurance of over 15 hours and a payload capacity of almost 1200 kgs and is intended to be deployed by the US Navy. It is also likely to be equipped with a Leonardo-Finmeccanica’s Osprey Active Electronically Scanned Array (AESA) radar. Besides the intended Intelligence, Surveillance & Reconnaissance (ISR) role, an Advance Precision Kill Weapon System (APKWS) is also likely to be integrated with this RUAV. The APKWS was test fired from a manned Bell 407 in 2013.<sup>11</sup>

During the development of the MQ-8C, Bell has been involved in the modification of the Bell

407 platform for the integration of the ISR and associated systems. In addition, Bell is also developing the Bell V-247 “Vigilant” tilt-rotor UAV, which combines the capabilities of a helicopter with those of a fixed wing aircraft. The design is based on its experience with the manned V-22 Osprey tilt-rotor programme.<sup>12</sup>

This expertise available with Bell of transforming the Bell 407 platform to the MQ-8C as well as the ongoing Bell V-247 programme may well define the future course of the Chinese RUAV programme and may form a part of the assistance to the R&D related to drones and the modification of the Bell 407GXP platform.

### **Bell 407GXP as a Next Generation Chinese RUAV?**

The 100 Bell 407GXPs being procured along with an assembly line are powered by Rolls-Royce 250-C47B/8 turbine Full Authority Digital Electronic Control (FADEC) configured engines and the claimed “Hot and High” performance is stated to be exceptional.<sup>13</sup>

This would mean an inherent capability of the platform as a RUAV to surpass the performance parameters of the MQ-8C as well as its capability to be deployed in the high altitude regions bordering India. This would be in addition to it being used in the ship-borne mode similar to the US Navy.

This course of action for building the RUAV capabilities would be in consonance with the

effort of the People’s Republic of China (PRC) to capitalise on the extensive research work being undertaken in the various military-industrial complexes set up for the purpose and to expand the operational envelope of the People’s Liberation Army (PLA).<sup>14</sup>

Textron Inc. and Bell helicopters would be providing the R&D support to the civil part of the military-industrial complex by giving access to the expertise available with them. This would be provided within the framework agreement signed on the sidelines of the Zhuhai airshow for providing R&D assistance to the drone programme. This would obviously translate into a considerable savings in terms of time required by the PRC to operationalise a new platform, even if configured with its indigenous systems, as the necessary expertise has already been developed for the MQ-8C.

Maybe it is time for India also to undertake the required R&D to convert the Hindustan Aeronautics Limited (HAL) manufactured Light Combat Helicopter (LCH) into a RUAV which could then be effectively deployed along the northern borders and could also be used for ISR missions for protection of our maritime boundaries.

*(Disclaimer: The views and opinions expressed in this article are those of the author and do not necessarily reflect the position of the Centre for Air Power Studies [CAPS])*

### **Notes**

<sup>1</sup> China Daily, “NW China to Build 5.3b Yuan Aviation Project,” [http://www.chinadaily.com.cn/bizchina/tech/2016-12/10/content\\_27631661.htm](http://www.chinadaily.com.cn/bizchina/tech/2016-12/10/content_27631661.htm) accessed on December 19,2016

<sup>2</sup> Bell Helicopter, “Bell Helicopter, Shaanxi Aviation Industry Development Co. Ltd. And Xi’an Helicopter Company Ltd. Sign Agreement for Future Collaboration and the development of the Local Aviation Industry,” <http://www.bellhelicopter.com/news/press-release/2016/10/shaanxi-xian-framework> accessed December 13,2016

<sup>3</sup> US-China Economic and Security Review Commission, “China’s Military Unmanned Aerial Vehicle Industry,” Kimberly Hsu, June 13, 2013, <http://origin.uscc.gov/sites/default/files/Research/China's%20Military%20UAV%20Industry-14%20June%202013.pdf> accessed on December 21,2016

<sup>4</sup> NAAA, “Key R&D Bases,” <http://iao.nuaa.edu.cn/key-rd-bases.html> accessed on December 21,2016

<sup>5</sup> Kelvin Wong, , “Airshow China 2016:CASC unveils QY-1 rotary wing UAV,” *IHS Jane's 360* , November 02,2016, <http://www.janes.com/article/6544/airshow-china-2016-casc-unveils-qy-1-rotary-wing-uav> accessed on December 20,2016

<sup>6</sup> hktcd.com, “Qingdao Haili Helicopter Mfg Co.LTD-China (Shandong),” [www.hktcd.com/manufacturers-suppliers/QINGDAO-HAILI-HELICOPTER-MFG-CO-LTD/en/1X061QU0/](http://www.hktcd.com/manufacturers-suppliers/QINGDAO-HAILI-HELICOPTER-MFG-CO-LTD/en/1X061QU0/) accessed Dec 22,2016

<sup>7</sup> AviaStar, “Brantly B-2/YHO-3 1953,” [http://www.aviaStar.org/helicopters\\_eng/brantly\\_b-2.php](http://www.aviaStar.org/helicopters_eng/brantly_b-2.php) accessed on December 14,2016

<sup>8</sup> AviaStar, “Hynes H-5T 1986,” [www.aviaStar.org/helicopters\\_eng/brantly-hynes\\_h-5t.php](http://www.aviaStar.org/helicopters_eng/brantly-hynes_h-5t.php) accessed on December 22, 2016

<sup>9</sup> Weifang Freesky, “V750 Unmanned Helicopter,” <http://freesky.gmc.globalmarket.com/products/details/v750-unmanned-helicopter-2689367.html> & [http://news.xinhuanet.com/english/video/2014-09/01/c\\_133611189.htm](http://news.xinhuanet.com/english/video/2014-09/01/c_133611189.htm) accessed December 21,2016

<sup>10</sup> Wikipedia, “Superior Aviation Beijing,” [http://en.wikipedia.org/wiki/Superior\\_Aviation\\_Beijing](http://en.wikipedia.org/wiki/Superior_Aviation_Beijing) accessed on December 22,2016

<sup>11</sup> NavalDrones.com, “MQ-8C Fire Scout,” <http://www.navalDrones.com/MQ-8C-Fire-Scout.html> accessed December 19, 2016

<sup>12</sup> Bell Helicopter, “Bell Helicopter Introduces Bell V-247 “Vigilant” Tiltrotor Unmanned Aerial System in Ship-Borne Configuration,” <http://www.bellhelicopter.com/news/press-release/2016/9/v247-vigilant> accessed on December 12,2016

<sup>13</sup> Bell Helicopter, “Bell 407GXP,” [www.bellhelicopter.com/commercial/bell-407](http://www.bellhelicopter.com/commercial/bell-407) accessed on December 21, 2016

<sup>14</sup> Ian M. Easton, L.C. Russel Hsiao, “The Chinese People’s Liberation Army’s Unmanned Aerial Vehicle Project: Organisational Capacities and Operational Capabilities-March 11,2013,” [http://www.project2049.net/documents/uav\\_easton\\_hsiao.pdf](http://www.project2049.net/documents/uav_easton_hsiao.pdf) accessed on December 14, 2016