



Chinese Flying Boat Enters Next Stage of Development

OE Watch Commentary: China’s flying boat, the AG600, will begin open ocean testing later this year. The aircraft is an interesting case study for Chinese aviation development. Despite the relative simplicity of the design, and clear utility for government operators, its development has taken more than a decade. The accompanying passage from China’s *Economic Daily* discusses the AG600.

Designed by Chinese state aircraft company AVIC and manufactured by China Aviation Industry General Aircraft (CAIGA), a producer of business jets and utility aircraft, the aircraft began development in 2009.

AG600 Development Timeline		
2009	June	Project Approved
	September 5	Work officially begins
2012		Preliminary Design Completed
2014		Detailed design completed; trial production begun
2015		Large airframe components completed, parts assembly completed
2016	23 July	Prototype shown at the Zhuhai Airshow
2017	24 December	First test flight (ground takeoff/landing)
2018	24 January	Second Test Flight (ground takeoff/landing)
2018	26 January	Third Test Flight (ground takeoff/landing)
2018	24 July	First Test Flight (water takeoff)
2019		Additional testing and manufacture of additional prototypes
Late 2020 (planned)		First Open Sea Test
2023 (planned)		Mass production

With four WJ-6 turboprop engines, it has a crew of three and has a range of over 4,500km. It can carry up to 50 passengers, allowing it to act in a search and rescue capacity. At this stage in development it has now accumulated 172 flights and 308 flight hours. Beginning open-sea tests later this year means that major hurdles have been overcome and the airplane is entering one of the final stages of development.

The project’s lead designer is Huang Lingcai [黄领才]. A dedicated test facility was set up at Zhanghe Reservoir outside Jingmen [荆门], Hubei, for the July 2018 phase, which included water takeoff. The open-ocean phase scheduled for later this year will likely be better indication of the aircraft’s performance in real-world conditions.

The AG600’s relatively slow development is indicative of some of the broader challenges facing China’s aviation industry. China is striving to achieve what is called “original innovation”—self-developed breakthroughs in technologies that do not rely on imitation of work from abroad. At the same time it is attempting to “on-shore” or indigenize as much industrial capacity as possible. As sometimes reluctantly admitted by Chinese scientists and engineers, however, much of the countries’ new technologies or systems remain reliant on foreign-developed design concepts or key components. The C919,

for example, is touted as China’s first successful passenger aircraft but has been plagued by delays and uses imported engines. Other more successful designs such as the Y-20 transport aircraft or KJ-200 early warning aircraft have received significant input from foreign design firms, particularly Ukraine.

While English-language reporting from official Chinese news sources make no mention of its military applications, the plane is mentioned multiple times in Chinese sources as an exemplar of Military-Civil Fusion—that is it benefits from collaboration between military and civilian research institutes and has dual-use applications. The Chinese Coast Guard is also a likely customer. Chinese fishing boats now operate globally, but despite a major building program (and transfer of old PLA Navy ships), the Chinese Coast Guard has somewhat limited capabilities in China’s own waters. It operates Z-9 helicopters and Y-12 light transports for some duties, but these have limited range and cannot carry out the sorts of rescue missions the AG600 would be capable of. It also has the ability to scoop up water for firefighting missions.

While not stated in official reporting on the aircraft, it is possible that it will be adopted by the PLA Navy. PLA Naval Aviation has for many years operated several Q-6 flying boats out of Qingdao. The Q-6 is an improved variant of the Brev-6 maritime patrol aircraft. In recent years China has fielded a much more modern dedicated ASW aircraft, the KQ-200 (GX-6), based on the Y-9 transport aircraft. Earlier this year these aircraft reportedly deployed to Fiery Cross Reef [永暑礁] in the South China Sea. Logistic resupply remains an important issue for China’s far-flung outposts, and the AG600 could likely serve in this capacity, ferrying personnel and supplies more efficiently and rapidly than ships. **End OE Watch Commentary (Wood)**

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Continued: Chinese Flying Boat Enters Next Stage of Development



AG-600 at Airshow China 2016.

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Source: “‘鲲龙’AG600将在青岛开展海上飞行试验” (‘Kunlong’ AG600 Will Conduct Sea Test Flight in Qingdao),” *Economic Daily* [经济日报], 24 May 2020. http://www.xinhuanet.com/local/2020-05/24/c_1126024531.htm

Recently, China Aviation Industry Corporation (AVIC) officially announced that China’s independently-developed large-scale fire extinguishing/water rescue amphibious “Kunlong” AG600 aircraft will begin major sea flight testing in the second half of this year at Qingdao. This phase of testing follows successful land and sea takeoff tests in 2017 and 2018 respectively.

According to reports, the AG600 aircraft will fully explore the sea test flight technology and test methods, verify the aircraft’s hydrodynamic performance and surface control characteristics, check the operation of the aircraft’s systems in the marine environment, and collect sea flight data for subsequent development. At the same time the aircraft will be evaluated for corrosion problems brought on by the high salinity and high humidity environment of the ocean.

So far, the AG600 has officially begun pre-flight preparations (for the ocean test flight) with a total of 308 hours of flight time over 172 flights. The various routes, airspace and take-off and landing areas for the test flight are being selected, and safety precaution measures in the event of an emergency are being put into place.