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Surfside Seaplane Base  
Photo by Roger Hansen

## FLOATPLANES AND FLYING BOATS

Not only did the Wright Brothers not have floats on their original planes they didn't even have wheels. They incorporated a catapult and a dolly for take-offs and landed on fuselage skids. Soon, however, aircraft designers discarded this unwieldy system and added wheels. But this required somewhat lengthy and smooth fields to fly from and since more than 70% of the earth's surface is covered with water, interested parties began looking to lakes, rivers, and harbors as readymade airports and to design and build aircraft that could take-off and land on them.

Aircraft capable of operating from water are generally known as Seaplanes and are divided into two types: Flying boats and Floatplanes. Both are capable of incorporating retractable wheels for amphibious operations.



FLYING BOAT GRUMMAN ALBATROSS  
Photo by Roger Hansen

Flying boats, as the name suggests, have a fuselage or body with a bottom shaped like a boat's hull and is hydrodynamically shaped for efficiency in water operations. Typically, they have two small floats or pontoons at the wing tips to stabilize the plane when operating on water. Floatplanes are usually land based aircraft converted to Floatplanes by removing the wheels and attaching floats or pontoons.

Flying boats had the advantage of being able to be built large, and therefore capable of hauling large numbers of passengers and heavy loads of cargo. They could also operate in areas of large wave action and could carry large fuel loads permitting long distance flights to all parts of the world. Flying boats also saw extensive service in Navy and Coast Guard duty during WW I and WWII ranging from reconnaissance and submarine patrol to search and rescue operations. After WWII, with advancements in range and speed of airplanes, as well as the growth of suitable airports for land based aircraft, flying boats began to diminish in use. Today most flying boats, because of their capacity for carrying large payloads of water, have a role in fighting forest fires. Smaller, twin engine flying boats are still active servicing remote areas of the world as well as air sea rescue.

While most floatplanes have two floats, a few designs have used a single float mounted under the fuselage with two smaller pontoons under the wing tips. The two-float configuration lends itself to modification from wheels to floats as the fuselage remains above the water permitting the mounting of the engine and propeller in the nose.

Floatplanes also allow easier docking, mooring, boarding and hand propping if needed. Two-float arrangements are typically found on aircraft as small as Piper Cubs but have been used on aircraft as large the Douglas DC-3 and the De Havilland DHC-6 Twin Otter.

Floatplanes tend to be less stable on water than flying boats and are restricted to operating in areas where wave action is less such as lakes and rivers. Pontoons invariably add weight and drag and render the aircraft less maneuverable, slower, and with a lower rate of climb. Some incorporate a more powerful engine, and/or a constant speed propeller to compensate.

The history of float planes dates back to 1910, when a Frenchman, Henri Fabre,



flew the first successful floatplane. This was followed closely with flights by such familiar names in the U.S. as Boeing and Curtiss who developed both flying boats and floatplanes. Flights in other countries soon followed and the floatplane was on its way. Only a few countries made use of the floatplane in WWI, mainly for patrol, reconnaissance, and rescue operations. Britain introduced the use of Seaplane Tenders which hoisted floatplanes in and out of the water by use of cranes.

## FEDERAL CERTIFICATION UNMANNED AIRCRAFT SYSTEMS

After the First World War, a number of floatplanes began to set endurance and range records of the time. In 1924, US equipped with floats completed a round the world flight from Seattle and back in 175 days. The Soviet's flew a float Russia to New York City in 1929. By the late 20's, the fastest and largest aircraft in the world were flying boats, but float planes were also developing and carving out their own place in the world of flight.



One of the most interesting and colorful a developments involving floatplanes was the Schneider Cup Races. These races began in 1913, were suspended during WWI, and then continued up to 1934. Seven countries participated including the U.S. Aircraft were all float equipped, flew a fixed course over a body of water and achieved speeds up to 442 mph. While the original purpose of the races was to promote seaplane development, they quickly became competition between nations for the development of fighter planes. The British racing designs for example, led to the development of the Spitfire of WWII fame.

WWII saw further utilization of the floatplane, although flying boats played a dominant role with their range, load capability, and multi-engine safety. Floatplanes were often catapulted from larger ships and retrieved by crane. These aircraft were generally of the single pontoon design as they could operate in larger wave conditions. One British floatplane with two pontoons saw action as a torpedo attack aircraft.

With the end of WWII and the era of giant flying boats, both civilian and military, virtually came to a halt. However, float planes continued to find their niche as bush planes, for light duty transportation to lakes and other remote areas as well as to areas too small or hilly to accommodate proper airstrips.



Today, many float planes are operated commercially as a charter service, while some are flown for personal, private use. While flying boats have all but disappeared, floatplanes, it seems, are here to stay. *By Don Uhlenberg*

The new rules for non-hobbyist small unmanned aircraft (UAS) operations – Part 107 of the Federal Aviation Regulations (PDF) – cover a broad spectrum of commercial uses for drones weighing less than 55 pounds. Here are the highlights of the new rule.

### Operating Requirements

The small UAS operator manipulating the controls of a drone should always avoid manned aircraft and never operate in a careless or reckless manner. You must keep your drone within sight. Alternatively, if you use First Person View or similar technology, you must have a visual observer always keep your aircraft within unaided sight (for example, no binoculars). However, even if you use a visual observer, you must still keep your unmanned aircraft close enough to be able to see it if something unexpected happens. Neither you nor a visual observer can be responsible for more than one unmanned aircraft operation at a time.

You can fly during daylight or in twilight (30 minutes before official sunrise to 30 minutes after official sunset, local time) with appropriate anti-collision lighting. Minimum weather visibility is three miles from your control station. The maximum allowable altitude is 400 feet above the ground, and higher if your drone remains within 400 feet of a structure. The maximum speed is 100 mph (87 knots).

You can't fly a small UAS over anyone who is not directly participating in the operation, not under a covered structure, or not inside a covered stationary vehicle. No operations from a moving vehicle are allowed unless you are flying over a sparsely populated area.

Operations in Class G airspace are allowed without air traffic control permission. Operations in Class B, C, D and E airspace need ATC approval. See Chapter 14 in the Pilot's Handbook (PDF).

### Pilot Certification

To operate the controls of a small UAS under Part 107, you need a remote pilot airman certificate with a small UAS rating, or be under the direct supervision of a person who holds such a certificate

You must be at least 16 years old to qualify for a remote pilot certificate, and you can obtain it in one of two ways:

- You may pass an initial aeronautical knowledge test at an FAA-approved knowledge testing center.
- If you already have a Part 61 pilot certificate, other than a student pilot certificate, you must have completed a flight review in the previous 24 months and you must take a small UAS online training course provided by the FAA.

If you have a non-student pilot Part 61 certificate, you will immediately receive a temporary remote pilot certificate when you apply for a permanent certificate. Other applicants will obtain a temporary remote pilot certificate upon successful completion of a security background check. We anticipate we will be able to issue temporary certificates within 10 business days after receiving a completed application.

### UAS Certification

You are responsible for ensuring a drone is safe before flying, but the FAA does not require small UAS to comply with current agency airworthiness standards or obtain aircraft certification. Instead, the remote pilot will simply have to perform a preflight visual and operational check of the small UAS to ensure that safety-pertinent systems are functioning properly. This includes checking the communications link between the control station and the UAS. The UAS must also be registered.