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Wipaire, Inc.
1700 Henry Avenue
South St. Paul, MN 55075

May 12, 2023

Eric Alleyne
Air Safety Investigator
National Transportation Safety Board
Office of Aviation Safety
Eastern Regional Office (ERA)
45065 Riverside Parkway
Ashburn, VA 20147

Subject: Aircraft Crash Investigation

Mr. Alleyne,

This letter serves as an official reply to your aircraft crash investigation of a Piper PA-18, equipped with Wipline 2100 Amphibious floats. Within this email package, I have included the following documents, as they relate to landing gear hydraulic pump components, specifically, electro-hydraulic assembly (21A09000-210) and Emergency hand-pump assembly (21A09000-194). Also included, Aircraft Flight Manual Supplement (AFMS), POHSA00713CH-A-6, and A-8, which lists emergency procedures for landing gear malfunctions (Section 3), placards, and warning for water operations. I have also included the Service Manual (SMAN)/Instructions for Continued Airworthiness (ICA), 1002549, for Wipaire 2100/2350 Amphibious and Seaplane configured floats. Finally, I have included excerpts from the Service Repair Manual (SRM), applicable to Wipline 2100 amphibious floats, which shows landing gear / hydraulic inspection intervals, (Section 12.1), and detailed photos and a brief synopsis of each component of the landing gear system in question.

Should you have further questions, please feel free to contact me at [REDACTED] or call direct to [REDACTED].

Best Regards,

[REDACTED]
Darryl R. Ray
Manager, Data/Product Support
Wipaire, Inc.



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- PA18 Gear Selector Panel – Unit has (4) blue lights for gear up position, (4) green lights for gear down position, and a single red light that lets you know that the pump is running. Reference photo of a typical small float selector head. There is a light for all (4) gear positions in both UP and DN. The red lights are on WHENEVER there is pump power sent to pump motor.
- The POH supplement does specifically state procedures in case of emergency gear situation and clearly states “not to land on water with gear partially retracted.”



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- The main hydraulic pump can be several different part numbers, depending on mounting location, but most likely Wipaire (21A09000-210). Later pumps will have a low-level warning system, installed under Wipaire drawing 1009439. These were active from roughly 2017 and on. Installations were not seen until maybe 2018 or later, as pumps were cycled through after the completion of the drawing package. Again, these are rough estimates.
- With a normal cycle of the landing gear, the pump will operate until all landing gear has fully extended/retracted. While the 2100A floats do not have any “locks”, they do have an over center main gear and a nose gear system that is fully horizontal and at the back of the nose box. The 8 indicator lights are 100% independent of the gear hydraulic system and its operation, meaning that when you are using the electric pump or the hand pump, the indicator lights will operate completely independently. If there is a physical blockage of the gear system and it achieves pressure before reaching the intended cycle completion, then the pump may stop running, however you will clearly not have an indicator light showing UP or DN.
- There are a few service letters that may come into play at some point, however for now, based on the account you have given me, it does not appear to be a factor. Key here is that if the nose gear was not fully up, as indicated to the pilot via blue light or visually seen, this would have been easily noticed in the cockpit.





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