



## RECORD OF CONVERSATION

**Noreen Price**  
**Aviation Accident Investigator**  
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**Date: November 17, 2020**  
**Persons Contacted: Kelly Michaels, Co-Pilot**  
**NTSB Accident Number: ANC21LA006, N400PW PC-12**

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**Narrative:** Ms. Michaels was the copilot during the PC-12 ditching in the Pacific Ocean that occurred on November 6, 2020. She was interviewed by telephone and her attorney, Lilly Sanchez, also called into the interview. Ms. Michaels was thanked for the detailed account of the events that she included in the NTSB form 6120. This is a summary of her statements.

Ms. Michaels stated that she was requested by Mr. Johansson to be a second pilot for the ferry flight from California to Australia, due to the length of the flight and her experience in PC-12s. She had over 900 hours of legacy Pilatus PC-12 flight time, but no long-distance ferrying experience. She and Mr. Johansson obtained PC-12 NGX differences training as part of the mission preparation, which included about 20 hours of simulator training. They practiced a ditching scenario in the simulator. She described the major differences between the legacy PC-12 and the NGX, is the new model had mostly electric systems and also electronic engine and propeller controls, vice hydraulic and manual override systems in the older model. Also, there is no air fuel separator in the NGX model.

In early October, Ms. Michaels and Mr. Johansson flew the accident airplane from McMinnville, Oregon, to Hillsboro Airport, Oregon, where Pilatus modified a motive flow fuel pump in accordance with an airworthiness directive (AD). They then departed for North Las Vegas Airport (KVGTT) but had to turn around due to a right fuel quantity fault indication. Aero Air was a Pilatus certified repair station located at Hillsboro. They stayed there for a few nights, but the system was not repaired there. On October 5 they flew to KVGTT at a lower altitude and the fault indication did not occur. The fuel quantity fault was repaired at KVGTT. They left the airplane at KVGTT with Mr. Fred Sorenson to install the ferry fuel system. They returned to KVGTT on November 1 and repositioned the airplane to Santa Maria Airport (KSMX). The next day, the airplane's ferry tanks were filled from an "old" fueling truck and the main tanks were topped off. They departed for Hilo Airport (PHTO), Hawaii. During that leg, they could not transfer any fuel from the ferry tanks to the main tanks, so they diverted to Merced Airport (KMCE), California, for inspection, repair, or modification. A mechanic at Gateway Air Center at KMCE, Tom Lopes, tried to help that night. He installed 2 small transfer pumps in the ferry system and when the system was ground tested, a fuel line burst and caused a sizeable leak in the cabin. He stated that Fred Sorenson, the installer, would have to fix the system. Mr. Sorenson was not available for 2 more days.

The crew and Mr. Lopes spent much time removing the system and cleaning the interior. Mr. Lopes defueled the ferry tanks into a clean tank that he had. When Mr. Sorenson arrived on November 5, he reinstalled the ferry fuel system and modified it by adding 2 transfer pumps so that there was enough pressure to overcome the one-way check valve in the fuel line. Mr. Sorenson, Mr. Lopes and both pilots participated in a phone call with a Pilatus technician in Colorado named Tomas. He stated that the ferry system provided fuel directly to the engine through a check valve and fuel should return to the main tanks via high pressure heated motive flow. Ms. Michaels was very concerned about the possibility of air being introduced into the main fuel line to the engine because of the direct feed and the absence of a fuel/air separator in the new model. When she voiced her concern, Tomas said that was not a problem and the engineers designed the fuel ferry system that way. Ms. Michaels felt that they were the technical experts and accepted his explanation, although she was still concerned. After discussing the issue with Mr. Sorenson and Johansson, they agreed on procedures for ensuring air did not enter the main fuel line during the end of transfer process: 1) Turn the ignition to "on", 2) Monitor the fuel line quantity aft of the transfer pumps while pumping, 3) Once the tank quantity was sufficiently low (not empty), turn off transfer pumps with fuel still present in the line, 4) turn off the transfer and tank valves, 5) go to the aft cabin and use a flashlight to check fuel quantity in the tank. The airplane was returned to service November 5.

On November 6, Ms. Michaels and Mr. Johansson flew the airplane from KMCE to KSMX and tested the ferry fuel transfer process while enroute with both the front and rear internal tanks and both transfer pumps. They had no problems. There were no known mechanical issues with the airplane. They refueled at SMX and departed for Hawaii.

During the ocean crossing flight, the internal transfer system worked without anomalies. Ms. Michaels followed the checklist and guidance provided by the ferry system installer. They burned off the main tanks from 400 to 300 gallons, then activated the ferry system transfer process for 1/2 of the rear tank. The checklist was simple: 1. Open the tank valve, 2. Open the pump valve, 3. Turn on transfer pumps. The engine was burning about 300 lbs per hour at FL 280. Once the main tanks were at 350 gallons, she reversed the procedures, secured the transfer system, and went back to the main fuel tank supply. While transferring ferry fuel, it took about 40 minutes for the main tanks to fill to 350 gallons. Her understanding was that the system main tanks were filled by high pressure bypass fuel from the engine. They transferred about 1/2 of the forward ferry tank, then the main tanks until 300 gallons remained, and then commenced the final transfer from the rear ferry tank.

About 5 hours into the flight, when the rear ferry tank was almost empty, they prepared to "empty" the rear tank. They were concerned about running the tank dry and the possibility of introducing air into the engine's main fuel line and wanted only usable fuel extracted. Ms. Michaels started timing for 23 minutes based on fuel flow and expected ferry fuel remaining in the rear tank. The ignition switch was placed ON by Mr. Johansson. She *planned* on turning off the transfer pumps when time was up, then the transfer and tank valves, and then going to the rear cabin with a flashlight to see the quantity left in the tank. When it was time to finish the rear tank transfer process, she sat on the floor in the front of the cabin next to the pump pack and monitored the clear fuel line (quantity indicator) on the side of the transfer pump assembly. When 23 minutes went by, she turned off the transfer pumps with fuel still in the supply line. As she slowly stood up to get to the transfer valve and fuel tank valve so she could turn them off, she heard the engine shutter, then lose power. The propeller feathered and she confirmed that the ignition switch was on and noted that the main fuel boost pumps were also on. She did not know when Mr. Johansson placed them on (before or after the engine flame out.) She estimated that the engine lost power about 20 seconds after turning the transfer pump off. The fuel quantity in the main and forward tank was about 450 gallons at the time. She sat back in the copilot seat, and they commenced the emergency checklist for engine failure in flight.

Ms. Michaels read the POH emergency checklist and Mr. Johansson performed the steps. She recalled that they were at FL 280 when the failure occurred but could not recall what altitude the air start procedures were performed, but she knew that 20,000 ft was the maximum altitude for restart in the POH. During the first air start, the propeller unfeathered and the engine started, but did not reach normal flight idle. The Ng was 50% vice 65% with the power control lever (PCL) at the idle position. The engine did not respond to PCL movements. There were no indications of flames or smoke from the exhaust. The engine was shut down with the engine RUN/OFF switch. Another air start was attempted. During the second attempt, a loud grinding noise was heard and then a loud bang, so they aborted the attempt. The CAS panel lit up with multiple warnings, including an EPECS FAIL light. They also attempted EPECS Fail air start procedures and pulled the two EEC circuit breakers, but the EPECS FAIL light remained. The emergency checklist stated to perform a forced landing, but they wanted to continue to try given where we were over the ocean. The propeller never moved, and the engine never lit off after the first attempt. They tried to reboot the whole electric system, but nothing worked. The crew committed to ditching the airplane about 8,000 ft msl.

Ms. Michaels went back to the cabin and prepared the raft and survival equipment and brought out life vests to don. They were located near seat 1. She took the controls and Mr. Johansson went to the back to look through other equipment to ready. Then he came back to the cockpit and took the flight controls back. He made mayday calls on the VHF radio and Ms. Michaels ran the ditching checklist. After the airplane landed, she shut down the airplane while Mr. Johansson opened up the right over wing emergency exit and placed the raft and equipment in it. Ms. Michaels was up to her ankles in water when she evacuated to the raft. She was able to take a sweater with her, but not her shoes. They pushed the raft away from the airplane. Mr. Johansson used the satellite radio to coordinate a rescue. They had a satellite phone, VHF radio, EPIRB, water, food and 6 heat suits. There were problems with the satellite phone and the VHF radio power supplies, but they worked a bit.

The M/V Ariel, a large oil tanker, attempted to rescue them during the night, but the ship would not slow down, and they had great difficulty holding onto their lines. After many frightening attempts, Mr. Johansson signaled that they would not try again. The ocean swells were about 10 feet and the wind was about 30 knots. In the morning, the M/V Ariel told them over channel 16 that the USCG was not coming and that they were their only hope for rescue. As the ship passed by going somewhat fast, they were able to tie the raft to a line and then the ship's crew shouted for them to jump, and so they did jump to lines that then drug them under the water through the ocean. She thought that she was going to drown. Mr. Johansson helped her back into the raft, which was also under water due to the ship's speed. Then a container ship nearby, the M/V Horizon Reliance, came to attempt the rescue. Apparently, they had done it before and wanted to try. Mr. Johansson had to wave a heat suit at them so they could see them. The ship did stop and slowly drove back and forth until near the raft, and then they shot rope cannons at them and they were able to hold onto the lines and pull up to the stopped ship. It had been about 22 hours since they egressed the airplane into the raft. It was the longest night of her life and she was very thankful that they survived.

Ms. Michaels suggested that perhaps entrained water in the fuel froze into ice crystals that clogged the main fuel line, but she did not know what caused the loss of power or why the engine did not restart. She was curious about when Prist (anti ice additive) that was added to the fuel. The wing tanks were filled from an old looking fuel truck at SMX on November 1. Then on November 2, the ferry tanks were filled at SMX and the first Hawaii flight attempt was made. They diverted to MCE and the ferry tanks were defueled into a singular tank, which was then added back into the main tanks before departing on November 6. All the tanks were topped off at SMX before departing for Hawaii. She stated that fuel came from many sources and had been moved around in the trouble shooting process. She thought that the heated motive flow jet pumps may have not operated properly in conjunction with the ferry fuel system, which could have led to icing of fuel lines out in the wing.

She corrected the fuel amount provided on the NTSB form 6120 to 680 gallons vice the reported 460 gallons.