

BATTLING MOTHER NATURE

Mother Nature has mood swings. She is warm and nurturing one moment and a raging, murdering tyrant the next. Until quite recently, it was impossible to tell when and where the transformation would occur and that was a matter of life or death to those residing and working in hurricane-prone areas. Natives perished by the hundreds, often thousands, as high winds and monstrous waves washed away their homes and sank their boats every year.

It was Ma Nature (MN) at war. Tropical storms were her best weapon and surprise was her favorite tactic. She grew the storms in the southern North Atlantic, swept them into the Caribbean, through the island chains, across Central America, into the Gulf of Mexico and along our coasts and no one knew when a storm might appear on their doorstep or forecastle.

Columbus was among the first Europeans to be affected and live to tell about the experience but the attraction of immense monetary gain was too great, and mariners swarmed into the area. Until the 19th Century, Europeans were primarily concerned with shipping losses. Spanish galleons were stout vessels but they were no match for MN's wrath. Many were lost in those storms and much of Spain's wealth in the form of gold bullion disappeared with them. Mariners knew what was happening but could only guess about when and where it might happen. Ma Nature had the element of surprise and used that advantage without mercy. Entire fleets disappeared in those ferocious storms as Europeans fought each other for control of the area.

As the area's population grew, and on the mainland especially, MN's surprise attacks began claiming hundreds of non-native casualties. During the 19th and early 20th Centuries, the carnage extended from New England down to Key West and into the Gulf of Mexico. For example, in 1900, a hurricane devastated Galveston, Texas and upwards of 6000 people lost their lives. More than 100 people died in 1926 when a category 4 hurricane struck Miami September 17-18. The 1935 Labor Day Hurricane, a category 5 storm, devastated the middle Florida Keys killing hundreds of World War I veterans who were working on the Overseas Highway project.

At their website, the Weather Bureau's history confirms the dire situation; that in the first part of the 20th century, "warnings for hurricanes *were often late and inadequate.*" "A 1938 hurricane that struck New England *with little warning* was responsible for at least 600 deaths." (Emphasis added.) A sense of hopelessness prevailed in areas affected by these storms and the federal government struggled to develop an effective warning system.

Coincidentally, as WW II wound down the Navy had been developing an airborne Combat Information Center (CIC) at NAS Patuxent River, Maryland. The concept originated as a response to Kamikaze attacks that took so many American lives during the battle for Okinawa and started with radarscopes situated in the bomb bays of disarmed B-17s. During the late 1940s and into the mid-1950s the concept evolved into using the Super Constellation airframes stuffed with sophisticated electronics. Eventually the idea that they could be used for weather reconnaissance caught on and the rest is history.

The Navy's contribution to the saving of lives was relatively short-lived but for 14 years spanning the 1960s we did provide timely, accurate information that was a giant leap in the Weather Bureau's forecasting capabilities. I was the squadron's Senior Meteorologist and worked with (not *for*) Dr. Gordon Dunn and Dr. Robert Simpson, heads of the National Hurricane Center located in Coral Gables, Florida to coordinate our efforts. VW-4 provided the

command/control aircraft for a joint effort to tame hurricanes, led by Dr. Joanne Simpson and named Project Stormfury.

The squadron commanding officers and the aircraft commanders may have received letters of appreciation and commendation but the dedication of the crews who trusted us to get them safely through nature's worst weather conditions has been overlooked, perhaps because our squadron's efforts were not glamorous. There were no parades because the enemy continues her attacks. Nevertheless, she lost her element of surprise and that was a significant victory. As soon as military reconnaissance flights provided timely, accurate plotting of those storms, maritime losses dropped precipitately. Our National Security got a significant boost and many people are alive today because of our efforts. During the period that spanned the 1960s, millions could breathe easier just knowing that storms were not in their immediate future, and that was a big boost for the tourist industry.

Shown here is the Navy-designated WV-2 aircraft that I flew as aircraft commander for four years in the 1960s while assigned to the Navy's Hurricane Hunters (VW-4) based at NAS Jacksonville, Florida. The squadron had five of these Lockheed Model 1049 Super Constellations, similar to Air Force EC-121s, equipped with sophisticated electronics, which we used to scout the southern North Atlantic Ocean out to 1200 miles east of Puerto Rico. The bottom radome housed the APS-20 long-range search antenna while the upper radome housed the APS-45 height-finding antenna.

During each hurricane season, one of VW-4's five crews deployed to Naval Air Station (NAS) Roosevelt Roads on Puerto Rico's far eastern shore, and that crew made scouting flights every 4-5 days. The 13,000' runway was aligned with the constant 15-knot Trade Winds and ended at the water's edge. Fully loaded, the WV-2 would require at least 10,000' of the runway for takeoff. Our four R-3350 engines were the most powerful and reliable that were available but even they could not get us higher than 100' when we reached the ocean. Routine searches lasted 15 hours and comforts for the 24-man crew included bunks for rest and hot meals prepared in the galley.

Hunting for tropical storms was the easy part. We remained low, around 1500', so our observers could look for white caps moving against the Trades. Persistent easterly winds were normal at these latitudes; any time we observed a westerly wind, we knew we had a storm-in-the-making. Our search radar was good out to 200 miles and if radar showed a closed rotation, we had a tropical storm, and that was a game changer—a scouting flight became a storm flight. From that point on we provided both the Hurricane Center and naval headquarters with data for their warnings and forecasts.

The atmosphere inside the eye is a dead calm but some of the world's worst turbulence is present in the eyewall and rain bands surrounding the eye. We entered the eye every four hours, and since the Navy was interested in what was happening on the surface, we made each eyewall penetration at 500' to let the meteorologist on board observe the sea state and estimate wind velocity. At that level, turbulence was bad anywhere near the storm and crew movement inside the plane ceased; everyone was strapped down. Eyewall turbulence would be severe-to-unbelievable, thumps in rapid succession with the radio altimeter showing how we bouncing 200' up and down. Observers back aft reported that the wings were flapping, the tips flexing four-feet up and four feet down. The ride felt like what rodeo bull-riding looks like, and it lasted a lot longer. Sometimes it felt like we were free falling; I could only hope we stopped at some level above the ocean.

The rain seemed to be solid water; it was like flying into Niagara Falls. At first, I wondered how the engines could possibly keep functioning, but somehow the carburation separated air from water

and they never missed a beat. (The Super Connies' engines were the epitome of reciprocating engine engineering. They were extremely complicated with hundreds of moving parts. Eventually I would have seven in-flight engine shutdowns, but I encountered no engine problems on storm flights.)

Keeping the aircraft right side up and out of the ocean was the real concern. We made at least two and possibly three each storm flight depending on how far from base we were. It was hard, hot work, my flight suit would be soaked and I would lose 5-7 lbs. on a typical storm flight. I made at least 55 low-level hurricane penetrations during my four-year tour of duty.

I was never airsick. There were times that I could taste my last meal but it never got past my teeth. My fellow pilots were too busy to get airsick but things could get uncomfortable in the cabin. We were in the Tropics after all and the aircraft's air conditioning system was inadequate so it could be overheated as well as scary-to-terrifying back there. Airsickness was unescapable and once it happened the awful odor spread throughout the cabin and induced the condition in others. Some flights were just worse than others in that respect, and we had an ample supply of barf bags available on every flight.

These storms are as deadly as any foe the nation has faced. Over the centuries, they launched surprise attacks on our East and Gulf Coasts, disrupting transportation, wreaking structural damage over vast areas, and inflicting massive casualties. For fifteen years, we and the Air Force cooperated (they flew high and avoided the severe turbulence) in providing warning of the impending attacks and doubtless saved many lives. Together, the Navy, Air Force and Hurricane Center tried to attack the storms. That effort failed primarily because the amount energy involved in the storm cannot be affected, let alone controlled, by man, at this point in time.

There were fringe benefits to our recon efforts. On 22 July 1967, I was on a recon mission when a woman on Antigua suffered a life-threatening problem that was beyond the capabilities of the island's medical facilities. The unnamed storm was near Antigua and the airport was closed due to strong winds and heavy rain. A request for an immediate evacuation was forwarded to me via radio. This would be my first approach to the island's airport but I decided that I had to give it a try. My first approach resulted in a successful landing; the ambulance was waiting at the terminal, and my crew made the prostrate patient comfortable in a bunk. A letter from the patient's husband confirms that the timely evacuation saved her life.

I reported aboard in August 1965, just a couple of weeks after the officer I replaced, also an aircraft commander (a/c), had lost his plane due to storm damage. He was still shaken when he briefed me about his harrowing experience.

Squadron procedure was to enter the eye and remain for several minutes while the crew obtained meteorological data. Some low clouds may remain but air is completely calm in the eye of a hurricane and the crew could get up, walk around and relax. Eyes of tropical storms are dynamic, varying in size from a few miles to more than 40 miles in diameter over time. Our squadron doctrine specified that an eye must have more than a 10-mile diameter to be penetrated. However, the squadron's CO was along on this flight and he ordered the a/c to enter an 8-mile eye.

The aircraft commander (a/c) could have refused, and probably should have, but he complied with the CO's order and entered the eye. While in the eye, some crewmen undid their lap belts and left their seats. That was standard procedure, but this time the aircraft inadvertently re-entered the eyewall and the results were catastrophic. Crewmen were helplessly thrown around the cabin. Some

kissed the ceiling and then were slammed to the deck. There were plenty of sharp edges in the cabin and blood squirted everywhere. As the a/c struggled to regain control, the starboard wingtip tank was thrown from the aircraft and the resulting imbalance made control of the aircraft impossible. (The structural engineering was such that the aircraft's wings were strongest with the wingtip tanks filled with 600 gallons of gasoline so we normally entered storms with wingtip tanks filled.) Then, as the aircraft was turning over on its back, the port wingtip tank came off and the a/c was able to get out of the eyewall into calmer air. Serious injuries resulted but there were no fatalities. Damage to the Connie's airframe was unrepairable, and it was struck from inventory. That was the second naval aircraft lost while on a storm mission, in 1952, a P2V with a crew of 10 disappeared inside a hurricane.

Hunting, invading and tracking tropical storms was arduous, frequently dangerous work but the fact that we were saving lives while defending the area from attacks by hostile hurricanes was the source of great pride and satisfaction to all hands.

