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AVIATION SAFETY FROM COVER TO COVER
SPECIAL ISSUE
HAWAII

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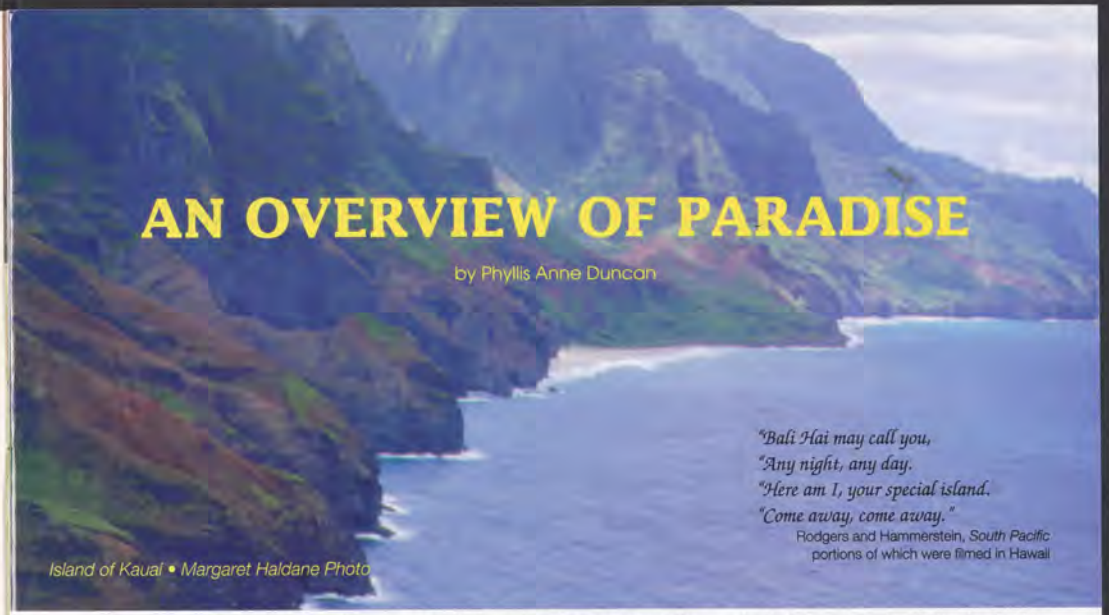
FLYING IN HAWAII • SPECIAL ISSUE

FEATURES

DEPARTMENTS

FRONT COVER: In 1986 a fountain of lava erupted from Kilauea Puu Oo, Hawaii Volcanoes National Park, Island of Hawaii. U.S. Geological Survey Photo. BACK COVER: Lava cascaded from Kilauea into the Alae Crater in 1969 before it ran to the sea to add acreage to the Island of Hawaii. National Park Service Photo.

Winner of the National Flight Standards Service Excellence in Public Awareness Award



AN OVERVIEW OF PARADISE

by Phyllis Anne Duncan

"Bali Hai may call you,
"Any night, any day.
"Here am I, your special island.
"Come away, come away."
Rodgers and Hammerstein, *South Pacific* portions of which were filmed in Hawaii

Island of Kauai • Margaret Haldane Photo

Paradise. It seems that ever since we were kicked out of it—so one story goes—we've tried to return. And in that quest, "paradise" becomes one of those overworked words, trite and applied to things that do not and cannot rise to the definition. We're lucky here in the U.S.; we have many forms and kinds of paradise, and one of them is our 50th state, Hawaii.

To say that Hawaii is beautiful is to understate the obvious. It is a pristine beauty, a wild beauty, and an unforgiving beauty. The scenery is so inviting and breath-taking that it is difficult to believe that this true paradise can kill, but it does. One of its victims is the unwary pilot. What we hope to do in this issue is provide an overview and some concrete information that any pilot in Hawaii (new or experienced) or any pilot visiting Hawaii can use to make a trip to paradise the joy it is supposed to be.

Let's begin with a little history.

Geological History of the Hawaiian Islands

The Pacific "Ring of Fire" is a chain of active, dormant, and extinct volcanoes that reaches from the tip of Peru in South America northward through Central and North America then southward from the Aleutians to Japan and the South Pacific. The "Ring of Fire" is caused by the relentless traverse of the Pacific Tectonic Plate northward, volcanoes erupting where the Pacific Plate butts up or rubs against another plate; i.e., the Earth's crust is not one solid piece but rather a series of plates that float on the planet's molten core. Where the plates intersect violently, the molten core reaches the surface in the form of lava. For you geologist readers out there, I realize that is a fairly simplistic portrayal of a very complex interaction, but, hey, I'm a pilot, all right?

In the center of the "Ring of Fire" is the usually placid Pacific Ocean, but in the middle of that millions of years ago, a "hot spot" formed. Around six million years ago, the cone of cooling lava broke the surface of what was to be called the Pacific Ocean and formed what eventually would be named the Hawaiian Island of Kauai. As the Pacific Plate continued northwestward and the "hot spot" ebbed and exploded again and again, the remainder of the Hawaiian Islands—Oahu, Molokai, Maui, Lanai, and the Big Island of Hawaii—were formed. As the tectonic plate dragged its newly formed island off the Pacific "hot spot" the lava cooled, and the volcanic rock and ash formed fertile soil. Soon the formations were lush, verdant islands in the middle of a vast and overwhelming sea.

The islands sat there uninhabited and virtually unknown until the eighth century A.D. when people from Polynesia (specifically the Marquesas first and later the Society Islands), further to the south and west in the Pacific, followed their gods and goddesses in primitive outrigger canoes to the islands they were to occupy and make their home. The "hot spot," still erupting on the largest and newest of the islands, was believed to be their goddess, Pele, who sent forth lava and smoke to punish her people when they neglected their worship of her. The people flourished among the islands, eventually settling almost all of them. They lived in what was, for them, paradise, believing they were the center of the universe, the only inhabitants of this water world until 1778 when Captain James Cook, Royal Navy, "discovered" the islands that for a while would bear his name.

Historical Overview

Because the Hawaiians were a welcoming people—they usually reserved their violence among their various tribes—they accepted Cook and his sailors, who recognized the beauty and potential wealth of the islands. The islands were then set on a course which some believe brought civilization to the uncivilized and which some believe was the downfall of the true Hawaiian culture. Indeed, some believe this may have been heralded by Cook's fate in the islands. While Cook's ships were undergoing repairs, some native Hawaiians, impressed by Cook's ships and small rowboats, stole a small boat, which served as one of the ship's lifeboats. Cook sent marines to kidnap the recognized ruler of the Hawaiians, Kalaniopuu, intending to hold him hostage until the boat was returned. A scuffle ensued between the Royal Marines and Kalaniopuu's warriors, the marines fired their guns, and the Hawaiians attacked in full force. Cook was killed at the water's edge.

After Cook's "discovery" merchants and missionaries followed, bringing commerce and prosperity, though not entirely for the native Hawaiians. Lands were bought for ridiculously cheap barter or simply claimed by incoming immigrants. Sugar became "king," and the native Hawaiians suffered not only from "exotic" diseases such as measles and chickenpox brought by the settlers but also became virtual slaves to the merchants and farmers.

Since 1778, Hawaii has been a kingdom, a republic, a territory of the U.S., and finally a state. The Hawaiian Islands have become a part of the U.S. and hold a very important place in our history and the history of our democracy. December 7, 1941 is as significant and important to the Hawaiians as it is to the rest of us.

Aviation History

Hawaii has a rich aviation history as well, which you can learn about at the Pacific Aerospace Museum, in the terminal of Honolulu International Airport. (The Museum, which opened in 1991, is an interactive learning center that commemorates aerospace achievements in the Pacific.)

According to local lore, Hawaii's aviation history began in pre-history, when one of their gods granted his son, Maui, the ability to fly on wax and feather wings. The story is remarkably similar to the Greek myth of Icarus and Daedalus and is just as fanciful. What can be authenticated is that Hawaii's aviation history began as the world's aviation history did—first with a balloon flight. One hundred years after the Montgolfiers flew a balloon in France (1785), some intrepid souls made an ascent in Hawaii. The first powered airplane arrived by boat in 1910, and the first commercial flights inter-island began in 1920. Several of those first commercial operators still fly today under the recognized names of Aloha Airlines and Hawaiian Airlines, among others.

The 2,500-mile distance from the mainland to Hawaii was considered insurmountable until 1925 when Navy Commander John Rogers piloted a PN9 from California to Hawaii—sort of. Rogers missed his last checkpoint—the last of a string of Navy ships providing navigational guidance—and had to ditch 300 miles short of Hawaii. Newspaper headlines in Hawaii and the mainland declared he and his crew "lost at sea," but they had actually ripped the fabric off the wings and fuselage and made sails. Several days later they sailed into Honolulu on their makeshift boat.

In spite of not quite making the whole trip by air, Rogers proved the possibility of flight from the mainland to Hawaii, but it was the Dole Air Races, begun in 1927, that proved that regular flights between the mainland and the islands were safe and feasible. It wasn't long after that Pan Am's famous Clipper Ships began regular service. Now almost hourly flights from the mainland arrive at Honolulu and airports on the other islands.

Aeronautical Challenges

In Hawaii there is a "clash," if you will, between the high-tech and the primitive, a cycle that resonates from Cook's huge, masted ships encountering the natives' outrigger canoes. Today it is modern aircraft operating in "some of the most primitive areas on the planet," according to the FAA's Honolulu Flight Standards District Office (FSDO).

The Hawaiian Islands have over 1,000 miles of coastline, and the islands themselves from Kauai to Hawaii span an area of the ocean 400 miles long—approximately the distance from Cleveland, OH to Washington, DC. Some areas of the islands are absolutely pristine and, consequently, offer the most photogenic scenery anywhere in the world. That scenery has drawn movie makers countless times and also, today, thousands of airborne tourists in private or commercial sightseeing flights.

Hawaii has an active volcano that periodically creates more land mass for the Big Island, the highest sheer cliffs in the world on Molokai, 1,000-foot waterfalls, and the "Grand Canyon of the Pacific," Waimea Canyon on the island of Kauai.

Naturally, anyone would be tempted to "strike off" on one's own to explore and to appreciate the beauty these islands have to offer. Particularly, if you are a pilot, the desire to unfetter yourself from a tour guide—even an airborne one—is overwhelming. It is a desire that can be accomplished with careful planning and caution.

Hawaiian Meteorology

One reason people who live there call Hawaii "paradise" is its moderate temperatures. However, these are islands in the middle of a huge ocean, and they have a complex and ever-changing meteorology. As with anywhere, the adage for Hawaii can be, "If you don't like the weather, just wait a while." Because of the presence of moist air, which is heated by warm currents from the water, and intense solar radiation, a day can start cloudless and bright. Literally, within minutes, uplifted warm air forms clouds at mountain tops and inside passes. Without knowing the ins and outs of these passes, you can become trapped very quickly with no where to climb and no room to turn.

A full spate of weather services from briefings at a flight service station to automated observations is available to pilots and is essential to safe operations in the islands, especially for inter-island flights.

Though not exactly meteorological, darkness is a particularly singular concern of pilots operating in Hawaii. Again, large areas on the islands remain unsettled with few horizon-defining lights. With the dark ocean as a backdrop and the high terrain covered with dark vegetation, discerning a horizon at night is very difficult for those not practiced in night navigation. Lights on the islands themselves are sparse enough that reversing land and lights with sky and stars can happen very easily unless a pilot heeds the aircraft's instruments closely. In the article on page 6 where we conducted an accident analysis, you will see that several of the most serious accidents happened at night and were usually collisions with rising terrain.

Clouds are a near-constant feature on each island's mountain tops or ridges. On a flight from Oahu to Kauai, some 65 nautical miles apart, Kauai became visible as a dark swath on the horizon, its upper reaches shrouded in near permanent clouds. It resembled nothing less than what it was once used for—a prehistoric vista that was home to dinosaurs and King Kong. Visibility along the coast and beneath the clouds was good, but they masked terrain and obstructions the unwary could encounter. Kauai also "boasts" the wettest spot on the face of the earth—the 5,200-foot summit of Mt. Waialeale where 460 inches of rain falls each year.

Topography

Each island is, of course, unique, but there are also certain similarities. Also, the islands contain every type of topography found on the planet (except a glacier, of course), just in miniature. The islands are considered mountainous terrain, which mainland pilots may forget because of the tourist representations of nice, flat beaches. There are rain forests and deserts, valleys, steep gorges, old and new lava fields, extinct and active cinder cones, pasture, and farmland. The most important thing you can do to prepare yourself on the mainland to fly in Hawaii is get some mountain flying experience, with concentration on the unique characteristics of mountain operations: density altitude, turbulence, and visual illusions caused by sloping terrain.

All of this topography combines to provide the eye with beautiful, sometimes primitive scenery, and one thing that becomes readily apparent as you overfly the islands is that if you were to have an emergency which forces an off-airport landing, your choices may be limited. In some cases, the only choice may be to ditch in an ocean with strong currents and hostile aquatic fauna. The beaches wide enough to use for an emergency landing strip are usually full of people, and the convolution of the heavily eroded, volcanic terrain doesn't offer many safe off-airport landing possibilities—unless you're in a helicopter that can autorotate into a fairly small area.

The topography of mountains and ridges interspersed with valleys means pilots have to contend with a venturi effect, sometimes extremely turbulent, when flying through passes or valleys. One airline captain friend of mine recalls taking his family for a visit to Hawaii when his children were young. He loaded them into a Cessna 172 and tried to fly into the crater of the extinct Haleakala volcano on Maui. The highest peak of Haleakala's rim is 10,023 feet, and the captain said the turbulence and downdrafts in the "gaps" leading into the crater were the worst he'd ever encountered in any aircraft.

Conclusion

As we'll see over the next several articles, any type of aviation activity you'd like to experience you can find in Hawaii. And you can complete your Hawaiian aviation adventure with planning, caution, and plenty of information from the local experts.

Let the journey begin, and, as the Hawaiians would say, "Aloha!"

Hawaii continues to make aviation history with the arrival of Linda Finch in her Electra on the penultimate stop of her Amelia Earhart around-the-world commemorative flight. (Margaret Haldane photo)

Something for Everyone

Story and photo
by
H. Dean
Chamberlain

The Island of Oahu

Hawaii is everything the travel agencies say it is and more. From towering waterfalls along ragged, rocky cliffs to sparkling beaches to lush green tropical trees to hot melting lava, Hawaii has it all. Hawaii is a natural paradise that offers something for everyone. Aviation is one of those things. From airplanes to helicopters to gliders to parachutes to hang gliders to ultralight vehicles, there is something for everyone who loves to fly in Hawaii.

Visiting pilots can expect a check-out of their flying skills that will include a local area checkout. If possible, bring proof of a current flight review to help expedite things. If you plan on flying out of Honolulu, you can expect a Class B airspace checkout that will include local VFR arrival and departure routes. Although we tend to think of Hawaii as an island paradise, its terrain includes 1,000 to 2,000-foot high cliffs that end in the ocean as well as mountain peaks that top almost 14,000 feet. Add in strong winds and inter-island over water flying, and you have some interesting flying conditions that combine both mountain flying techniques and strategies as well as sea-level flying, so it is important to get a good area brief as part of your aircraft checkout. When flying off-shore, pilots always need to do the best preflight of their lives. You should also make it a point to ask questions about anything you don't understand. The answers could make your flights more enjoyable and safer.

Recently, I had the opportunity to fly with David Kraul, an instructor at Anderson Aviation, Inc., at the Honolulu International Airport, and to meet Bill Anderson, the company's president. Since they knew I was working on an article for this issue, they shared their knowledge of flying in Hawaii. Kraul, who was born and raised in Hawaii before leaving the islands to continuing his flying career in Europe, continued to share his knowledge and expertise as we flew from Honolulu International Airport on the island of Oahu to the islands of Molokai and Maui and back.

Flying in Hawaii is unique for many reasons. The least of which is the fact that Hawaii is the only state made up entirely of islands. Many of its volcanic peaks top out thousands of feet above sea level. As mentioned earlier, many of the islands have rough, inhospitable shoreline segments that make it difficult or impossible to safely land on them in an emergency situation. The only option may be landing in the sea which is why we took off and flew with our inflatable life vests on. A technique Kraul recommends whenever going off-shore.

As we climbed out of Honolulu International, Kraul pointed out some of the best emergency landing sites near the airport and over Honolulu. Not surprisingly, most were golf courses. As in other major metropolitan areas, golf courses and public parks may be your best emergency landing sites in Honolulu and other places in Hawaii.

Add in the possibility of moderate to severe turbulence downwind and around some of the islands and you have good reasons to make sure your checkout pilot gives you a thorough local area brief. You should pay attention to the part on local weather and orographic cloud formations.

To emphasize the importance of proper flight planning and good piloting skills, Kraul told of a foreign couple who had rented a C-172 to fly from Oahu to the island of Kauai. The distance is about 65 plus nautical miles (NM) over water. For some unknown reason, the aircraft was lost at sea. Did the aircraft have a mechanical problem transiting the Kauai Channel, or did the pilot become lost and fly out to sea until the fuel ran out? No one will ever know. The aircraft was never recovered. The risks are real.

Kraul said although it is possible in many areas to see from one island to another, it is important for pilots to be able to navigate accurately because you may not always be able to see from one island to another. For example, as in the case of the couple lost at sea, you can't see from Oahu to Kauai even in mid-channel because of the distance involved. Add in the possibility of low clouds developing between any of the islands, and the risk of becoming lost becomes greater. And because clouds can develop and remain over water, the presence of clouds does not always indicate land. He said accurate VOR and dead reckoning navigation are important when flying inter-island. Being able to file IFR is a great help.

When flying inter-island, VFR pilots have an interesting choice to make. Kraul said pilots of small, single-engine aircraft have to decide whether they want to try to climb high enough to be able to glide back to land, or they can stay low beneath the clouds that average about 2,500-foot ceilings and fly direct. Add in the normal trade winds of 10 to 20 knots from about 060 degrees, and it makes for an interesting decision. Kinda makes you want to do a good preflight and wear your life vest.

Equally important is being able to use all of the safety services provided by FAA. Kraul strongly recommends that pilots obtain a good weather briefing and file a flight plan. Pilots flying VFR inter-island should also use the Island Reporting Service (IRS) provided by the Honolulu Flight Service Station (FSS). (See page 11 for a description of the service.)

The importance of good communication skills can't be over-stressed in Hawaii. Communications is important for SAR purposes. Because Hawaii is famous for its great natural beauty, rugged coasts, valleys, and high waterfalls, tourism is another important reason pilots need to maintain a careful radio watch. Dozens of fixed-wing and helicopter flights are made daily around the islands so that tourists can see the wonders of Hawaii from the air. And since a rental pilot may want to see the same exotic sites, the pilot needs to monitor the appropriate frequencies for the respective areas to help avoid a possible midair. Kraul said it is important for all pilots to watch out for traffic, monitor the specified frequency, and to know where the waterfalls and other sightseeing locations are to avoid a midair. By knowing the locations of such sites, he said pilots can anticipate where to find other aircraft transiting the area. If possible, the pilot should ask his or her FBO about any known sightseeing approach and exit routes in the area the rental pilot wants to fly in. When flying over significant sightseeing areas, pilots must remember to fly their aircraft. It is hard to watch out for traffic and fly the aircraft while being a tourist.

Kraul said pilots can expect to find a lot of traffic in convergent zones such as the one over Koko Head and the Koko Head VOR on the eastern shore of Oahu. Convergent zones are areas where a lot of traffic exist as aircraft go offshore or come ashore at the narrowest point between the respective islands. Convergent zones also exist around areas where terrain features, such as mountains, funnel aircraft into narrow avenues of approach. Sightseeing areas are another example of a convergent zone.

Terrain can also get your attention in other ways. As we flew around the south coast of Maui and approached Maalaea Bay, we hit moderate turbulence. The reason was the venturi effect caused by the wind funneling between the low land connecting the two high mountainous areas that make up Maui. One of the mountains peaks out at 5,788 feet, and the other one tops out at 10,024 feet.

Because of the mountainous terrain in Hawaii, wind shear and turbulence are possible miles downwind of many of the islands when a strong wind is blowing. With mountains ranging in elevation from several thousand feet to almost 14,000 feet, pilots need to be aware of the dangers of wind shear and wind-related turbulence when taking off, flying, or landing near mountainous areas.

Another area where we experienced turbulence was flying from Honolulu International Airport out to Koko Head and back as we flew downwind of the mountains that form Oahu's eastern tip of the island. Since the trade winds are constantly blowing most of the year in Hawaii, pilots need to be always alert for wind related problems and especially when the winds are 30 or more knots. These strong average winds also need to be factored into all flight plans. More than one pilot has run out of fuel at sea because of unexpected head winds.

To help alert other pilots to wind turbulence and other weather related conditions around the islands, pilots are asked to report weather conditions to the FSS when conditions are not as briefed. As outlined in the *Aeronautical Information Manual* (AIM), pilots are encouraged to give pilot weather reports (PIREP's). Kraul used a preprinted PIREP form when he made his report to the FSS. Chalk one up for being prepared. The form also reduced the amount of time needed to transmit the report because the FSS specialist didn't have to ask Kraul for any missing information.

These are only some of the important safety tips provided by Kraul and Anderson. Space doesn't permit listing all of the advice they and other operators offered. For some of the best tips on flying in Hawaii, pilots can contact the State of Hawaii Department of Transportation Airports Division and request a copy of a booklet titled *Hawaii Airports and Flying Safety Manual* (See the article, "Island by Island," on page 10).

Pilots can also contact the FAA FSDO Safety Program Manager, Ms. Tweet Coleman by e-mail at Tweet.T.Coleman@faa.dot.gov or phone her at (808) 837-8307. She will be glad to help anyone operate safely in Hawaii. Between her and the volunteer aviation safety counselors that work with her in the FAA's Aviation Safety Program in Hawaii, one of them should be able to answer any questions you may have. They all work hard to help every pilot in Hawaii fly safely in the islands. Give her a call.

Finally, for pilots flying inter-island, no safety article would be complete without mentioning the need for appropriate water survival equipment to be onboard the aircraft. It is recommended that all passengers and pilots flying in small general aviation aircraft wear an approved inflatable flotation device when operating off-shore. Each should know how and when to use the life vest if the aircraft goes into the water. An inflatable life raft large enough to hold all persons onboard is also recommended.

Have a safe flight in Hawaii.

ACCIDENT ANALYSIS
1995-1996

by Phyllis Anne Duncan

Editor's note: Some data in this article are classified as "preliminary," pending completion of the investigations and assignment of probable cause.

For the most recent two-year period, 1995 and 1996, there were 23 accidents among the islands comprising the State of Hawaii. Eighteen accidents involved general aviation, and five were aircraft operating under FAR Parts 121 or 135. Of the 23 accidents, six were fatal (26%); five of the fatal accidents involved general aviation (22% of total accidents and 83% of fatal accidents). One accident was a midair collision involving two general aviation aircraft; however, though one aircraft was destroyed and one substantially damaged, there were no injuries to the two pilots and six passengers.

The six fatal accidents accounted for 14 fatalities, 13 occurring in general aviation operations and one in FAR Part 121/135 operations. Six people incurred serious injury, three in general aviation accidents; three in FAR Part 121/135 accidents.

Ten aircraft were destroyed, nine of them general aviation aircraft; one an air carrier aircraft. Twelve aircraft were substantially damaged. Of them, nine were general aviation aircraft, and three were air carrier aircraft. One air carrier aircraft sustained no damage, though a flight attendant received a serious injury from turbulence.

The 23 accidents involved 16 airplanes, seven rotorcraft, and one glider. Probable cause has been determined in 16 of the 23 accidents: Pilot error (of some form) was cited 14 times; mechanical failure twice.

Of the 16 accidents where probable cause was determined, 19 pilots were involved: one student pilot, two private, 10 commercial, and six ATP. The total hours showed a low of 30 (student pilot) and a high of 28,115. Average total time was 5,969 hours. Total time in make and model ranged from a low of two to a high of 10,000; average total time in make and model was 1,687 hours.

Twenty-one accidents occurred in visual meteorological conditions (VMC), and two occurred in instrument meteorological conditions (IMC). The two accidents occurring in IMC were both fatal, accounting for one-third of the total fatal accidents.

Twelve accidents occurred in daylight, four at night (one "bright" night), and one at dusk. The remaining accidents, still in the preliminary stage of investigation, are listed as "not reported" until final determination of probable cause.

Nine accidents occurred during Cruise, five during Taxi/Maneuvering, three during Landing, two each during Approach, Takeoff, and Descent, and in one accident Phase of Flight was not reported.

The make/model of the seven rotorcraft—all helicopters—involved in accidents were: five HU-369 and two B-206. The make/model of the 16 airplanes were: ATR-42-300(1), CE-150(1), CE-172(1), CE-310(1), CE-402B(1), DHC-6(1), DHC-8(1), EMAIR MA-1B(1), GA-AA1B(1), MO-20J(1), PA-23-250(1), PA-28-151(1), PA-28-181(1), PA-30-30(1), PA-34-200(1), and one WACO. The glider involved in an accident was a Schweitzer SGS-2-33A.

ACCIDENT ANECDOTES

Dark Night, High Terrain

The 1,045-hour Commercial pilot, ASEL and AMEL, with an instrument rating departed Kahului on the island of Maui at 0400 local time intending to fly to Kona on the Big Island. The night was described by witnesses and an airline captain who took off after the accident as "very dark." The CE-310 was seen by witnesses heading into the Iao Valley and then was seen impacting the southeast side of the valley. There was an explosion and fire, and the accident was fatal to the pilot, the only one on board.

The weather was VMC, wind from 120° at seven knots, and the visibility was 15 miles. The height of any clouds above the ground was 4,000 feet. There were no restrictions to visibility and no precipitation.

The accident report indicates the light condition as "dark night" and the terrain condition as "mountainous/hilly." The pilot was cited for inadequate preflight planning/preparation and failing to maintain adequate altitude/clearance.

Fuel Exhaustion, Ditching

The 1,000-hour private pilot, ASEL, without an instrument rating, departed Kona on the Big Island bound for Honolulu on Oahu in a PA-28. The pilot took off at 0900 local with two passengers on board. The weather was VMC, the wind from 60° at 14 knots, visibility 20 miles. It was daylight, and there were no restrictions to visibility and no precipitation. Cloud height above the ground was 2,400 feet.

During the flight the pilot called ATC and reported a rough running engine. Subsequent calls indicated the engine was "intermittent" then that the engine had failed. Radio and radar contact was lost, and another pilot spotted the aircraft upside down in the water. Two victims were found fatally injured, and the third remains missing.

Witnesses indicated that the pilot was "anxious to return to Honolulu." The aircraft was fueled three days before the accident, flew locally for about one hour, and had no record of subsequent fuel purchases before departure. The pilot had two previous occurrences where he had been forced to land off-airport because of low fuel.

The probable cause was the pilot's inadequate preflight planning for the over-water flight and inadequate fuel consumption calculations.

Dark Night, Fatigue

The pilot departed Oakland, CA for a planned 13-hour flight to Kahului, HI in a PA-23. As planned, the arrival would occur in darkness. The pilot provided hourly position reports for more than half the flight, but none were received for the final five hours. Air traffic controllers repeatedly called the aircraft without response.

The flight took an hour and one-half longer than planned, and the aircraft crashed 90 nautical miles southeast of the intended destination in the jungle of the Big Island of Hawaii. Investigation revealed that the aircraft was configured for cruise flight, and no mechanical problems were found. An autopsy of the pilot—a 22,000-hour ATP who was a flight engineer—revealed no medical conditions that would have prevented safe flight.

The accident occurred in visual meteorological conditions, but the night was described as "dark." Based on the length of the flight, the lack of mechanical problems in the aircraft, and the configuration of the aircraft for cruise flight, investigators surmised that the pilot fell asleep at the controls. Contributing factors were inadequate preflight planning and the darkness.

Inadequate Fuel Planning

The pilot and one passenger departed Honolulu with 48 gallons of usable fuel in the PA-28. The trip was intended as an inter-island, personal sightseeing flight. The first stop was on Molokai, where the aircraft stayed for about 15 minutes before departing. The next stop was on Maui, and again the aircraft remained on the ground for a period of time, approximately 40 minutes, before departing. The aircraft next arrived in Hilo 47 minutes after departing Maui. The two travelers stayed on the ground for about 25 minutes then departed for a nonstop return to Honolulu.

One hour and 20 minutes into the return to Honolulu, the pilot noticed the left fuel gauge decreasing rapidly. He checked the aircraft's exterior for signs of fuel leakage, but found none. When the engine began to lose power, the pilot switched tanks, contacted ATC, advised them of the state of his fuel, and requested radar vectors to the nearest airport. The pilot was given a heading to an airport on Lanai, 27 miles away, but before he could reach the island, the engine quit. The pilot ditched the aircraft in the ocean, and he and his passenger were able to exit before the aircraft sank in 600 or more feet of water. The two—with no flotation or survival gear—remained in the water for 25 minutes until they were picked up by a passing boat.

The pilot told investigators that on the ground at Hilo, he estimated that he had 26 gallons of fuel remaining and that he believed 22 gallons would be enough to "easily be able to fly back to Honolulu and have a 30-minute reserve." Fuel was available for purchase at all stops the pilot made before departing Hilo for Honolulu. Of the five hours from the time of departure to the time of the ditching, the aircraft had been airborne for three hours and 43 minutes. The distance from Hilo to Honolulu is approximately 280 miles, mostly over water.

Investigators cited inadequate fuel planning and failure to refuel.

Darkness, Inadequate Supervision by Pilot-In-Command

The pilot and co-pilot departed Mue to transport mail to Honolulu on a non-scheduled FAR Part 135 cargo flight in a Cessna 402. The pilot in command was in the left seat, and a pilot-rated cargo loader was in the right. Another cargo-loader was on board, but not in a seat or in a restraint system. The PIC was an ATP and CFI.

After takeoff the aircraft began to turn and struck rising terrain only about 15 feet above the airport elevation and just 3/10 of a mile abeam the departure end of the runway. The aircraft was destroyed, one person was killed, and two were seriously injured.

The company routinely allowed pilot-rated cargo-loaders to fly the right seat to build multi-engine time (considered compensation) under the supervision of an experienced PIC. Investigation revealed that the pilot in the right seat was flying the aircraft, and the instrument panel on the right side was equipped with only EGT gauges; i.e., no flight instruments. The weather was VMC, but there were clouds at 5,000 feet, and the night was described as "dark" with no moon. There was no visible ground illumination in the vicinity of the impact.

Investigators cited the copilot for "failure to establish and maintain a positive rate of climb." The pilot was cited for "inadequate supervision...by failing to ensure that proper altitude was obtained and maintained." Related factors were darkness, lack of visual cues, and visual illusion—possibly the "black hole" effect.

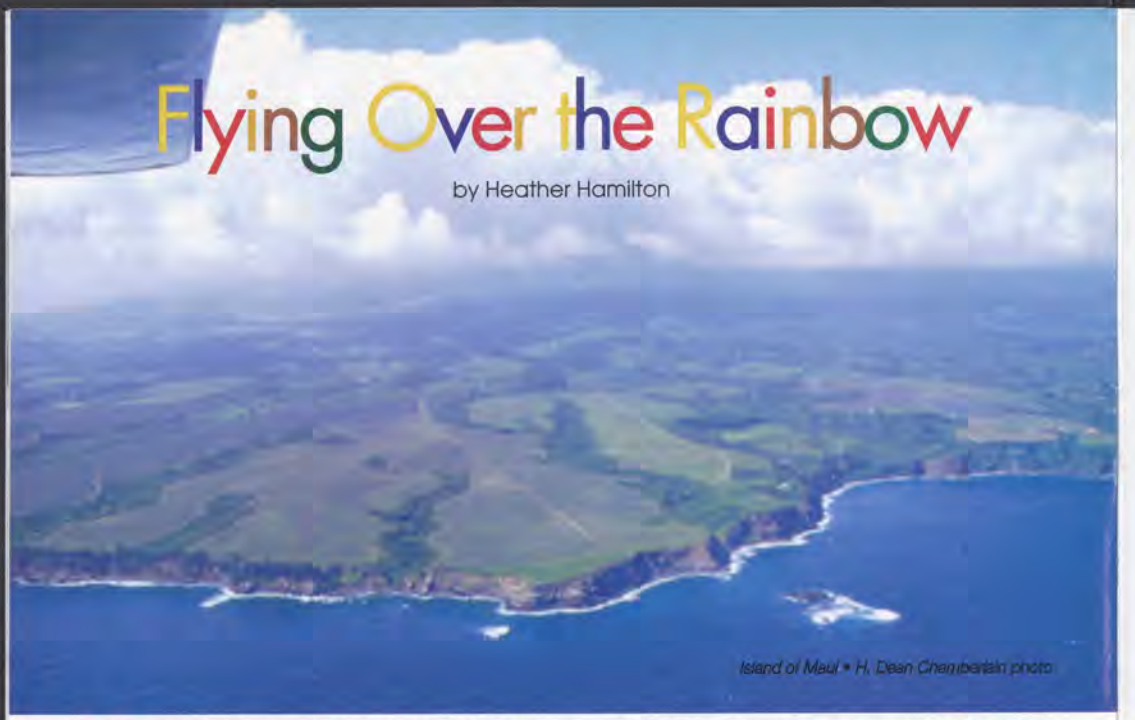
Terrain, Downdrafts

After being towed to 1,000 feet and released, the glider pilot climbed the Schweizer SGS-2-33A another 100 feet but was unable to locate an area of additional lift. He turned back toward Dillingham, and while flying an upwind course close and parallel to the north side of a ridge line, the glider encountered a downdraft. The pilot was unable to maneuver out of the downdraft, and the glider struck the ridge, on steep, rocky terrain. The glider was destroyed, and the pilot suffered minor injuries. The wind was from the southeast and gusty.

Investigators cited pilot error, indicating that the pilot allowed the glider to become too close to the terrain under gusty wind conditions and did not maintain adequate terrain clearance. The airline transport pilot had more than 15,000 hours but only two in make and model.

Flying Over the Rainbow

by Heather Hamilton



Island of Maui • H. Dean Chamberlain photo

Postcards from Hawaii portray images of beautiful beaches lined with swaying palms and emerald mountain ranges which rise directly from incredible ocean depths. Volcanoes pour forth molten lava and offshore reefs teem with schools of bright tropical fish. While Hawaii may seem like a VFR aviator's paradise, consider for a moment that those beaches are largely soft sand; the palms are permanently bent from strong prevailing trade winds; the mountains are lush because of regular rainfall; ash and steam obscure vision; and, chasing those bright fish into a reef environment, are large sharks.

Learning to fly in Hawaii is largely a wonderful experience and renting a plane is by far the best way to see the natural majesty the state has to offer. Pilots need to be aware that it is a very different environment; the state is designated mountainous terrain as topography ranges between 2,500 and 14,000 feet. The majority of airtime is spent in overwater operations and suitable off airport landing sites are few and far between. Unique departure and arrival procedures are predicated upon landmarks that may be well known to local folks, but not easily identified otherwise. A pilot must generally have at least a hundred hours in their logbook before they can rent an airplane. Even then, a fairly extensive check out should be expected with a minimum of one long crosscountry to include the airports of intended use. I was fortunate to be granted interviews with experienced counselors from the Honolulu FSDO, the Flight Service Station, and my fellow flight instructors. This presentation assumes that the reader has a good foundation, knowledge of FAR, great crosswind landing abilities, and a desire to fly over the rainbow.

WEATHER PATTERNS IN THE ALOHA STATE

Forecasting for the Hawaiian Islands is grouped into five different weather types: (1) trade wind weather, (2) tradewind/sea breeze cycle, (3) troughing weather, (4) frontal weather, and (5) Kona weather. Generally two weather types dominate; trade winds and Kona winds, so I have limited the discussion on weather to these two patterns as arrival and departure procedures and routes are predicated on one or the other.

Trade Wind Weather

Trade winds are defined as synoptic winds over the Hawaiian Islands with a mean hourly direction of east-southeast to northeast extending to approximately 6,000 feet. Northeasterly trade winds dominate Hawaiian weather most of the year. This persistent feature is a result of the semi-permanent East Pacific Subtropical High and its persistent ridge of high pressure that extends southwestward from the center to just north of the Islands. The location of the High determines the strength, depth, and duration of this predominant northeasterly wind flow.

The trade wind stream is the major cause of the variable cloudiness and rainfall experienced over the islands. It produces marked, sometimes dramatic, day to day weather variations as unstable shower areas/lines move across the state. During normal trade wind flow, rainfall is almost totally derived from orographic lifting of the trade wind air masses. Upslope motion on the windward side of the mountains causes the formation of cumulus which sometimes build to considerable heights. Showers usually begin on the windward and upper slopes and continue to the leeward side of the mountains. The amount of rainfall expected for any locale is related to the stability of the air, amount of vertical wind shear, distance from orographic lifting areas, time of day, and strength and depth of the trade flow. Heaviest rainfall occurs at night with the maximum around sunrise.

The trade winds are ordinarily stronger in the afternoon and lightest in the early morning. Except during heavy trades when there is little diurnal variation, winds at Honolulu will range anywhere from five to 25 knots over the course of a day. Trade winds can become gusty and the gust factor should be a consideration during flight planning.

The rugged and varied terrain of the Islands exerts the most influence on the speed and direction of trade winds. Around headlands, in exposed channels, and to the lee of some gorges, passes, and saddles, the trades may be much stronger and gustier than over open ocean. On Oahu, trade winds of 15 to 25 knots funneling down the Nuuanu and Manoa valleys often cause gusts to 35 knots offshore.

Kona Wind Weather

Kona winds take their name from the leeward coast of Hawaii, the Big Island. Although the Kona situation constitutes only about three percent of Oahu's annual weather, it is highly significant because it is one of the Island's major sources of thunderstorms and heavy rains. It is often quite still and hot with poor flight visibility. It generates weather in a direction opposite the trade winds and as a result the normal "Windward sides" experience Leeward trade wind type weather with downslope winds and heavy rain. "Vog" (volcanic ash from eruptions on Hawaii) is carried aloft and toward the Island chain which can reduce visibility further.

OVERWATER FLYING

The longest part of any flight between the Islands will be spent overwater, along rocky shorelines, or over the exposed ocean channels. Flying VFR at night is not recommended as there are few distinguishing features which can be used for navigation and makes search and rescue more difficult. The pilot should be familiar with ditching procedures and radio communications and should carry adequate safety equipment. Pilots should ask that their passengers wear their lifejackets and brief them on evacuation of the aircraft should it be necessary. All too often pilots fear that this will make their passengers uneasy, but it is far better that everyone have a clear understanding of the procedure before departure. A minimum of equipment includes a liferaft, life preservers (check expiration date), and flares. Other items I have carried over the years include a handheld marine EPIRB, (the ELT in the airplane is going to sink with it) handheld VHF radios, a small battery activated strobe light, a mirror, and black 50-gallon garbage bags. I have it on good authority that, should you climb into these in the water, you are a less likely looking target for sharks.

An extra note, the channels between the Islands often have ocean swells running between eight to 18 feet with secondary wind generated waves on top. In the winter, the North Pacific swell also adds its might to rough ocean conditions in the channels. If you are flying at night it is critical that you list flares or other signaling devices in the remarks section of your flight plan so that the Coast Guard will look for you in the event of an accident.

CONCLUSION

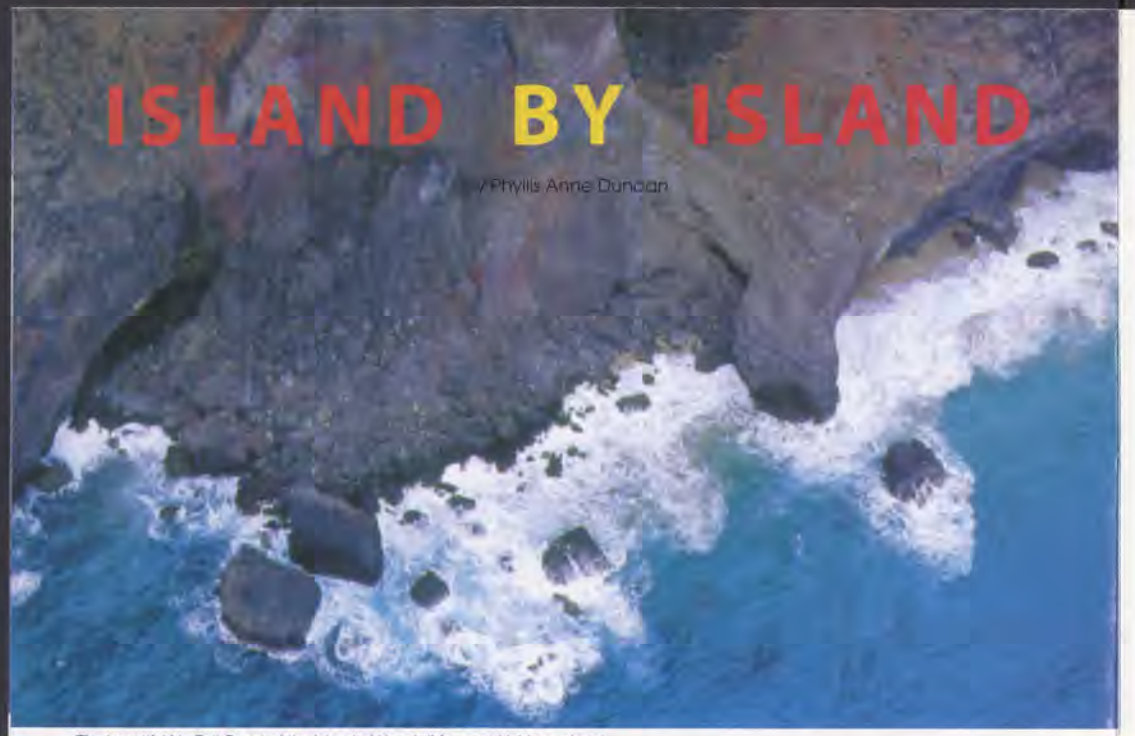
Flying in Hawaii is fun and breathtaking. You will see something different every time you fly and not enough can be said of the spectacular scenery. The flight schools, FSDO, and Flight Service are the best resources along with the publications available to ensure a safe and memorable trip. If you are planning on visiting a facility, call ahead for hours of operation and whether there will be someone available to help you. Don't consider doing anything you would not do flying at home, and look out for those rainbows!

Heather Hamilton is an ATP and CFI in Honolulu, HI. Author's Note: It is with much appreciation that I acknowledge the FAA's Honolulu FSDO and FSS and Hank Bruckner of Kaimana Aviation.

Kona Winds began the formation of highly turbulent altocumulus standing lenticular clouds, called "lenies" by the glider pilots at Dillingham Airfield, Oahu. (Margaret Haldane photo)

ISLAND BY ISLAND

by Phyllis Anne Duncan



The beautiful Na Pali Coast of the Island of Kauai. (Margaret Haldane photo)

In this article, we'd like to go over some of the unique aspects of each of the islands in the Hawaii chain, specifically dealing with state airports and some cautions about aviation operations on each island. A great reference you can obtain before you go to Hawaii is the Hawaii Airports and Flying Safety Manual, published by the State of Hawaii, Department of Transportation, Airports Division. The booklet is free, and the current edition is 1995-1996, though an update is being prepared. For your copy contact the Hawaii DOT, Airports Division, Honolulu International Airport, 400 Rodgers Boulevard, Suite 700, Honolulu, HI 96819-1880; telephone (808) 838-8701. From that same address, you can also obtain a copy of the Rules and Regulations of the State Airport System, which would be an excellent resource for your flight planning as well.

The Flying Safety Manual lists airport facilities, has field diagrams, traffic patterns, and details you'll need for making visual approaches to each state airport. You'll need to consult the Pacific Chart Supplement and NOTAM's for the most up-to-date information or for local conditions. And, of course, the information we're about to provide is just that—information. It doesn't take the place of current charts and other information necessary to meet the requirement of FAR § 91.103.

GENERAL INFORMATION

The overview of state rules and regulations we're about to provide applies to Hawaii state-operated airports only. Operations at non-state airports must be in accordance with applicable FAR, and there may also be local conditions or restrictions, such as noise abatement, that the pilot would need to be aware of. The local FAA Safety Program Manager at the Flight Standards District Office in Honolulu or an Aviation Safety Counselor, of which there are several on each island, would be the best resource.

When operating within five miles of any airport at an altitude below 2,000 feet AGL, pilots are asked to turn on landing or taxi lights to enhance visibility in heavily trafficked areas.

At non-towered airports, position reporting and using standard recommended phraseology during operations are other ways to enhance your safety in operations at any airport.

Taxiing

Some of these rules seem like common sense, but we've all seen people who are as reckless while taxiing as they are in their cars. Hawaii has gone a step further by regulating taxi operations at state airports to try and alleviate problems with runway incursions and ground collisions.

When a control tower is in operation at a state airport, a taxi clearance must be obtained from the tower before beginning to taxi. When the tower is not in operation or there is no tower, pilots must taxi to the run-up area by the shortest practical route and on the taxiway adjacent to the runway in use. Pilots may not taxi on an active runway when there is a taxiway available. Even at non-towered state airports, pilots may not cross any runway without stopping to look before crossing.

At towered airports after engine run-up, the pilot must turn the aircraft so that it faces the runway in use at a 90° angle from the landing direction then obtain the takeoff clearance from the tower. At non-towered airports just before takeoff, pilots must clear the area through 360° and pilots cannot position and hold on the runway in use if another aircraft is on base or final approach.

Takeoff

Pilots at state airports cannot take off until the runway is clear of landing aircraft or until an aircraft taking off is airborne. The aircraft must be at an altitude of at least 400 feet AGL before making any turns.

Traffic Patterns

At state airports pilots should fly the pattern established for that airport, found in either applicable FAA or commercial publications or in the Hawaii DOT's *Flying Safety Manual*. At some state airports it is essential that pilots fly the pattern on the side of the airport indicated for the particular landing direction. A non-standard pattern (i.e., right instead of left) may be established because of terrain, noise sensitive areas, military airspace, or to separate traffic from other aviation operations such as gliders, parachuting, etc.

At state airports general aviation aircraft should fly a rectangular traffic pattern 800 feet AGL over the terrain or at whatever altitude air traffic provides at a towered airport. Large aircraft should fly a circular traffic pattern at 1,500 feet AGL or as authorized by air traffic. Tactical jet aircraft should approach overhead at 2,000 feet AGL, make a level break, then continue in a circular pattern.

Entry into the small aircraft pattern should be the recommended 45° downwind entry, again unless air traffic instructs otherwise at a towered airport. Large aircraft should enter the circular pattern on a tangent or as directed by ATC.

When departing the traffic pattern, small aircraft should leave only after the first 90° turn and before reaching traffic pattern altitude at non-towered airports; otherwise, follow air traffic control instructions.

The standard right-of-way rules for landing aircraft apply, but at Hawaii state airports, pilots are advised to extend their patterns to keep a safe distance between aircraft.

Landing

Traffic in the traffic pattern must remain on a straight approach course when practical for the last 1,000 feet. Air traffic can issue deviations for this, i.e., s-turns for spacing. At state airports, aircraft should not turn to final if below 400 feet AGL. Again, the standard FAA right-of-way rules apply.

Parking

At state airports, aircraft must be chocked or have parking brakes set, and parking is only in designated areas. (One airport, Port Allen on Kauai, allows no overnight on-airport parking.)

Now, what happens if you break a state rule though it's not a violation of the FAR? Well, you won't be visited by your friendly FAA aviation safety inspector, but you might receive a citation or worse from the local law.

Maximum Landing Weights

In Hawaii's *Flying Safety Manual*, each airport diagram shows the maximum authorized landing weight for single-wheel type landing gear (S), dual-wheel type landing gear (D), and dual-tandem type gear (DT) with values in thousands of pounds. For example, D=70 means aircraft with dual-wheel type gear may land if they don't weigh more than 70,000 pounds. If aircraft exceed the maximum authorized weight for an airport, special permission must be obtained from the State Airports Division.

Many airports are built on old lava beds or on filled-in reefs, so the weight limits are critical to maintaining runways in safe condition.

Public Versus Private Airports

State airports in Hawaii charge no landing fees for non-commercial use. Paved runways are maintained in good condition by the state or are indicated otherwise in NOTAM's. Standard FAA markings are used, and each state airport has a segmented circle to show traffic pattern and landing direction.

There are non-public, private airports—some military but mostly agricultural—on Hawaii just as in the mainland, and the same trespass provisions prevail: Do not use them without the owner's prior written permission or only in an emergency.

Flight Plans and Flight Following

Every FAA inspector, air traffic personnel, flight instructor, or local pilot I spoke to in preparation for this issue said a number one rule *was filing a flight plan, especially for inter-island flights.* The Hawaii DOT says, "File it. Follow or amend it. Close it."

The flight plan is important for all of the usual reasons, chiefly being search and rescue operations if it should come to that.

Large portions of some of the islands are considered remote and uninhabited, and reaching some areas can take hours or days of climbing by a search and rescue operation. And, if you have to ditch...

For inter-island flights Honolulu (HNL) Air Route Traffic Control Center provides flight following, and the HNL FSS offers the Island Reporting Service. FAA inspectors who have investigated reports of lost aircraft say that "either or both are good life insurance."

Island Reporting Service

This service is available to all pilots with the following conditions.

- The pilot must request Island Re-

porting Service when filing a flight plan.

- Stopover flights aren't accepted but diversions from the specified course are permitted if the pilot indicates how long he or she will be in a specified area.
- The aircraft must have a functioning two-way radio.
- The route and the altitude selected by the pilot allows radio contact with the FSS.
- The service begins only after radio contact has been established with HNL FSS.
- The pilot must make enroute radio contact with the FSS at designated checkpoints and must provide a time estimate to the next designated checkpoints.

If the pilot misses a radio call over a designated checkpoint, the FSS will attempt to make radio contact. If the FSS cannot establish contact within 15 minutes, the flight will be considered overdue. Search and rescue operations will then be launched.

While enroute, if you have radio failure, tune 7600 on your transponder, land at the nearest airport, then contact HNL FSS by phone. If you don't, then the overdue aircraft process goes into effect.

This service is optional but strongly encouraged by not just us "Feds" but local operators as well. Some FBO's make it a requirement of renting their aircraft. Under the reporting service, the pilot in command is still responsible for the safety of the flight.

The only two places among the islands where the service is not available—essentially because of communications problems—is around Kauai and between Hilo and Kona via the South Cape.

Radar Advisory Service

At any time you can contact CERAP at the radio call "Honolulu Center" and request VFR advisories. Frequencies are shown on the chart or can be obtained from the HNL FSS when filing your flight plan. Pilots can also ask ATC for a hand-off to center for radar advisories.

Hawaii Weather Services

The Honolulu Flight Service Station Telephone Information Briefing Service (TIBS) is available on Oahu at 833-9440 and on 1-800-757-4469 from the other islands. Using a touch-tone phone, you can obtain pre-recorded weather information. HNL AFSS can also be contacted for a live weather briefing, and you can also visit it at Honolulu International Airport.

There are National Weather Service facilities on Oahu, Hawaii, Maui, and Kauai.

- Oahu Weather Forecast Office (808) 973-5282
- Hawaii Weather Service Office (808) 933-6941
- Maui Weather Service Office (808) 877-6825
- Kauai Weather Service (808) 245-3711

Island Cautions

Again, it's always best to check with local pilots for any local "idiosyncrasies," but here are some general and very unique cautions for the islands:

- On the Big Island of Hawaii, you can expect volcanic eruptions in the Hawaii Volcanoes National Park. These eruptions are not like Old Faithful; it is difficult to predict when they will occur. When the eruptions are occurring, left hand elliptical patterns will be established upwind of the eruption area for all aircraft. The minimum altitude above the area of eruption is 2,000 feet above the terrain. *Remain clear of smoke*, not just for possible volcanic ash damage but primarily to assure you don't encounter hidden terrain or other aircraft. Traffic information can be monitored on 122.9. When the volcanoes are erupting airborne tourist traffic—helicopter and fixed wing—will be heavy, and extra vigilance is required on everyone's part.
- On Kauai electromagnetic radiation exists continuously within 2,500 feet above an S Band antenna. The antenna is located at 22 07 N, 159 40 W near Kokee NASA Telemetry Station. The Hawaii *Flying Safety Manual* contains this dire warning: "Helicopters and slow speed aircraft may be exposed to direct radiation *which may be harmful to individuals and equipment*." [Emphasis added]
- On Oahu, there is an unmarked long wire antenna of four cables 7,300 feet long and stretching across Haiku Valley. The antenna's centerpoint is located at 21 24 24 N, 157 49 59 W. Within a 3,000-foot radius of this antenna and 3,000 feet above Kaena Point Tracking Station, there is continuous electromagnetic radiation. See the warning above.
- Also on Oahu, there are numerous hang glider operations from the surface to 1,500 feet between Makapuu Point and Waimanalo Beach. When flying in this area, remain one mile off shore.
- There are civilian and military parachute drop zones active at varied times of the day and encompassing a variety of altitudes. The designated drop zones are at Dillingham on Oahu, East Range/Taro Drop Zone, Hana on Maui, Kanes Drop Zone, Pokai Bay, and Puukapu Drop Zone. Contact the HNL FSS and consult current charts for the exact locations, active times, and altitudes to be used.

The sea has eroded eons-old cooled lava into these sheer cliffs on the Island of Molokai. (H. Dean Chamberlain photo)

Aircraft Noise

Aircraft noise is a particularly sensitive issue in Hawaii because of the many parks and native sacred areas. Several airports—notably Kahului and Hilo—have specific noise abatement areas, the information on which is available through FAA and commercial resources. Pilots flying in Hawaii should consider that any area surrounding an airport is noise-sensitive, and pilots should minimize their noise "footprints" within manufacturer and operational safety limits.

Sightseeing from the air is one of the best ways to view the beauties of the islands, but try to operate at the highest altitude practical. In reality, you'll see more in context from a higher altitude. If you operate at too low an altitude, you not only may be unsafe and subject to possible enforcement action, you'll be a bad visitor to this place of serene beauty. Also, many sections of national parks are considered sacred by the native Hawaiians, and they periodically hold ceremonies and services there. These ceremonies and rituals are considered religious and are NOT staged for the benefit of the tourists. You'd be upset at someone buzzing your sunrise service, so keep to the recommended altitudes over national parks, wilderness areas, etc. These areas are marked on charts in the usual manner, and the Hawaii *Flying Safety Manual* has illustrations of noise sensitive areas on the Big Island, Kauai, Maui, and Oahu.

VFR Direction of Flight

The VFR cruising altitudes and flight levels prescribed in FAR § 91.159 apply to flights conducted at more than 3,000 feet above the surface. In the Hawaiian Islands, because of the increasing amount of low-level, inter-island flights, the state "strongly recommends" that pilots fly inter-island at 1,000, 2,000, or 3,000 feet MSL when westbound, and 1,500 and 2,500 feet when eastbound. When eastbound, pilots need to be especially alert for tour aircraft at 1,500 feet.

THE GRAND TOUR - ISLAND BY ISLAND

In the past six months both Associate Editor Dean Chamberlain and I visited the State of Hawaii, and between us, we managed to fly to or over each of the islands. (Lucky Dean was on vacation; I actually had to work!) What follows is a breakdown, island by island, of interesting facts, a little history, and some aviation information. Distances mentioned are based on measurements taken from the current Sectional Aeronautical Chart (May 22, 1997 - November 6, 1997) for Hawaii.

Niihau - The Forbidden Island

The furthest west of the archipelago is Niihau, called "The Forbidden Island" because it is privately owned by ex-patriate New Zealanders. The 71-square mile island is a vast cattle ranch that is just 15 nautical miles overwater from Kauai. In addition to its cattle, Hawaiian tourist information lists its other most interesting feature as its sea shells. Its tiny, perfectly formed shells are used to make necklaces and bracelets sold as trinkets to us unsuspecting tourists.

No airports are depicted on the sectional chart, and the wealthy, reclusive family and its 266, mostly native Hawaiian, employees prefer their privacy. It is, however, a very beautiful sight from the air from Kauai.

Kauai - The Garden Island

Kauai is probably the most beautiful place I've seen to date on this earth. Granted, I haven't seen much of the planet as a whole, but I think I'd be hard-pressed to find somewhere that outshines it. Five hundred fifty-eight square miles in size, it is called the "Garden Island" because it is green—every shade, hue, and tint of green in your imagination and some beyond it. Sugar cane used to be the primary crop, but now it's coffee, grown in

well-manicured and neatly tended fields. Kauai is the oldest of the Hawaiian Islands and features the wettest spot on earth, Mt. Waialeale with nearly 500 inches of rain a year. Also on this island is the incredible Waimea Canyon, called the "Little Grand Canyon" or "The Grand Canyon of the Pacific." The canyon contains the entire state's only navigable river, the Waimea.

As with most of the islands, the population centers are close to the coast, as are the airports. On Kauai there are four airports, two towered, two non-towered. The main commercial airport is on the southeast coast at Lihue, a contract tower open 16 hours out of 24.

Lihue not only has a wildlife preserve on the airport for birds—creating a significant birdstrike hazard—but it also is a staging area for many of Kauai's helicopter tour operators. Fuel is usually available, but transient parking is limited. Arrangements must be made with the airport manager for an extended stay. A new general aviation ramp with increased parking is under construction.

Lihue has preferred routes for aircraft operating VFR. Inbound from the east, pilots should contact Honolulu Center on 126.5 for routing. Lihue Tower Manager Jeanne Crane says that flying in Kauai "is not for the novice." She cites the high volume of helicopter tour traffic, intimidating terrain, and the rapidly changing weather as factors that require an experienced pilot, an experienced Hawaii pilot at that. I agree. After flying to Kauai from Oahu in a *Travelaire*, then taking the standard helicopter air tour, I concluded that the only way to see Kauai from the air is by helicopter air tour. This is not to promote the air tour industry in any way; it's a safety issue. There is just so much air tour traffic into and out of the various spots of interest, that an extra aircraft would distract not only the non-tour pilot but the tour operations as well. There are also places that can only be appreciated by helicopter; trying to fly a fixed wing aircraft into some of the picturesque crevices and gorges would be fatal.

The advantage to working at Lihue Tower? Says Ms. Crane, "The view of the Kauai Channel and in the right season we can watch whales breaching."

Port Allen, non-towered and used mostly by agricultural aircraft and as a staging area for some of the tour operators, is on the southwest coast of Kauai, 15 nautical miles from Lihue. Waves crash on the rocks, and the spray makes rainbows on the airport. However, Port Allen is not lighted (although there is a lighthouse on the point), has no fuel or other services, and is restricted to aircraft weighing less than 12,500 pounds. As mentioned the helicopter traffic is heavy, and there is also occasional glider traffic. Both traffic patterns are on the south side of the airport.

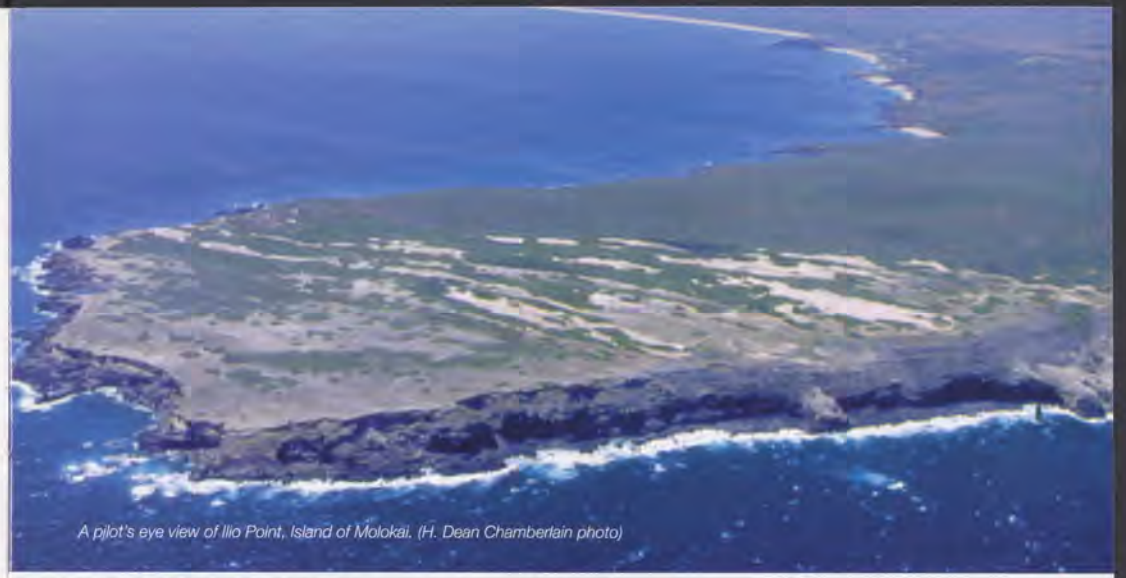
Princeville, on the north shore, is restricted to FAR Part 135, day VFR operations only. The fourth airport, on the island's western coast, is military—Pacific Missile Range Facility Barking Sands, which has a control tower. As with the mainland, these airports would be available in the event of an emergency.

Two-thirds of the circumference of Kauai is surrounded by Warning Areas 186, 188, and 189, so in addition to the high level of air tour traffic, you can expect military aircraft to be active as well. Check the chart for the controlling facilities of these warning areas.

A quiet—on this day—Kilauea vents steam on the Big Island of Hawaii. (Margaret Haldane photo)

Oahu—The Gathering Place

Some 65 nautical miles ESE of Kauai and at 618 square miles, Oahu is one of the smaller islands although it is the most populous. Of the State's nearly 1,000,000 inhabitants, more than 800,000 live on Oahu. Oahu is, of course, the site of Pearl Harbor, Diamond Head, and the world famous Waikiki Beach. It also has the most complex airspace among the islands. (See the article on air traffic services on page 20.) Though its terrain is not as high as on the Big Island, Oahu boasts plenty of obstructions to watch out for and plenty of aviation activity from parachute drops to hang gliding to parasailing to soaring to plain old flight instruction, not to mention air carrier and military traffic.



A pilot's eye view of Ilio Point, Island of Molokai. (H. Dean Chamberlain photo)

Honolulu International Airport has all the major services you'd expect from an airport of its size and activity. It is a U.S. landing rights airport and a Customs, immigration, public health, and plant inspection and quarantine station. Because of the location of Honolulu tower, you may be hidden from visual contact with tower during certain approaches and taxiing operations. Consulting approach charts, taxi diagrams, and the *Flying Safety Manual* for specific instructions is essential. There is also limited transient parking and a local requirement to operate with landing lights on while in the airspace.

When it's VFR and with the trade winds blowing, non-jet aircraft will be vectored to Runway 4R/L. If you request Runway 8L, you'll be expected to fly the ILS approach procedure. Aircraft on visual approaches to Runways 22L/R and 26R must remain at pattern altitude until descent for landing.

Honolulu also has specific departure and arrival routes when the trade winds are blowing and pilots flying in the area are expected to be familiar with them. ATC will provide detailed instructions if need be, but that increases their workload and yours. All shoreline departures are noise sensitive areas, especially after dark. Again, consult SID's and STAR's for the arrival and departure sequences. The procedures are different depending on whether trade winds or Kona Winds are blowing.

General aviation on Oahu has something to look forward to. NAS Barbers Point will be closed down in the next couple of years, but it will hopefully not go the way of many closed military bases—to the developer. The State of Hawaii is considering turning it into a general aviation airfield with new facilities. All general aviation operators currently at Honolulu could be moving there. Operators have indicated it might be a good move for flight instruction operations.

There are many restricted areas on Oahu and plenty of noise sensitive areas as well—again mostly along the coast where the majority of the population lives. Ridges with tops between 3,000 and 4,000 feet run along two sides of the island with a valley in between that contains Wheeler Army Air Field.

Dillingham Airfield, directly opposite the island from Honolulu, is one of the busier general aviation airports on Oahu. In addition to student instruction, there are two glider operators and several sport parachuting operators on the field. The operators divvied up the territory on the airport so that sport parachuting and glider operations use one side of the field and all other operations, the other side. It is incumbent upon the pilot on his or her first trip into Dillingham to learn which is which. Dillingham is also restricted to day VFR only operations.

There is a UNICOM on the field, and state regulations require pilots to contact UNICOM and remain in contact while operating at the airport. There is also an aerobatic training area just off-shore from the airport, which is just across a state road from a beach. All in all, there are lots of gliders and jumpers to look out for at Dillingham.

Gliders are towed and depart Dillingham's pattern to the south. They normally fly the ridge which parallels the runway and stay within five nautical miles of the airport. Remember, most gliders are not radio-equipped, so they rely on powered aircraft to adhere to the traffic patterns and procedures. The tow planes are generally radio-equipped and use the glider traffic pattern for takeoff and landing.

HAWAII
ISLAND BY ISLAND

however, since this is an auxiliary landing field for Barbers Point. There are a whole list of "don't's" when operating here, so refer to the *Flying Safety Manual* before considering a stop.

One of Oahu's "must" places to see is the USS Arizona Memorial in Pearl Harbor. DO NOT fly over this site out of respect for the dead entombed in the great battleship that was sunk on December 7, 1941. It is tempting to be sure, the stark white memorial against the harbor's blue waters, but no one needs to "buzz" what is essentially a national cemetery of our war dead. Drive there, watch the great film, and go by the ferry, but don't fly over it. The same holds true for the "Punch Bowl," or the National Memorial Cemetery of the Pacific in downtown Honolulu. Once called by the Hawaiian name of Puu-o-waina—Hill of Sacrifice—the Pacific equivalent of Arlington Cemetery embraces the remains of soldiers, sailors, and marines and is best appreciated from the ground, respectfully.

The daily parachute operations occur from 13,000 feet. Jumpers exit upwind of the airport, sometimes as far as one and one-half miles from the drop zone when winds are strong. Jumpers generally free-fall from 13,000 down to around 4,500 to 2,000 feet when 'chutes are deployed. They then glide to the drop zone in an abbreviated left traffic pattern for Runway 8 or right pattern for Runway 26. When there is little or no wind, jumpers may open 'chutes directly over the airport or the nearby beach.

Ford Island Navy Auxiliary Landing Field, just a few miles northwest of Honolulu is another day, VFR only airport, and civilian landings (usually training flights) are allowed with permission only from the UNICOM. Passengers and pilots may not disembark,

Molokai—The Friendly Island Lanai—The Pineapple Island; Maui—The Valley Island

Some 23 nautical miles almost due east of Makapuu Point on Oahu is Molokai. Just 35 miles from Laau Point to Cape Halawa, Molokai is some 264 square miles. The State's highest named waterfall is Kahiwa, on Molokai, and it is also the site of the island's historic colony for sufferers of Hansen's Disease.

Lanai, 10 nautical miles south of Molokai, used to be joined to Molokai and Maui until, thousands of years ago, a geological cataclysm caused the sinking of the connecting land bridges. Lanai is privately owned by

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the Dole Company, and the cultivation of pineapples is the primary farming business.

Maui is 10 miles southeast of Molokai, 10 miles northeast of Lanai. All three islands comprise the county of Maui. The island of Maui has the world's largest dormant volcano caldera, Haleakala Crater, over 10,000 feet high. Between Haleakala in the east and 5,800-foot high Eke Crater in the west sits a low, verdant valley that forms the narrowest point of the island. Its green fields appear peaceful, but it is subject to severe turbulence when the trade winds create a venturi effect between the two peaks, which are a little over 20 nautical miles apart.

On Molokai, there are two public and one private airports. Kalaupapa Airport on the north side of the island on Kahiu Point is day, VFR only. It is also the site of the Hansen's Disease colony, and pilots must obtain permission from the State Department of Health before landing there. There is also a great deal of military helicopter activity in that area. One caution for pilots who land there—wild animals in the vicinity of the airport. What kind of wild animals? The *Flying Safety Manual* doesn't say, but its very next caution on Kalaupapa is "Deep ruts along northeast runway shoulder caused by wild boars." The final caution is large waves that impact the point October through May and cause 40-foot high salt sprays.

Molokai Airport, which has an FAA tower, is about midway north and south of Molokai. Because of its central location, it handles a great deal of the air tour, commuter, and training flights for the island. Westbound traffic flies at 1,000, 2,000, and 3,000 feet while eastbound traffic flies at 1,500, 2,500, and 3,500 feet. All transiting pilots are strongly urged to use these altitudes below 3,000 feet. Because of the high volume of air tour traffic, pilots should monitor the air-to-air frequency of 122.9, listen for position reports of other aircraft, and provide your own. This report should consist of your position relative to the various VFR reporting points, your direction of flight, and your altitude.

The lone airport on Lanai is Lanai City, which is non-towered and left traffic only. There is a fee if you park there more than one hour, and small aircraft must park to the northeast. There are no services available.

Maui also has three airports, two public and one private. Kapalua on the west is private. Kahului in the center is towered, and Hana in the east is non-towered and open to the public. There are numerous areas of hang glider activity around Haleakala.

Hana is for VFR operations only, but at night the lights can be remotely activated over 122.9. There is an aerobatic practice area north of the downwind leg (all righthand traffic), and parachute operations. The glider traffic pattern is 100 feet below and slightly inside the small aircraft traffic pattern of 800 feet. There are no services such as fuel or meals.

Kahului has an FAA tower and fuel service. Transient aircraft must park on the east ramp, and there is extensive military helicopter activity in the vicinity. There are also noise sensitive areas that correspond to the most populated areas, and pilots need to avoid overflying several schools and a

hospital when approaching both Runway 5 and Runway 2. Kahului has Class C airspace, and air traffic warns of a potential midair collision hazard north, west, and south of the airport because of air tour activity. ATC suggests maintaining contact outside Class C airspace for enroute traffic advisories. There is a VFR training area southeast of the corner of the Class C airspace.

Kapalua is restricted to FAR Part 121 and 135 operations. No helicopters, no non-commercial jets, and no practice or training flights are allowed. The number of air carrier operations are restricted as well, dependent upon aircraft size.

There is one tiny island, lest we forget, that has no airports, no facilities, nor any people. It is Kahoolawe, the Uninhabited Island. Just 46 square miles, it was a military bombing range, and it lies five nautical miles southwest of Kamanamana Point on Maui. It is no longer actively used as a bombing range.

Hawaii—The Orchid Island

The island of Hawaii—as distinct from the State—is rightly called "The Big Island." It is over 4,000 square miles, and stretches some 65 miles north to south and about 75 miles east to west. Of course, that is constantly changing because the Big Island has Kilauea, the volcano that has been erupting for nearly a decade and adding acreage to the island.

The two highest points of Hawaii the State are on the Big Island—Mauna Loa and Mauna Kea, both at nearly 14,000. Mauna Kea and Mauna Loa are the sites of the only snowfall in Hawaii, but the ski season is really, really brief. (I'm not joking; there is a ski season.) Between these two towering peaks—which are pretty impressive from the air as they rise precipitously from the flat coasts—is a 6,800-foot high "valley" with Bradshaw AAF and Restricted Area 3103. One mistake pilots make is trying to skirt Bradshaw and R-3103 to the north only to impact the sides of Mauna Kea. This interior portion of the island is uninhabited, so there are few lighted landmarks to prevent disorientation from the "black hole" effect we've mentioned before.

As with Kauai, there are specific air tour routes and procedures, and turbulence can be a severe problem. During my near-circumnavigation of the island in a *Twin Comanche*, the smoothest ride was offshore, over the water. And the water in many places would be the only place to head for in the event of an emergency landing. The topography of the shore is steep and rutted with hundreds of dazzling waterfalls and cliffs but no safe landing areas.

Kilauea, which saved its most recent eruption until after I had left (just my luck, since this was one thing I really wanted to see, volcanoes being pretty scarce where I grew up), is also a very holy spot for the Hawaiians, who come there for rituals and ceremonies quite often. Low flights over Kilauea have been a problem, and since it is a part of the national park system, the Park Service is just about ready to step in and close it off to all flights unless local and transient pilots clean up their acts. (See the sidebar on page 18.)

In addition to the military airfield, Bradshaw, there are six airports on the Big Island. One is private, Puuwaa Waa northeast of Kona, and one is abandoned, south of Kona.

Hilo Airport is located on the north shore toward the eastern portion of the Big Island. It has an FAA tower and full fuel services, as well as restaurants, taxis, rental cars, etc. No jets may operate on Runway 3/21 after 6 p.m. and until 6 a.m. local time. When the tower is closed, landing lights are radio controlled. There are noise sensitive areas west and north of Runway 8/26, and a high volume of traffic south southeast going to and from the volcanoes.

On the opposite side of the island from Hilo is Keahole-Kona International Airport. It has fuel services and some training activity. Ten miles east of the airport is a "cinder cone" from an extinct volcano some 8,200 feet high, and the terrain rises deceptively steeply there. Kona tower was handling general aviation traffic very differently from air carrier traffic the day in May I flew into there with Hawaii's Safety Program Manager. Air carrier traffic was kept over the water, while general aviation was kept over land. However, the landing direction that day was Runway 17, and air traffic had us fly above and parallel to the left downwind, then turned us left *over the rising terrain* in a teardrop entry to the downwind leg. Traffic pattern altitude is 800 feet for general aviation aircraft, and the terrain, the squirrely pattern entry, and the overland turbulence made for a very interesting approach. Again, much of the terrain—dark, volcanic rock and hardened lava—would be absolutely featureless at night.

It is somewhat obvious why small aircraft are kept over land: The three Victor airways bringing air carrier traffic approach Kona from the west northwest, and there could be a potential midair collision problem, but advisories are available from Center.

Upolu Airport is on Upolu Point, the furthest west point of the Big Island. It is non-towered and has no services, but lights are radio controlled for night landings; however, there is no backup or standby power for those lights.

Twenty miles inland and southeast of Upolu is Waimea-Kohala Airport, which is also non-towered and without services. There are high tension wires 1,000 feet from the approach end of Runway 4, and there are fees for transient parking. When the airport is unattended, pilots can park in the designated areas and depart the airport by a gate southwest of a firehouse nearby. Ground transportation is available only by prior arrangement.

There is a small, private heliport five miles northeast of Kona which services several resorts in the area. Traffic is irregular there and would be low level.

SOME FINAL THOUGHTS

At last, you say!

Each island has depicted on the charts various VFR reporting points, but some of them are typically endemic of the islands—a sugar mill, a temple, the Captain Cook Monument, etc. For the pilot unfamiliar with just what a sugar mill looks like, a thorough checkout by a local pilot is a must. Preparation cannot be overemphasized when you decide to take on the endeavor of flying in Hawaii. I depended a lot on the local pilots and was glad I had one along on the flights I took.

The islands may call to you, and you should heed their call. You will see some of the most breathtaking sights you've ever imagined, and you will exercise your best piloting skills for a safe, uneventful flight. That's a real win-win situation.

Aloha!

Because of the constant forces of wind and warm, moist air, clouds can form densely and quickly, obscuring Hawaii's high terrain. Big Island of Hawaii with clouds hiding Mauna Kea in the distance. (Margaret Haldane photo)

RULES OF GOOD PRACTICE

- Know your regulations, particularly FAR Part 91.
- Check the weather and NOTAMS before you file a flight plan.
- Be sure you have current charts appropriate for your flight.
- Before flying between the islands, check your VOR with a VOT on 111.0 or with a ground or airborne checkpoint.
- Check your compass and direction gyro on the runway before takeoff.
- USE YOUR RADIO.
- When in doubt, contact FSS, a tower, or Center for advice and assistance.
- Close your flight plan.
- If you file VFR, stay VMC.

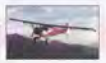
THE NATIONAL PARK SERVICE

Nearly 270,000 acres of the State of Hawaii are in national parks. There are seven total parks in the state, and four of them are on the Big Island. Mr. Jack Minassian, a ranger with the Park Service on the Big Island, suggests pilots review their charts for locations of the parks and follow the recommended altitudes. All of the Park Service areas on the Kona side of the Big Island are noise sensitive and religiously significant and should be avoided, i.e., not flown over at any altitude.

Ranger Minassian also warns about low-level flight near the active volcano. "We get complaints from the U.S. Geological Survey," he said, "when low-level flights disrupt the sensors they have in the area to help predict eruptions."

Minassian also warns pilots not to forget that Mauna Kea and Loa soar up to 13,000 feet or more and that they should be prepared for cold weather if they survive an off-airport landing there. Water is also a concern, since there are few potable streams.

The Park Service has experienced problems from some operators and transiting pilots who have not heeded the regular VFR routes and altitudes for the parks and would consider banning all flights over Hawaii's national parks unless pilots educate themselves to the operational suggestions.



Hawaii pilots: FAA Inspector Tweet Coleman (left) and FAA Examiner Phil Auldridge approach Kona Airport, Big Island of Hawaii. (Margaret Haldane photo)

Robert Justman, author and pilot, has been flying inter-island for some 24 years and 14,000 hours. He is the author of *The Land of Aloha,* a brief history of the State, its ethnic groups, and the best sightseeing spots to be found. On the basis of his extensive island flying experiences as an air tour pilot, he offers the following advice.

"Get the state book on airports ahead of time and study it. Know the VFR arrival and departure routes," he says, "and fly high, 4,500 to 6,500 feet between islands. It gives you more time to communicate, to plan, to glide to safety. Besides, when you fly high, you can see more!

"Fuel is not available or is difficult to obtain at some airports, so check before you leave your departure airport or plan your fuel and reserve very carefully for a round trip.

"Fly the leeward side, not the windward side. The turbulence can be heavy, and use the services provided by air traffic. Get constant weather updates, particularly on the Big Island when the volcano is erupting. The weather changes rapidly then.

"I don't advise anyone from the mainland to fly him or herself to the volcano. It's just too spectacular to look at, so you end up not looking outside in an area of high density traffic.

"Don't fly into a valley if you aren't sure where it goes. Use the VOR's, and GPS is great in Hawaii!

"Icing is rarely a problem but carburetor icing can happen year-round.

"I don't advise mainland pilots, even ones with extensive night time, to fly these islands at night unless they're IFR. There is just no horizon, and low level clouds can block lights. Over water at night—no way.

"You can expect clouds to increase and visibility to decrease as the day goes on. Warm, moist air rises, and clouds hide the mountaintops. Make sure you maintain your normal cloud clearance distances.

"Use flight following and the Inter-island Reporting Service. Make sure you know the names of the islands and the various reporting points on each. Some of the Hawaiian names are difficult to pronounce, so ask a local and practice them.

"Use all the tools available to you—VOR's, ADF, GPS, DF Steers, Center, Flight following, all of it.

"Finally, if it's too cloudy, don't go. Chances are the weather will improve."

AIR TRAFFIC SERVICES

Hawaii offers the full range of air traffic services, and the airspace ranges from Class G (uncontrolled) to Class B. Flight following is available for crosscountry and inter-island flights, and Assistant Air Traffic Manager of the Honolulu ATCT, Deborah Saito, strongly encourages pilots to take advantage of the service. Center radar extends across the state of Hawaii. However, the coverage is limited in mountainous areas.

In the Honolulu area in particular but also on most of the islands there are numerous military training routes and other special use airspace that must be avoided or that pilots must receive clearance to transit. Ms. Saito also notes the variety of aviation operations in the islands: "You have parachute drops, gliding, hang gliding, parasailing, commercial sightseeing helicopters at low-level, military aircraft, air carrier aircraft. Everyone—pilots and controllers—have to be vigilant."

She also suggests good familiarization with the busy airspace around Honolulu and with the local requirements, such as acknowledgement of specific clearances without being prompted. Progressive taxiing instructions are available at Honolulu, and she suggests that you ask for them if it is your first time operating there. Honolulu International is collocated with historic Hickam Air Force Base, and you don't want to be taxiing on the wrong ramp! Major Joseph E. Davis, Chief of Public Affairs, at Hickam Air Force Base, indicates that general aviation pilots have not been a problem as "intruders." He does emphasize the importance of learning when MTR's are hot and avoiding them when they are. "Hawaii is a Regional Air Defense Sector," he explained, "and there is a variety of military traffic always in the area, whether it's F-15's in the MOA's, KC-135's doing refueling flights, or C-130 transports coming in from the mainland—not to mention practice air drops."

Notices to Airmen (NOTAM) contain a wealth of information on conditions and operational considerations in Hawaii. L (local) NOTAM's are very important and should be reviewed by checking with flight service and requesting them.

Adhering to established VFR routes and maintaining noise abatement procedures are essential to safe and uneventful operations particularly on Oahu, the most populous of the islands.

There are controlled airports on most of the islands, but the towers may be part-time. However, the Honolulu Combined Enroute Radar Approach Control (CERAP) is available 24 hours.

A review of classes of airspace, special use airspace, VFR routes, dead reckoning, pilotage—anything to do with your navigation skills are essential before navigating the airspace in Hawaii.

RIDGE RUNNING

by H. Dean Chamberlain

A Schweizer SGS-2-32 glider awaits a tow plane for some ridge soaring at Dillingham Airfield, Oahu. (H. Dean Chamberlain photo)

If I had known I would be writing this short article about my first sailplane flight in Hawaii for our first-ever Hawaii issue, I would have taken notes. Earlier this year when I visited Hawaii, I took the time to take a soaring lesson along Oahu's northwest shore and its nearby mountain ridge. Most of my glider training and soaring have been done in Florida. Florida is great for thermal soaring, but Florida lacks the one important item I wanted to expand my soaring knowledge and experience. It doesn't have any high ridges or mountains. Florida is a great state, but it is basically flat unless you want to call a few "tall" highway overpasses "short" mountains. So much for ridge or mountain soaring in Florida and my poor attempt at humor.

"What is so important about a ridge?" you ask.

Ridges can make for great soaring.

For those not familiar with soaring and sailplanes, simply stated, soaring depends upon rising air. A constantly descending sailplane needs faster rising air to gain altitude and to stay aloft. In thermaling, a sailplane pilot uses sun-produced, rising air currents called thermals or a string of thermals to gain altitude to stay aloft. But generally speaking, when thermaling, when the sun goes down or it becomes overcast, your glider goes down. Not necessarily so with ridge soaring.

In ridge soaring, lift develops when a strong wind blows up over a ridge, hill, or mountain. As the wind flows up over the ridge or hill, the uplifted wind provides lift suitable for soaring on the windward side and above the top of the ridge or hill. With proper wind conditions, glider pilots have flown for hours and hundreds of miles along ridges. Ridge lift can last for hours, days, or depending upon location, almost forever if you have the right wind conditions.

For example, on the U.S. east coast, sailplane pilots frequently fly from Pennsylvania to Tennessee and Georgia and back along the gentle ridges of the Appalachian mountain range. The ultimate example of orographic lift is the mountain waves over the Rocky Mountains that have carried sailplane pilots to tens of thousands of feet into the upper atmosphere. All without benefit of an engine.

Hawaii has some interesting ridge lines. The one I flew along parallels Dillingham Airfield. Rising from Kaena Point on the northwest corner of Oahu, the long ridge line runs southeast for several miles and tops out at about 4,080 feet. Most of the ridge is in the intermittent restricted airspace of R-3109 and R-3110 controlled by the Army's Schofield Barracks. You are not going to make any great cross-country flights along the ridge, but it makes for some great local flying, and the view is fantastic. When you add in the seemingly constant trade winds during the spring, summer, and fall, the conditions make for great soaring.

The drive from Honolulu to the airfield takes about an hour or so depending upon traffic. My Sunday morning drive past Pearl Harbor, through fields of pineapple and past historic Schofield Barracks brought back images of another Sunday morning more than 50 years ago. I kept thinking of the scene from the movie *Tora, Tora, Tora* of the flight instructor and her student flying along in their biplane early one December morning in 1941 as attacking warplanes flew by to strike Pearl Harbor. Later as I drove past the Schofield Barracks, the vivid scenes of soldiers defending against the attacking aircraft came to mind.

Thinking back to that day more than 50 years ago, I wondered what

the area looked like then without all of the development now around Honolulu --truly paradise.

Once you are off the four-lane roads, the beauty of Hawaii is apparent as you drive through the country side along two-lane roads between pineapple fields that stretch for miles. But nothing compares to the beauty of the coast line as you crest a small hill and see the ocean in the distance. From the homes along the coast, to the campers along the beach, to the surfers with their surfboards, to the skydivers floating down over Dillingham, to sailplanes doing aerobatics over head, the northwest coast has something for every adventurer. If you love the air or sea, Oahu's northwest coast can satisfy your every need. It truly is a tourist agent's dream.

Dillingham's 9,000-foot runway parallels the beach and road leading to the airport. As you drive to the far end of the airport and enter it from the highway, you will find two commercial glider operators on the beach side of the airfield. Both share a small, covered, open-air customer reception area beside the parking lot. Take your pick. I chose the one on the left. My instructor, Mary Campbell, was the chief instructor for Soar Hawaii Sailplanes, Inc. (When I returned to Dillingham to shoot some photos for this article in July, I flew with the operator on the right, the Honolulu Soaring Club, Inc.)

After a preflight briefing and aircraft checkout, Campbell and I launched in a Grob-103. The Grob-103 is a two-place, fiberglass sailplane with good performance. The aero-tow to altitude was interesting to say the least. Having made 50-plus relatively benign aero-tows in Florida where my main concern was always being prepared for a possible tow-rope break, I learned a few new lessons that day about being towed in turbulence.

First of all, Hawaii's normally picture perfect weather stayed home that January day. It had rained intermittently during my drive to the airfield, and the wind was strong. Then making things worse, clouds were hanging over the top of the ridge line. Not your typical tourist day in paradise.

But it was a great day for learning about ridge soaring and turbulence. The first thing Mary pointed out was to carefully watch the tow plane. She said, "When the towplane bounces from turbulence, the sailplane will bounce next." She was right.

I was also glad we had full five-point seat harnesses on as we bounced and climbed to get above the turbulence on the downwind side of the ridge that overlooks the airfield. Once off tow at 5,000 feet, the soaring made up for the turbulence as we flew along the downwind side of the ridge. Being able to soar above and downwind of the cloud-covered ridge made the trip to Hawaii worth every minute spent getting there. It also taught me more about soaring.

As we flew, Mary pointed out different techniques needed to fly along the ridge while searching for lift and the rules for ridge soaring. Later, as we worked the area between the ridge and the nearby shoreline looking for additional lift, we would occasionally fly out over the ocean. At first the thought of being out over the ocean in a motorless aircraft was a sobering thought, something about boats and sailplanes don't mix, but soaring over the ocean and looking down at the breaking surf and the surfers working the waves was spectacular.

So was the landing!.

With a strong wind blowing at about a 90° crosswind to the runway which is located along the base of the ridge line, the approach and touchdown was exciting. Add in the sharp downdrafts from the nearby ridge and the ride was more exciting than going to a carnival. But Mary's instruction and techniques were great. We made a perfect landing. It was my first ridge flight, my first flight in Hawaii, and my longest flight then to date.

The flight was expensive, but worth every dollar. Like everything else in paradise, flying sailplanes in Hawaii is more expensive than on the mainland, but like the helicopter tours and other aerial adventures in Hawaii designed for tourists, you will see sights that are priceless. When you decide to check out soaring in Hawaii, you need to call in advance and make a reservation. If you want to try your hand at sailplane aerobatics, that can also be done at Dillingham.

When I returned to Dillingham in July, I flew with Dwight W. Velazquez, a government employee and 5,000-hour commercial instrument and multi-engine airplane pilot who flies gliders on his days off. At Dillingham, he said, "The primary source of lift is ridge, followed by thermal, and then wave. One wave flight this summer went to about 26,000 feet."

When asked for tips on flying the ridge overlooking Dillingham, he said, "Pilots flying the ridge need to follow the standard rules for ridge flying. For example, when passing another glider from behind the pilot passing needs to pass on the inside between the other glider and the ridge to avoid a possible midair. The reason is since all turns are always made away from the ridge this avoids the risk of the other pilot turning into you if you were to start to pass the other glider on the side away from the ridge." He also said, "Pilots must remember to keep a safe altitude above the ridge. I recommend at least 500 feet." Another tip he provided was, "Pilots need to remember the wind speed and direction so that they don't drift too far downwind. They need to be able to return to the field in case of a strong headwind before they get too low."

He reminded me the best time to fly gliders at Dillingham is during the spring, summer, and fall when the trade winds are blowing. In the winter, the winds are more unpredictable. The day we flew, in a Schweizer 2-32 three-place glider, was great. The wind was constant, the lift was great, and the flight was spectacular.

So the next time you are in Oahu, stop by Dillingham and soar to new heights in either a two- or three-place glider. You will be glad you did. The ride is great and the view is fantastic.

Then when you are done soaring and want to try something different, you can "drop" in to the skydiving facility at the other end of the airfield. Like we said, Hawaii has something for everyone.

See you there.

A Flight Through Paradise

by Phil Auldridge

It's just an ordinary day in the islands. A steady breeze from the northeast provides cooling ocean moisture, along with an associated cloudy shade along the windward shores of all the islands. The tropical sun reflects off the shimmering, transparent ocean, to provide an infinite range of colors in the scattered clouds above. The crisp, clear, tropical air renders a thin blue line at the horizon, smartly separating ocean from sky, and offering a perspective to the edge of our paradise that seems to impose no limits.

But then, an ordinary day in Hawaii is no ordinary day for the rest of the world! Pilots flying through our special part of the world are daily treated with flight conditions and views so spectacular as to defy accurate recording on film or video! Therefore, it is not difficult to understand why general aviation is such a natural part of the Hawaiian Islands. Much of the hidden, sacred beauty of the islands is only offered up to those who choose an aerial vantage point to enjoy it.

To truly understand our islands from a pilot's perspective, one needs to consider the actual origin of the islands. The entire archipelago of Hawaii has required millions of years for its creation. Unlike many of the lifeless coral atolls of the Pacific and Caribbean, Hawaii's birthright has been a violent one, as volcanic forces far greater than any man-made disturbance created ageless conflicts of fire and water.

An understanding of common Hawaiian weather patterns can also aid the visiting pilot in planning an aerial tour of all the delicious sights that Hawaii has to offer. The state is blessed with the existence of a near-stationary and near-permanent high pressure area to the north of the chain. This high is responsible for the legendary trade winds (winds from the northeast), that provide an almost uninterrupted flow of cool breezes at 10 to 15 knots, and gives Hawaii one of the most temperate climates in the world. Thanks to these cooling, moisture-laden winds, maximum temperatures, even during summer months, rarely exceed 85°, while overnight lows generally remain at or above the 60° mark!

The constant northeast winds have taken their due tithe from the windward coasts of all the islands. (The entire chain is laid out in a roughly east-west line, so that the northern shore of each island becomes the predominant windward location.) Erosion from the constant winds and waves have created spectacular ocean cliffs along each of the islands' northern shores, ranging from the sheer vertical 2, 000 cliffs of the Big Island's Hamakua Coast, the incredibly lush Hana coast area of Maui, Molokai's north shore hidden valleys and cliffs, to Kauai's well-known Na Pali Coast.

A typical pilot's weather scenario on a normal "trade winds" day goes something like this:

In the early morning, winds are light, and flying is smooth on both the windward and leeward sides of the islands. There are just a few scattered clouds around the chain. Around midday or so, the moisture-laden trade winds begin to create a layer of clouds on the windward sides of the islands, with bases around 2,000 feet MSL. The clouds are most predominant on the islands with the greatest vertical geography, such as around Hilo Bay, at the base of 13,000 foot Mauna Kea, or the Hana area of Maui, at the base of legendary Haleakala crater. It is about this time of day that the leeward sides of the islands begin to offer a little turbulent air for flying, as the prevailing wind spills over the ridges of the mountains. Generally this turbulence at worse offers mild discomfort; but occasionally, when trade wind velocities exceed 15 knots, moderate turbulence can be a consideration, requiring tightened seat belts and slower flying speeds for safety.

Later in the day, cloud tops on the windward sides of the islands can reach 8,000 feet or so, and it isn't unusual for those clouds to produce some precipitation, particularly along the windward shores. Occasionally this precipitation can impose temporary restrictions to visibility, and heavy showers can reduce visibility near to the one-mile minimum, requiring legal VFR traffic to remain below 1,200 feet AGL (in Class G airspace). Knowledge of Special VFR procedures and minimums can be very helpful for a VFR pilot flying into windward airports.

As sunset approaches, the wind velocities subside, and cloud patterns begin to break up. Frequently, by mid-evening, skies are crystal clear throughout the state, and the system is primed to begin its cycle all over again the following day!

Island-hopping in Hawaii can be an exciting and once-in-a-lifetime experience for visiting pilots. The proximity of the inhabited islands to each other simplifies navigation. (Just look across the channel, and head for the next land!) Except during the 60-mile-plus route between Oahu and Kauai it is unlikely that your flight will be ever out of sight of land.

Flying overwater can be conducted safely, as has been demonstrated throughout the state with the thousands of safe flights conducted over the years. Nevertheless, overwater flights pose additional hazards that the "mainlander" pilot might not be aware of, and special techniques and considerations must be acknowledged if your flight is to be conducted safely and without anxiety.

We consider use of the Island Reporting Service mandatory for all flights from our school. Equally important is our requirement that all passengers wear life jackets at all times during

Landing on Runway 4R, Honolulu International Airport. (H. Dean Chamberlain photo)

flights in the islands. (Most rental organizations now provide waist-type life-jacket pouches which can be worn with comfort, and easily donned over the head in an emergency.)

Be sure that the organization you rent from gives you a detailed briefing on ditching procedures. Advance preparedness and having a clear plan-of-action in mind can literally mean the difference between life and death in the event of a water landing. Of course, maintaining as high an altitude as practical during overwater segments can increase your chance of communication, quick rescue, and survival.

You will find a number of businesses on the islands of Oahu, Maui, and Hawaii (Big Island) offering aircraft rentals for current pilots. A glance through the yellow pages or your AOPA directory should yield names and contact information for each. The Internet is another growing source of information about flying and Hawaii in general. Just search for "flying, Hawaii", and you will find a number of excellent organizations offering pilot services in the state. In addition, you might want to view the very complete Hawaiian Weather Internet site at ;

http://lumahai.soest.hawaii.edu/Hawaiian_Weather.

You will find Hawaii's pilots eager to share the splendors of Hawaii with our off-island brethren! Next time you are in Hawaii, get airborne and see the hidden Hawaii reserved exclusively for aviators!

Mr. Auldridge is an 11-year resident of Hawaii's Big Island. When not giving check rides as an FAA Designated Examiner or managing his flight school (Sporty's Academy Hawaii), Phil enjoys flying his Piper Twin Comanche *throughout the state.*

SOMETHIN' IS (SOMETIMES) BETTER THAN NOTHIN'

by Scott Allen

Whatever images flying in Hawaii may conjure up in your head, they are likely to be eclipsed by the beauty of the actual flight. To sell you on how pretty it is, our various hotels and Chambers of Commerce spend massive dollars on people who seem little more than walking star-bursts of hyperbole. (I'll spare you that, but you might enjoy James Michener's *Hawaii*.)

Despite the beauty, flying in the Hawaiian islands poses some very real hazards. Still, flying basics are flying basics; much like mainland hazards, adequate consideration during preflight goes a long way toward mishap prevention. The truism that it's better to be on the ground wishing you were flying than to be flying wishing you were on the ground is as true in Hawaii as anywhere else.

Some considerations affecting Hawaiian operations include the dreaded black-hole approach. Given the location of our airports, nearly every night approach commences over a dark, featureless expanse of water. There was recently a tragic, controlled-flight into terrain, multiple fatality mishap when a pilot on a VFR flight plan proceeded over-water at night, elected to transit along the absolutely unlit shore of a small island under an overcast, and apparently became disoriented. Instead of turning toward open ocean, climbing and asking for a flight assist, the aircraft turned toward its destination, impacting the mountainous terrain of the island that blocked its path.

One of the nicer features of our weather system is our trade winds; during the humid summer months, absent those chronic breezes, the humidity would be at best unpleasant. The down side (no pun intended there) is the orographic turbulence and downdrafts which are generated on the lee side of our numerous ridgelines. For pilots unprepared for lee-side downdrafts, the results are the same here as on the mainland. Two differences: the surrounding scenery might be greener (haven't yet seen a "pretty" crash site in six years of viewing wreckage), and we don't have to wear coats in the field very often. The strong and apparently sometimes irresistible temptation to explore our lush and verdant valleys is a chronic consideration. As some unhappily discover, when power required exceeds power available, those valleys are every bit as remorseless as they are beautiful. How strong/unpredictable are the winds? A tragic and compelling example occurred almost a quarter of a century ago when an F-4 *Phantom* (despite its large size, clearly an aircraft with better than average control responsiveness) cartwheeled down the side of the Kaneohe Bay runway (both aircrew died) after apparently being hit by a vicious unexpected gust as it crossed the runway threshold.

Conclusion? Come on down, bring your tourist dollars, your family, and more tourist dollars. But watch out for those valleys!

Mr. Allen is an Aviation Safety Inspector (Operations) at the Honolulu FSDO.

A HARSH ENVIRONMENT?

by Lester N. Sasaki

Uniform surface corrosion is generally observed on all surfaces of the aircraft. The photo on the top of next page depicts exfoliation corrosion separates in distinct layers which expand to occupy a much larger area than the original, uncorroded part. (Photos courtesy of Mike Dahlager and Pacific Corrosion Control Corp.)

I know what you're thinking: 82° year round, sunshine, blue skies, and palm trees—what harsh environment? But yes, there is a price for living in paradise. Aircraft owners and operators find out very quickly that, because of the environment we live in, there is a very large price (besides the cost of living) to pay for living in Hawaii. The Pacific Ocean is relentless in its effort to turn metal into dust. There is no escape. The inevitability of corrosion in Hawaii is like taxes and death.

When an aircraft is diagnosed as having signs of corrosion during an inspection, aircraft owners develop choking, breathless symptoms, somewhat like a heart attack, in anticipation for what comes next. How severe is it? Can it be simply cleaned and treated? Does it require major structural repair or replacement? Or the unthinkable, beyond economic repair?

The latter doesn't happen very often. But to insure it doesn't, commercial operators and private owners spend an enormous amount of time and money on prevention and early detection. People here learn fast that if you don't do the job right the first time, you will pay the price for it very quickly. They learn that hours of corrosion removal followed by inadequate prevention measures go to waste if the process is not properly done. They learn that inadequate corrosion removal and treatment allow corrosion to appear again in a very short period of time. Spending thousands of dollars to do repairs does not guarantee that thousands more won't be spent next year.

Most owners spot surface corrosion quickly and have their A&P mechanic take care of it as soon as possible. Corrosion (filiform, surface rust, dissimilar metal types of corrosion) on the external areas of an aircraft is relatively easy to spot and correct before it becomes very serious.

However, intergranular/exfoliation corrosion in difficult to inspect areas are the most insidious. If this type of corrosion is not found and corrected in an early stage it may develop into catastrophic proportions in both the safety and economic aspects. Imagine a wing falling off during flight. This has never happened yet, although intergranular corrosions on spar areas (in the wing as well as the fuselage) are quite common and there are known cases were corrosion caused flap and landing gear failures.

The military in Hawaii figured out long ago that the corrosion here cannot be addressed in the same manner as in the continental United States. The aircraft wash cycles here are more frequent as well as the frequency of corrosion inspections. Because of its harsh environment, Hawaii is used as a test bed to evaluate different type of paints, corrosion preventative compounds, corrosion treatments, and effectiveness of corrosion programs.

Effectiveness of corrosion programs is hindered by things such as: "junior" mechanics, who lack experience and training. They are usually the ones tasked to do the corrosion maintenance (since senior mechanics learn early in their careers that corrosion control is no fun). Furthermore, strict EPA regulations on the use and disposal of chemicals, such as alodine and chrome-pickle solution used to treat metal, dissuade the use of proper treatment procedures.

Besides the salt-laden air that we live in, another contributor to the corrosion problem here in Hawaii is the volcanic activity that is occurring on the island of Hawaii (a.k.a. the Big Island). A rash of helicopter crashes a few years ago at the beginning of the ongoing activity of Kilauea brought into light the fact that volcanic fumes and ash were causing turbine engines to fail. It was discovered that crystalline material was forming on the engine compressor blades causing the com-

pressor to stall. Because of this more frequent engine washes were initiated by the manufacturers of the engine and aircraft. This also prompted more frequent aircraft washes since it made sense that if the fumes and ash were causing engine problems it was probably doing the same to the airframe.

There are areas that are more prone to corrosion than others. For instance, on the north shore of Oahu, particularly during the winter months, monster waves come rolling in that generate an enormous amount of salt spray. Corrosion seems to appear before your eyes at Dillingham Airfield in Mokuleia, which is just a few yards from the ocean, if the airplanes are not rinsed daily. In Honolulu and other airports, where the surf does not get as large, the corrosion problem is not as great. But it still takes a lot of effort to keep on top of it.

So yes, Hawaii, with all its sun and surf, is a paradise and a wonderful place to live. But, it is also a paradise for corrosion. The only effective way to handle the problem is to attack it head on with aggressive preventive measures. On the days you're not on the golf course or at the beach, you should be at the airport washing and maintaining your airplane. ✢

Mr. Sasaki is an Aviation Safety Inspector (Airworthiness) in the Honolulu FSDO.

DITCHING!

by Hank Bruckner, CFI/I/ME

If you fly in Hawaii, ditching is a possibility you cannot ignore. How prepared will you be if it rears its ugly head on your next flight? Most of us fly airplanes that aren't conducive to practice ditching, so we need to get it right the first time. Ditching the average light aircraft should be survivable if we're prepared. Let's look at what we can do to maximize our chances and minimize the hazards:

Before Take-off

- Make sure your aircraft is in good condition and has enough fuel for the intended flight, plus generous reserves. The vast majority of engine stoppages are because of fuel starvation.
- Insure you have enough survival equipment for all occupants and that it, too, is in good shape. When was the last time your vests and raft were inspected?
- All occupants must know how to operate all survival equipment. And, if you're flying a single, all occupants must be wearing their life preservers. You'll get out with what you are wearing, and possibly nothing else. If you have a raft (highly recommended!), make it someone's responsibility to hang on to it and egress with it. If you are by yourself, strap it down on the seat next to you so that it will still be there when the aircraft comes to rest.
- Have an egress plan for all occupants and brief all passengers—include how to operate all exits, and how to fold seats. Remember, it is critical for rear seat passengers to know how to get out quickly.
- File a flight plan, and indicate what survival equipment you have aboard. If the Coast Guard knows you have flares and/or strobes, they'll continue the search at night. Otherwise, you'll have to tread water until first light.
- Know your aircraft's suggested ditching procedures. Check the POH.

In Flight

- En route, determine a ditching heading by evaluating the direction of the major and any minor swells and wind direction. In Hawaii, the wind is usually out of the northeast, but the swells vary greatly by time of year. Use the day's surf forecast to give you a hint. Ask yourself, "If it quits now, what would I do?"
- Know your position at all times.

Recently, an airplane that ditched in the surf off Dillingham Airfield, Oahu, was dashed to pieces in minutes by strong waves. All occupants exited safely. (H. Dean Chamberlain photo)

The Ditching

- Make a Mayday call. Use 121.5 unless you are in midconversation with a controller. All towers and radar rooms monitor 121.5. Give as precise a position as possible, as well as your intent, and other useful information (number aboard, etc.), "Mayday, Mayday, Mayday! This is Bugwhacker 43210. My engine just quit. I am 15 miles east of Koko Head on the 095 radial, at 2,000'. I'll be ditching with three people on board. Mayday, Mayday, Mayday!"
- Prepare all occupants for ditching. Make sure someone has the raft and flare kit.

Island of Molokai. (H. Dean Chamberlain photo)

Egress

- Don't panic. The aircraft will likely flip. Maintain the crash position until all motion stops.
- Don't release your lap belt until you are ready to egress. Follow your leg up to your waist with your hand to find the belt, then along the belt to the buckle. Remember, as long as you are in your seat, what was to your left still is to your left, and what was to your right still is to your right. Up and down may well have traded places. Hang on to a reference point, such as the door frame, with one hand before releasing your belt. Then pull yourself out. *DO NOT inflate your vest while in the aircraft.*
- On the surface, inflate your vest and try to locate other occupants. If you have no raft, huddle together for warmth and to make a bigger target. Do anything you can to make yourself easier to see.
- Use your signaling devices. Activate your EPIRB, if you have one. Scan the horizon with your mirror (daylight), but don't use up your pyrotechnic devices (flares, smokes) until you know there's someone to see them. Once rescue forces are in the area, use your dye marker. It greatly enhances your visibility to the rescue people, but they only last about 20 to 30 minutes. Smokes (daylight) and flares (night) will help guide the helo or boat to you. They, too, don't last very long. Use them wisely. Don't shoot your flares at the helicopter coming in to pick you up—the pilot will likely wait until you're out of ammo before approaching.
- Don't grab the rescue basket until it touches the water. It may build up a significant static charge and shock you big time. If the Coast Guard responds, their rescue swimmer will be in the water with you. Follow his/her advice, and enjoy the ride.

- Secure or jettison any loose gear that could get in the way or be a hazard on impact.
- Wedge canopy or doors open before impact. On a Cessna, you can open the door and then lock the handle to prevent the door from closing again..
- Leave the gear retracted if applicable.
- If seas are less than one foot, land into the wind. If seas are greater than one foot, approach parallel to the major swell taking advantage of any headwind component. As the size of the swells increases, the landing must increasingly be parallel to the swell, except in a crosswind. If the wind is over 35 knots, land into the wind regardless of the swell and try to touch down on the back side of the wave.
- Touch down at the slowest practical speed. Generally, full flaps will provide the lowest stall speed. However, on some low-wing aircraft, full flaps may produce a down-pitching upon impact. On some high-wing aircraft, flaps can hinder egress.

These recommendations have been developed over the years. No two situations are alike, however, and the successful outcome will ultimately depend largely on you. Have good equipment and a plan and make sure everyone aboard is in on it. Be thinking, "what if..." as you fly, and don't stop flying until the airplane has come to rest. Above all, wear your life vest and don't panic.

Hawaii offers some of the most spectacular flying anywhere. With some planning and forethought, you can make it safe, too.

For additional information, consult AIM (Chapter 6) or the U.S. Coast Guard *Search and Rescue Manual.*

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PARADISE FOUND

Story and photos by Greg Marshall

Along with a life raft, the Lance's regular survival gear includes two waterproof pouches containing two ELT's, a VHF radio, a portable GPS, cellular phone, vests, flares, strobe lights, a first aid kit with extra aspirin and pain pills, sun block, mirrors, flashlights, a See-Rescue marker, fishing kit, spare batteries, water, food, and reading material.

If you're a pilot planning on visiting Hawaii, don't pass up the opportunity to beg, borrow, or steal (just kidding) an airplane during your visit for a tour of one or more islands. Flying the Hawaiian Islands can be one of the high points of your aviation career and, properly planned, it can be safer than overflying many areas of the mainland. Even those of us lucky enough to have lived and flown here for years are still not jaded by the beauty of every flight. Hawaii is blessed with about 364.8 days of VFR weather, dramatic sunsets, and those full circle double and triple "pilots' rainbows" that surround the airplane. Terms like IMC, icing, thunderstorms, hail, and, of course, snow, are not in the vocabularies of most general aviation pilots here.

There is a classic joke about Hawaii weather briefings. Pilot: "How's the weather?" Briefer: "Same." Pilot: "OK, bye." Not quite that simple, but almost.

WATER, WATER, EVERYWHERE

"You fly over the ocean in a single-engine airplane?" Having flown in Hawaii for over 20 years, I am still amused when visitors, pilots and non-pilots alike, are surprised to find out that small airplanes, especially singles, fly inter-island. Like many pilots living here, I learned to fly in Hawaii, so over-ocean flying is second nature to me. Actually, I get more nervous flying over timberland and mountains on the mainland, and I find myself constantly searching for a bodies of water where I can ditch in case the engine quits. In an emergency, unless there's an airport or a big empty highway nearby, I'll always opt for a water landing. No unseen wires, rocks, potholes, fences, or cows. And no post-crash fire. Several airplanes a year make water ditchings, and most everyone survives without a scratch. Good planning, flight procedures, and proper safety equipment are as necessary in Hawaii as they are elsewhere.

PLANNING FOR WINDS

Most of the time, Hawaii's trade winds blow at a steady 10-12 knots—just enough to erode the fuel reserves of the average rental airplane to the critical stage. Every year, a couple of airplanes come up short, usually ditching in shallow water just off Waikiki beach, about five miles short of Honolulu Airport. Fortunately, almost all of these ditchings are survived without injuries to anything but the pilot's pride. Usually, the pilot is a tourist who simply lost track of winds and fuel while preoccupied with sightseeing.

In the usual M.O. (modus operandi) of these foreshortened flights, the pilot has calculated the fuel so that he or she can make the round trip to another island without refueling. The pilot calculates the point to point distance and may even factor in some wind. Occasionally, those wind calculations fail to take into account the usual increase in wind velocity that takes place as the day progresses between the outbound flight and the return flight later in the day. Then, while flying back in spectacular VFR, the pilot diverts slightly to sightsee along a spectacular coastline, or to see a pod of whales breaching just a few miles out in the channel, or a fresh flow of lava steaming into the ocean. Hawaii is full of visual distractions — allow extra fuel for them.

STRONGER WINDS

It's also not unusual for trade winds to blow extra strong for several days—20 to 25 knots is not uncommon, occasionally with higher gusts. Maui's main airport, Kahului, is noted for frequent strong winds. Fortunately, though, Kahului's runways are situated such that the winds are generally directly down one of the two runways. Local pilots are accustomed to this, and you should view it as cause for caution. Properly handled, it is rarely necessary to delay or cancel flights.

Turbulence, of course, goes part and parcel with higher winds, and flight precautions are occasionally issued for "light to moderate turbulence on the leeward side of all mountains." Pilots visiting from other states, such as Colorado, where mountain flying is a regular practice, understand the phenomena and the care necessary when flying over or in the vicinity of mountains and ridges.

Since most flying in Hawaii is done between islands, it is rarely necessary for a pilot to traverse multiple mountain ridges or ranges. Therefore, one of the riskier aspects of mountain flying is generally not encountered. However, because of the locations of airports within the islands, pilots will almost always encounter leeward (downwind) turbulence in the islands. Often, because of the strength of the winds and the sharp height of the volcanic mountains, disturbed air can reach 10 to 20 miles out to sea. Keeping an eye on the sea's surface can often give a pilot an early warning to both turbulence and occasional wind shear.

THE "MOLOKINI BUMP"

Between the island of Maui and the uninhabited island of Kahoolawe (formerly R3104B, a military practice target area), there is a tiny volcanic crater, Molokini Island, that barely protrudes above the ocean. Just to the east "lives" (it is alive) what I call the "Molokini Bump." Airplanes flying southeast to Kona approach the "bump" sheltered from winds by the 10,054 foot Haleakala Mountain. Suddenly, bingo, the airplane meets the full force of the winds diverted around the mountain in a classic wind shear. After ramming my head on the cockpit ceiling a few times, I came to notice that the shear line was depicted clearly on the ocean's surface below. Since then, I've been able to impress pilots and passengers alike by saying, "Tighten your seatbelts, we're going to hit a wind shear in two minutes."

"How did you know that?" they always ask after the "bump."

"Pilot's intuition," I reply—sometimes that's sufficient to blur their memory of my last bounced landing.

READING THE OCEAN

With a little practice, a pilot can become quite proficient at gauging wind direction and velocity from the air. Usually, inexperienced pilots will read the wind direction exactly 180° in reverse. The reason for this is that they tend to read the more visible sea foam, rather than the actual waves. The foam appears to be moving one direction, and the darker wave appears to be moving the opposite direction. Once beyond this bit of confusion, the pilot can progress to the next step of estimating velocity. Hawaii is an excellent place to learn and practice reading wind from the ocean. Almost every airport is located next to the ocean, and on departure and arrival, while still at low altitude, the pilot can observe the sea conditions and compare them to the known wind direction and velocity obtained from ATIS.

Unlike some of the Caribbean's shallow islands that hardly interfere with winds, Hawaii's dramatic volcanic mountains rise sharply from the sea, presenting a formidable obstacle to the path of the wind. The old Kaanapali Airport on Maui (now closed) was noted for its trick wind conditions. Its location was such that wind, split by the mountain and sweeping around both sides of the island, came to meet right where the airport was located—it was not unusual for the windsocks at each end of the runway to stand out pointing opposite directions. Wind shifts of just a few degrees played havoc for arriving and departing flights.

MADAME PELE BECKONS

There is nothing more dramatic and unique to Hawaii flying than being able to view molten lava flowing into the sea from an active volcano. In the strongest sense of the word, it is "awesome," and will remain one of a pilot's lifelong memories. Hawaii's resident goddess of the volcano, Madame Pele, is currently quite active. The east rift zone of Kilauea on the Big Island (as it's called) of Hawaii has been in a continuous state of activity for several years, and for unusually long period with continuous flows of red, molten lava flowing into the sea. You can actually watch the island grow—a first hand look at how the Hawaiian Islands originally formed.

Like the Sirens of Greek mythology, Madame Pele's attraction also veils very real dangers, some not encountered in any other type of flying. After returning from a sightseeing trip over the volcano, several pilots have been astounded to find the paint blistered on their airplanes. The heat is immense, even at a distance. Others have become disoriented in the volcanic smoke and haze, also known as "vog." Still others have ended their tours with stall/spins into the lava fields, most likely because of inattention to airspeed while circling at low airspeeds. A helicopter crew miraculously survived an autorotation into a lava vent following an engine failure. As with several

other such incidents, the probable cause was engine oxygen starvation close to the lava flow.

Again, proper planning is the key to what can be a very safe and enjoyable flight. A good briefing from a local flight school or pilot familiar with the volcano is a must. Kilauea is located in one of the most remote areas of the islands, far from airports. Blocked by a volcanic mountain, compass readings are erroneous and ground-based navaids and communications are very poor in the vicinity of the volcano. Weather can change suddenly. Light to moderate turbulence is not unusual because of the combination of trade winds and thermals generated by the heat of the molten lava. Special flight rules and radio frequencies apply to flights in the active volcano area. All things considered, it's worth it, if a pilot plans well and uses extra common sense. Avoid any marginal VFR, keep a safe distance and altitude on the upwind side of the lava flow, and pay close attention to flying the airplane.

SAFETY EQUIPMENT

After many years of flying in both Hawaii and the Caribbean, I've put together an impressive pack of survival gear for my Piper *Lance*. Along with life vests, I have one of the compact (14 pounds) four to six person liferafts, with canopy. I've also got a waterproof pouch that contains mirrors, flares, strobe lights, a portable ELT, a VHF handheld, spare batteries, sunscreen, a first aid kit, maps, a compass, some water, a fishing kit, a couple of Diet Cokes, and a bag of Oreos (survival need not be painful). I've also got one of those spiffy new "See Rescue" devices--a 40-foot orange streamer, good on land or sea, that the Coast Guard loves. I also carry my cellular phone with spare batteries. Both on land and sea, cellular phones often have coverage in areas where other radio frequencies won't work. Those are my "primary" survival items, the most important to get out of the airplane with first. I also have a "secondary" waterproof survival bag. This contains another portable ELT, more flares (enough for a mini fourth of July display), more water, more snack food, and a couple of novels so I can at least catch up on my reading.

With the exception of the liferaft, I use the same kit for extended overland flying when I'm flying on the mainland U.S. I carry life vests everywhere. Like I said, I prefer a water ditching to most dry-land emergency landing sites.

Note that I'm packing THREE portable radios (two ELTs and one VHF)—plus the cellular phone. Having been in the electronics business for over 20 years, I never trust one of anything electronic. My theory has always been that a pound of radios is worth far more than a pound of water or food. Since almost all ditchings are survived without injury, I can imagine nothing worse than surviving a ditching, only to expire slowly from dehydration and starvation over days of time. With working radios, rescue is certain, land or sea.

If you're planning on renting an airplane in Hawaii, you should probably plan on bringing your own survival kit. All of the rental companies supply vests, and most also offer liferafts. Be sure that these have been recently checked for serviceability.

DOES IT WORK?

Just having safety equipment is not enough. It needs to be fully serviceable when needed. The batteries in flashlights, strobes, portable radios, and portable ELT's should be replaced annually. Rotate them into your kid's toys or your Walkman. Forget about the "2001" date codes on batteries that you're buying in 1997—no matter what anyone says, those batteries will not be up to new strength four years from now when you life may depend on them.

Under the best conditions, kept in their factory wrapper, life vests deteriorate from handling and UV. Even for FAR Part 91 use, they should be inspected frequently and replaced as necessary. If you are one of those cautious pilots who has the passengers wear their life vests while flying over water, the vests will wear out sooner and will occasionally get torn or snagged in a door or seat track. Make a point of giving them a good visual inspection before and after each use. Between uses, don't just toss them under the seats—store them in a ziplock bag. FAA certified inspections are conducted by most raft and vest manufacturers, as well as by inspection stations located at most larger coastal airports. The cost of inspection and re-certification is nominal—about 25% of the replacement cost of a vest.

FLOATING AIRPLANES

It takes an amazingly small amount of buoyancy to keep a small airplane afloat. I know this from personal experience. After my Lake *Buccaneer* sank unceremoniously at anchor off Maui some years back, we easily refloated it by inflating just two small boat mooring buoys, one attached to each wing, using air from a scuba tank. For air-sea rescue purposes, the large white "X" formed by an airplane, even awash, is much easier to spot than a person or raft in the water. With fuel tanks less than half full, most airplanes will float for several minutes on their own. When traveling with a light load of baggage, I'll leave the *Lance*'s forward baggage compartment mostly empty except for a partially inflated two-person, toy store variety raft. While it might not be enough buoyancy to keep the airplane afloat very long, it will allow more time for passengers to exit the airplane and retrieve all survival equipment. If the airplane were to stay afloat, I might tether my liferaft a safe distance from it. I'd heard of a fellow who filled his airplane's wings with ping-pong balls for the same purpose, but that might be asking for trouble in other areas (not just with the FAA inspector).

AIRPORT QUIRKS

Unlike flying on the U.S. mainland, more planning will be necessary just to park and get to and from your airplane in Hawaii. For obvious reasons, there are not a lot of transient general aviation flights passing through Hawaii's airports. Even though Hawaii's airports are state controlled, each island manages its airports individually—and each island is as different as a foreign country. There are no standardized procedures for transient aircraft parking, or even for exit and re-entry to the general aviation tie-down areas. Don't expect a "Follow me" van from the FBO or even a lineman on the ramp to guide you to parking—they don't exist. Transient parking areas are marked at some airports, but at most you'll need to ask assistance from the tower.

Gates near transient parking areas at most airports (including Honolulu) are unattended, and often in remote areas of the airport. Most gates are locked, some with combination locks, some with key locks. The combinations and the keys vary airport to airport, so it is wise to make advance preparations so that you know the procedures for each airport on your itinerary. It is not unusual for resident pilots, as well as visitors, to find themselves on the wrong side of a locked gate with no assistance readily available. Unlike most mainland airports, you will not be able to transfer baggage from the airplane to your rental car, airport shuttle, or friend's car—vehicular access to the tarmac is highly restricted. Plan accordingly, since this can easily involve walking a half mile or more, with baggage, in the mid-day sun or during a tropical rainburst.

Several good flight schools offering airplane rentals are located on the major islands, and they'll happily brief you on most of the anomalies of flying in Hawaii. The controllers are helpful and friendly, even in the Honolulu Class B airspace. Flight Service has a convenient, well staffed office at Honolulu International Airport, and their staff will readily assist you in flight planning. They're used to a lot of student pilots, including many from Japan and other countries, who train here. Just tell them you're a visiting pilot, and you'll get all the help you need.

Security badges are required for all resident general aviation pilots in Hawaii, but these are issued separately for each island. Badges are supposed to be honored inter-island, and visiting pilots are not required to possess an airport badge. Unfortunately, security guards have not always been properly briefed, and sometimes will not honor pilots licenses or badges from other islands. Fortunately, pilots are rarely challenged, but the best advice is to carry lots of documentation—pilots license, aircraft rental agreement, etc.

While some of the airport ramp procedures may prove confusing for the visiting pilot with a locally rented airplane, be assured that it is almost as confusing for pilots who have lived here for years. Patience goes a long way in coping with some of Hawaii's old ways. Meanwhile, bring plenty of film and your swim suit

See you at the beach!

Wide expanses of indigo ocean, blue sky, and puffs of clouds extend to each horizon. The wire antenna is for the HF radio used for the author's ferry flight from Oakland to Honolulu.

AVNEWS

GARVEY SWORN IN AS NEW ADMINISTRATOR

When the September issue of *FAA Aviation News* went to press in late July, the nomination of Ms. Jane F. Garvey as the Nation's 14th Federal Aviation Administrator needed approval by the Senate. That approval came on July 31, and on August 4 Ms. Garvey was sworn in by Vice President Al Gore and Transportation Secretary Rodney Slater.

"I am honored by the confidence placed in me," Garvey said. "I plan to lead the FAA in maintaining the safest aviation system in the world, and in delivering what the American people expect and deserve: an agency that is efficient, productive, and decisive."

Recent legislation made the Federal Aviation Administrator's position a five-year post.

Hawaii's "Flight 2000" Project

Beginning in 1999, the FAA will conduct a two-year evaluation of new air traffic management concepts and technologies in Hawaii and Alaska. The Flight 2000 project is a revolutionary air traffic management concept that will greatly increases users' flexibility to plan flight routes and operate aircraft. Imagine a small box in the cockpit giving you Global Positioning Satellites (GPS) for navigation, Automatic Dependent Surveillance-Broadcast (ADS-B) equipment for surveillance, and data link for communication. This system will use the ADS-B to transmit GPS derived position information directly to other ADS-B equipped aircraft, ATC via either satellite or a ground based communication link. Situational awareness will be enhanced because it will allow similarly equipped aircraft to view other traffic, and ATC will see the same picture as the aircraft.

Hawaii was chosen because it offers a controlled environment with an affordable fleet size to do a full-scale evaluation safety and quickly. Approximately 600 aircraft will be equipped with compatible on-board avionics for evaluation. Commercial, military, and general aviation will be asked to participate in this voluntary demonstration; for example, a Civil Air Patrol Cessna's 172, a major air-carrier's DC-10, and a Military's Bell 206. The program will allow pilots to fly a route and an altitude that is best suited for the existing conditions. The advantages include fuel and time savings from flying more direct routes and more efficient use of airspace to accommodate aviation growth.

Dave Tuttle, National Program Manager for "Flight 2000," will discuss this project at the International Oceanic Airspace Conference, October 27-30, 1997. This conference will be held at the Ilikai Hotel in Honolulu. If there are any questions relating to the conference, call 202-863-2175 or internet at ioac97@cssiinc.com.

If you would like more information on this exciting project, contact Jacqueline Rehmann at 202-267-8719, or Tweet Coleman 808-837-8307 and visit the Flight 2000 Web site: http://www.faa.gov/flight2000/

This article was prepared by Tweet T. Coleman, Safety Program Manager, Honolulu FSDO.

Leo Loudenslager 1944 - 1997

Leo "Looper" Loudenslager, 53, the popular air show performer, died July 28 in a Nashville, TN, hospital, succumbing to injuries suffered a month earlier when a vehicle crossed the center line and collided head-on with the motorcycle he was operating.

Loudenslager entered aerobatic competition more than two decades ago, winning many accolades along the way, including seven U.S. National Aerobatic Championships; World Aerobatic Champion, 1980; eight Gold, five Silver, and three Bronze Medals in World Competition; Aviation Hall of Fame of New Jersey; Aerobatic Hall of Fame I.A.C.; first aviator to receive the Victor Award; Art Scholl Showmanship Award; Bill Barber Showmanship Award; and the Clifford Henderson Award. Loudenslager also made appearances on "Good Morning America." His spectacular air show performances were viewed by more than 20 million spectators here and abroad.

Loudenslager designed and built his own airplane, the *Laser 200*, which provided him with the versatile maneuvering range that he needed to win championships. It was 20-feet long and had a wingspan of 24 feet, five inches. Nearly 50 percent of the plane's weight (850 pounds empty) was engine and propeller. With a 220-horsepower Lycoming engine, Loudenslager's *Laser 200* could reach a top speed of 230 mph.

He also was a senior captain at American Airlines and served as an officer of the International Council of Air Shows.

At a memorial service held August 7, 1997, in Nashville, TN, air show performers Bill "Big B" Beardsley and Sean D. Tucker gave tributes to Loudenslager. In lieu of flowers, the family has asked that contributions be made to the "Leo Loudenslager Aviation Memorial Fund," which will be used to benefit aerobatic aviation.

Leo Loudenslager Aviation
Memorial Fund
c/o Franklin National Bank
P.O. Box 625
Franklin, TN 37065

Editor's Runway

from the pen of Phyllis-Anne Duncan

This issue is dedicated to the aviators and people of Hawaii

Planning, designing, and bringing this all-Hawaii issue to you, the readers, has been a labor of love. When the Honolulu FSDO Manager Pete Beckner asked *FAA Aviation News* to do an issue for Hawaii like the one we did in 1996 for Alaska, we said, "Sure. No problem." It seems like we forgot just what it takes to write an entire issue on just one subject, but we managed it, between Associate Editor Dean Chamberlain and me plus several local pilots and FAA inspectors who also contributed.

Also between Dean and me, we consumed about 30 rolls of film, and I hope we've presented the best of those pictures in this issue. Our pictures, good as they are, cannot do justice to the incredible beauty of Hawaii.

But, we will not be doing an all-Rhode Island issue, or an all-Florida issue. Sorry, but the all-Alaska and all-Hawaii issues were to address the unique operating characteristics of those two equally unique states of the union.

I even got to be part of a little aviation history. I was on the ramp at HNL snapping pictures when Linda Finch arrived in her *Electra* on the next to last stop of her around the world flight commemorating Amelia Earhart. As a 99 and fan of Earhart all my life, I couldn't help but get a chill when the top hatch of the *Electra* popped open and Ms. Finch emerged. It was like a moment back in time, a what-if passing through my thoughts.

When you begin to try and thank people for their assistance, you run the risk of leaving out someone, but we'll give it a try anyway. First, we'd like to thank Pete Beckner for suggesting this issue and Safety Program Manager Tweet Coleman for planning and organizing my trip there so I got to visit and/or experience just about every aspect of aviation in Hawaii. (I drew the line at the tandem parachute jump.) I can see why Honolulu FSDO was recently named the 1996 FAA FSDO of the Year." Rarely have I traveled anywhere where people were so happy to see someone from the FAA. During all my encounters with many different operators on the various islands, I got a universally wonderful reception when I said I was with the Honolulu FSDO. That shows the great job the FSDO manager and the FAA inspectors do in Hawaii.

I'd like to thank the administrative staff and all the inspectors at the Honolulu FSDO for taking time to answer my questions, especially Jeff Weller, who flew with this rusty pilot, and Dennis Noll who was spared that dubious honor when the Kona Winds made it too turbulent to go soaring.

Here's the rest: Bill Anderson and David Kraul of Anderson Aviation; Jeanne Crane of the Lihue Tower; Major Joseph E. Davis from Hickam AFB; Donn Parent of the Pacific Aerospace Museum; Mary Campbell and Bill Starr of Soar Hawaii; Mike Dahlager of Pacific Corrosion Control Corp.; Stanford Miyamoto and Ben Schlapak of the Airports Division of the Department of Transportation State of Hawaii; Jerry Matsuda, deputy director of the State of Hawaii Department of Transportation; Greg Marshal of Source International; Bob Justman of Pearl Pacific Enterprises; Sporty's Academy of Hawaii; Henry Bruckner, Aviation Safety Counselor; Jack Minassian of the National Park Service; Lee Heggen of Benchmark Flight Center; Bruce Mayes, Captain at Aloha Airlines; Clarence Lopez, Jr. and Frank Hinshaw of Skydive Hawaii; FAA Airways Facilities at Hilo Tower; Preston Myers of Safari Helicopters; Deborah Saito of the Honolulu Tower; James Le of Bali Hai Helicopters; Dwight W. Velazquez of the Honolulu Soaring Club, Inc.; and the Rotary Clubs of Honolulu and Hilo.

And to all those I may have left out—Mahalo—thank you in Hawaiian.

'Til next time...

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