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Ike was tired and feeling uneasy as he pulled the little Piper into a steep climbing turn for the second time. Between the stifling heat, the bad crosswind, and an airplane he hadn't flown much, he had missed his landing twice. He was stuck with the unfamiliar airplane because he had broken the tail wheel on his Cessna when he landed here yesterday, and there was nothing he could do about the heat. Ordinarily, Charlie, down there on the ground, would have warned him about the crosswind, but for some reason their citizens' band radio link wasn't working.

He and Charlie had a rule: if he couldn't land here in two tries, then conditions weren't right, and he would fly somewhere else for the night and try again the next day. But this time there were too many people depending on him. Besides, those two attempts had showed him how the ground conditions were affecting the Piper, and he was sure he could get it down in another try. He brought the airplane around again, lined up on yesterday's tire tracks, and began his final approach. The place he was aiming for was a barely perceptible clearing in the desert he sometimes called "Black Rock." It was one of his two homemade landing spots on the remote island of Angel de la Guarda in the Gulf of California.

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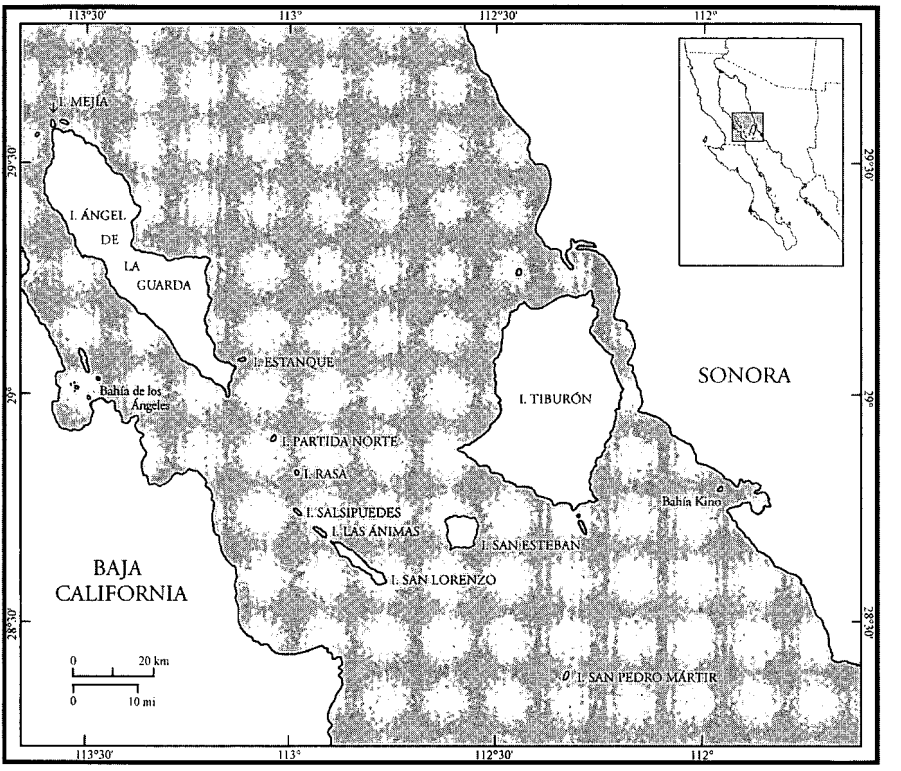


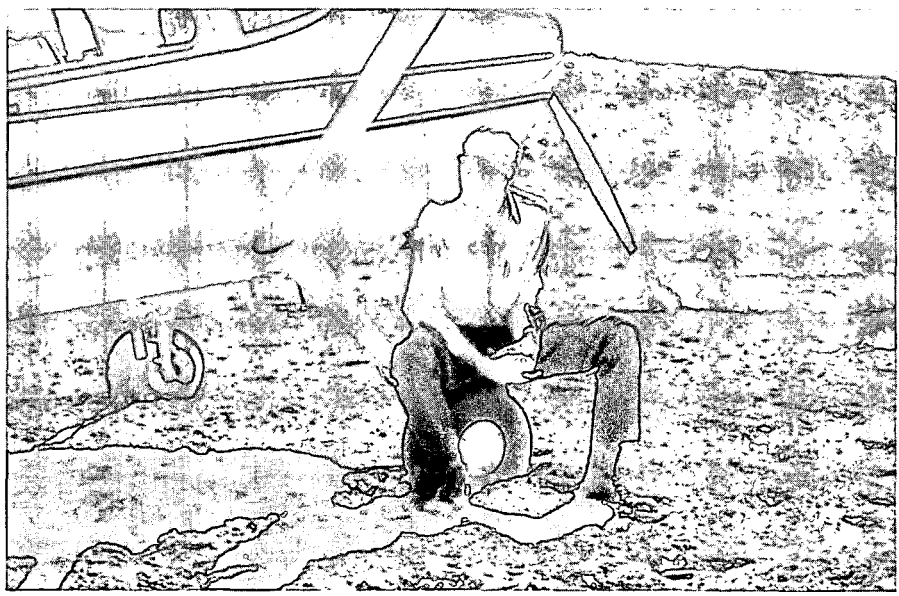
MAP OF ISLA ANGEL DE LA GUARDA

Isla Angel de la Guarda and Surrounding Region of the Gulf of California. *(Map courtesy Thomas Bowen)*

For Alexander "Ike" Russell there was nothing unusual about landing on a tiny patch of desert—he had cut his teeth on that kind of flying. More than thirty years earlier, when he was ranching in the San Pedro Valley east of Tucson, he and a neighbor had bought a war surplus Piper J-3 Cub and learned to fly from their own dirt landing strip. Over the years, Ike had flown the backcountry not only in the southwestern United States but in Mexico, the Caribbean, Central and South America, East Africa, and even Madagascar. The purpose of many of these flights was to deliver scientists to remote field locations. By facilitating these studies, Ike played an enormous role in expanding scientific knowledge (Bowen 2002). His regular airplane, a 1966 Cessna 185 Skywagon with a monster 300-horsepower engine and wing tips specially modified for short takeoffs, was a perfect match for this kind of flying. He loved flying it into difficult airstrips, and he took a quiet

pride in his ability to land in places that were completely beyond the capability of other pilots.

Like many of his favorite landing places, Black Rock was a no-go-around strip—the kind you had to get right the first time because once you touched down and cut power, there was no second chance. Even by Ike's reckoning, though, the strip at Black Rock was difficult: it was short and sloped, with high hills at one end and sharp drop-offs at both ends. But Ike knew it well—he had landed here at least a dozen times in the past several months and four times in just the last few days. So on this sweltering August day in 1977, he lined up on the strip for a third try.[1] This time he committed himself, but as soon as his wheels touched the ground, he knew he was in trouble. Unable to get the lightweight Piper to stop flying, he had overshot the start of the runway and now there wasn't enough room to stop. The airplane slid off the lower end of the runway and fell into the dry estuary 15 feet below.



IKE RUSSELL AND HIS CESSNA 185 ON ISLA TIBURÓN, JANUARY 1976
With his wheels sunk to the hubs in the powdery soil, the challenge here was to accelerate fast enough to lift off before he ran out of runway. This photograph was taken a year and a half before the crash at Black Rock. *(Photograph courtesy Thomas Bowen)*

As with previous mishaps and forced landings, Ike walked away from this one. But his seat belt had snapped, and this time he suffered cracked ribs and an injured spleen in addition to minor cuts and bruises. The trauma of the crash and the stress of heat and dehydration during the next couple of days, before the rescue, took a heavy toll. Afterward, his health deteriorated rapidly and he found it increasingly difficult to gather the energy and mental concentration he needed to fly. He never returned to Black Rock and rarely flew to his other beloved "Ikey" airstrips. Three years later he died. With his death, the scientific community lost one of its most valuable allies, and people throughout the American Southwest and northwestern Mexico lost a deeply cherished friend.

Ike's daughter-in-law Susan Randolph has written a poignant personal account of the events immediately preceding the crash, the rescue several days later, and the harrowing salvage of the damaged Piper (Randolph 2002). Although her story tells what happened, people who knew Ike sometimes have wondered why his phenomenal skill with difficult landings failed him at that particular place and that particular time. One reason this question has persisted is that the strip itself has been something of a mystery. Few people ever landed there or knew much about it, and in the intervening years even its location had been forgotten.

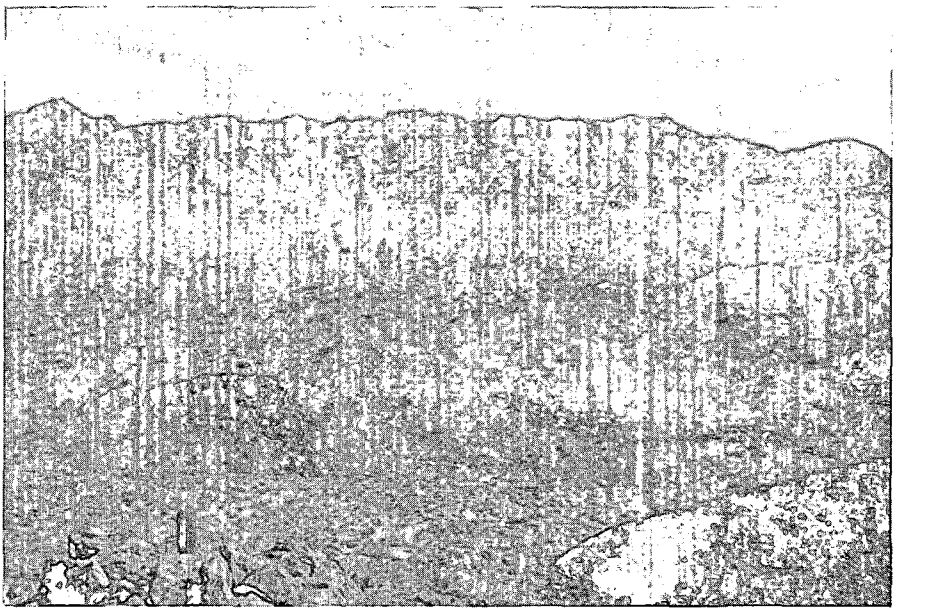
In January 2007, my friends Bill Broyles and Steve Hayden and I relocated Black Rock. Seeing the strip first hand showed clearly what Ike was up against every time he flew there and helped put the crash in perspective. With a better understanding of the context, it may be possible to shed some additional light on why things turned out badly on that August afternoon.

The Archaeology of Black Rock

We recorded Black Rock as part of an ongoing archaeological survey of Isla Angel de la Guarda. Although the airstrip is only about thirty years old, Ike was such an important figure in the scientific history of the region that we recorded it as a historic site with the designation PD-23B.

The Setting

The site is situated near the shoreline on the remnant of a rocky alluvial fan that slopes southeast to northwest. The source of the fan material has long since eroded away, leaving a steep-walled arroyo about 20 feet deep that forms the eastern edge of the fan. On the north and west the fan ends abruptly



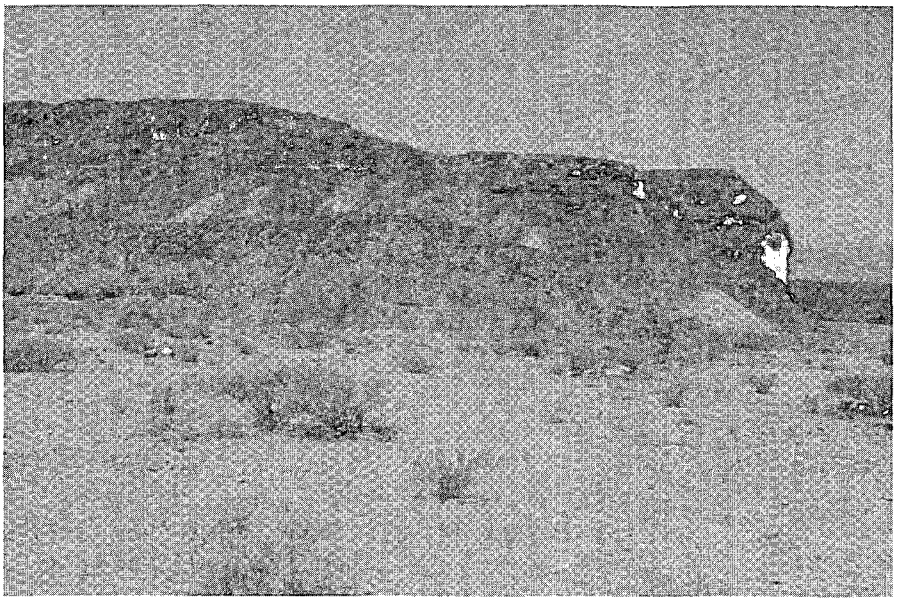
BLACK ROCK, JANUARY 2007
This view of the alluvial fan remnant and the two runways looks east-southeast from the top of the Black Rock buttress. The linear clearing at right is the original strip; the clearing to the left is the later unfinished strip. The arroyo is behind the fan where the two strips converge, and the dry estuary lies in front of the fan. A portion of the 80-foot hill that presents an obstacle for uphill landings and downhill takeoffs is at the lower right corner of the photo.
(Photograph courtesy Thomas Bowen)

in an extinct estuary about 15 feet below. This estuary, dry today, has been densely colonized by two common coastal shrubs, *Frankenia palmeri* and *Allenrolfea occidentalis*.

The western bank of the estuary, across from the alluvial fan, is a steep hill about 80 feet high. About 500 feet beyond this hill, there is a second one some 300 feet high. The eastern end of the second hill forms a prominent overhanging buttress of dark gray rock that lies in perpetual shadow. It is almost certainly the source of the name "Black Rock," by which Ike sometimes referred to this locality.

Major Features and Artifacts

Black Rock turned out to be a fairly complex archaeological site. The modern component includes not just one runway but two, the remains of a

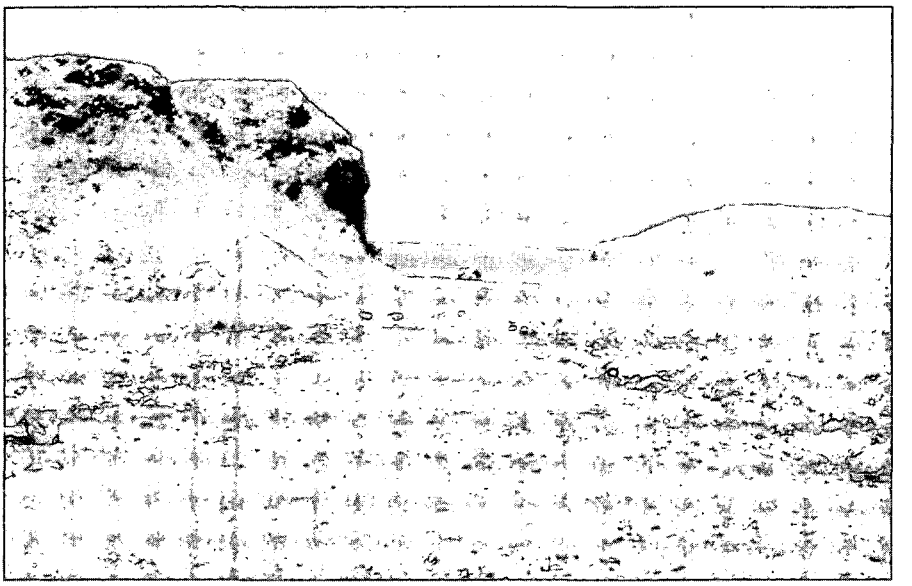


THE ORIGINAL RUNWAY, JANUARY 2007
The view is downhill (west) from the extreme upper end—what Ike would have seen at touchdown during a downhill landing or at the start of a downhill takeoff. The runway, centered in this photo, points slightly to the right of the summit of the first hill (the 80-foot hill). Behind it lies the 300-foot hill. *(Photograph courtesy Thomas Bowen)*

campfire, and a number of associated artifacts. The site also has a prehistoric or historic aboriginal component consisting of several metates, flaked stone tools, and lithic waste, suggesting it was once an important Indian camp.

Runways. The original landing strip at Black Rock is 732 feet long and, where measurable, about 40 feet wide. It is oriented roughly east to west and extends across the entire width of the fan. The eastern end is defined by the arroyo and the western end by the estuary, and from east to west the runway drops about 25 feet in elevation. At the bottom end, the estuary is about 240 feet wide. The hill that forms the opposite bank presents a major obstacle for downhill takeoffs and uphill landings.

The runway was built by removing plants and large rocks and smoothing the surface. Its path is aligned with the most boulder-free portion of the fan, suggesting that its position and orientation were chosen in part for ease of construction. The upper portion of the strip—about three-quarters of its total length—was cleared mainly by removing plants. Today, this section is



THE LOWER HALF OF THE SECOND RUNWAY, JANUARY 2007
The view is downhill (west-northwest) and shows the gap that would have provided unobstructed uphill landings and downhill takeoffs. The shadowed cliff face that forms the left side of the gap is the Black Rock buttress. *(Photograph courtesy Thomas Bowen)*

no longer well defined because plants are recolonizing the clearing. The rocky lower end required the removal of both plants and rocks. Some larger rocks were piled alongside the strip and still clearly define the edges. Except for this lower portion, the surface of the runway is a loose mixture of silt and small rocks. The texture is slightly soft, and shallow tire depressions from landings and takeoffs are still visible. A small rock cairn on the bottom lip might have been a visual aid to mark the end of the runway.

The second runway, built later, crosses the original landing strip at the upper end, and from there the two diverge at an angle of about thirty-five degrees. The orientation of the second strip is roughly east-southeast to west-northwest, which puts most of it east of the original strip. Like the original strip, the second runway extends the entire width of the alluvial fan, from the arroyo on the upper end to the estuary at the lower end.

The upper half of the second strip consists of the same slightly soft-textured mix of silt and small rocks as the original runway. The lower half is much rockier and required considerably more work to produce a smooth

surface. Large boulders, moved only as far as necessary, line the edges of the lower half. The last 165 feet were only partly cleared and were not usable.

At the bottom end of the partially cleared section, the second runway narrows to about 15 feet, curves sharply to the west, and then slopes northwest into the estuary. This strange extension looks as though it might have been built as a ramp to provide vehicle access. Indeed, there is a rusted axle from a pick-up truck lying in the estuary about 330 feet to the southwest.

The second landing strip was never completed. Had it been finished, it would have been about 970 feet long and 30 feet wide, with a drop in elevation of about 25 feet. We found no tire depressions in the soft-textured areas, suggesting that even the finished portion was never used.

Campfire. The campfire, about 8 feet in diameter, is a poorly defined, roughly circular jumble of burned rocks, charcoal, and artifacts. It is near the upper end of the original runway, about 7 feet from the runway itself and 16 feet from the arroyo. In and around the campfire are several pieces of burned and melted aluminum, an obsolete form of pop-top from a food container, and a burned fragment of a twelve-ounce aluminum can of grape soda. In February 1977, Ike brought writer Edward Abbey and several friends to Black Rock; members of this group confirm that their campfire was in just such a location.

Liquor Bottle. We found a half-pint liquor bottle under a shrub about 30 feet east-southeast of the campfire. The plastic cap was in place but there was no trace of the label or contents. A logo molded into the glass identifies the manufacturer as the Owens-Illinois Glass Company, a supplier to several major U.S. distillers and bottlers, and a date code shows that the bottle was made in 1976. This suggests the liquor was purchased in the United States in 1976 or early 1977 and consumed at Black Rock soon thereafter. It is also consistent with statements by members of Abbey's group that they passed a bottle of rum around the campfire (Abbey 1977a: 59, 61; Peacock 2002: 169).[2]

Airplane Parts. We found two airplane parts on opposite sides of the original runway, near the upper end. One is a broken piece of a machined aluminum casting, roughly half a hemisphere in form, with two fin-like projections on the top. The base has an outside diameter of 8.5 centimeters and it contains six bored holes 6 millimeters in diameter and 20 millimeters deep. The height of the hemispherical portion of the casting is 4.2 centimeters and the fins project at least another 2 centimeters. A machined hole in the top is 2.1 centimeters in diameter. The exterior was painted white.

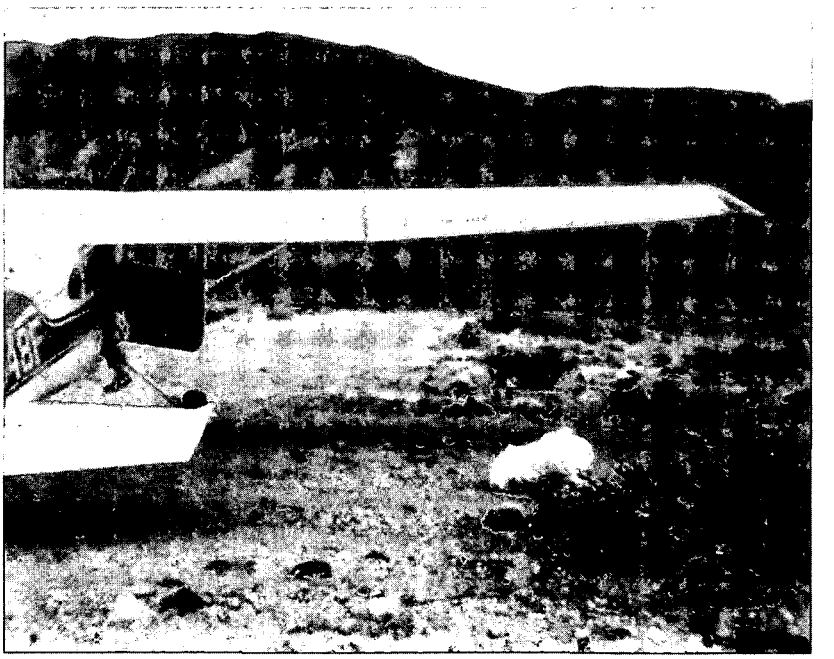
The second part is a rusted metal ring with an outside diameter of 8.5 centimeters, an inside diameter of 6.1 centimeters, and a thickness of 1 millimeter.

The casting is part of a "bracket assembly" and the ring is a "thrust washer." The two parts mate and together form part of the housing that attaches the tail wheel to the fuselage of a light plane.

These two parts are identical to bracket assemblies and thrust washers on Cessna 185 tail wheels. The same parts also may have been used on Cessna models other than the 185, but their presence at the site is consistent with the fact that Ike broke the tail wheel assembly of his Cessna 185 at Black Rock the day before the crash. Although Cessna 185s had many different paint schemes, the undercarriage of Ike's airplane, like the casting, was white.

How Short Is Short?

Because the second runway was never finished, Ike's takeoffs and landings were all made from the original runway. Initially, the runway may have



IKE'S CESSNA 185 PARKED ON THE ORIGINAL RUNWAY, 1977
The view is downhill (west).
(Photograph courtesy Jean Russell)

been no more than about 640 feet long (see note 7), but after Ike's first three landings and takeoffs, it was extended to its current length of 732 feet. Although most pilots would consider even a 732-foot runway appallingly short, just how short was it?

This is a complex question with no simple answer. Many variables determine whether a particular airplane can take off from or land on a runway of a given length. These variables include performance characteristics of the airplane, the physical characteristics of the runway, weather conditions, and, of course, the skill of the pilot. Airplanes are sold with a "pilot's operating handbook" (POH), which provides tables that give a range of values for various parameters to help pilots make this judgment. The POH that came with Ike's Cessna 185 indicates that his airplane, when carrying a typical load (pilot, two passengers, baggage, and fuel) and taking off at sea level from a paved and level runway, with an air temperature of 84°F and no wind, requires a ground roll of 567 feet to lift off and a total of 1,128 feet from the start of the takeoff roll to clear a 50-foot obstacle, such as a hill at the end of the runway.

If *all* these assumptions applied to Black Rock, then Ike should have been able to take off with 165 feet to spare, but he would not have been able to clear the 80-foot hill beyond the west end. Of course the actual runway was neither paved nor level. The resistance of its soft surface would have increased his takeoff roll by a significant but unknown distance, while a downhill takeoff would have reduced it by a significant but also unknown amount. Moreover, wind and weight can drastically alter the equation. A strong tail wind could totally preclude a takeoff that would be easy with a strong head wind. Weight was Ike's constant nemesis, and he was fastidious about minimizing it (Felger 2002: 3). At Black Rock he shuttled passengers in and out two at a time, and only once, when there was no baggage, did he fly in three people.

In fact takeoffs at Black Rock were not much of a problem for Ike. The wild card was the wing tip modifications on his Cessna, which made his airplane capable of astonishing takeoff performance. With a moderate load and favorable winds, Ike could take off from Black Rock uphill—to the east—and eliminate the problem of obstacles beyond the runway. Apparently, that was the takeoff direction he generally preferred.[3]

Landing was another matter. According to the POH for Ike's airplane, a fully loaded Cessna 185 landing at sea level on a paved and level runway, with no wind, an air temperature of 59°F, and heavy braking requires only

480 feet of runway. But few of these conditions apply to Black Rock. Landing short depends on heavy braking, and heavy braking requires the traction of a paved surface. Heavy braking on the loose silt and gravel of Black Rock would cause the airplane to skid much as a car skids when braking too hard on a gravel road. Light braking would avoid the skidding but greatly increase the roll. Either way, landing on an unpaved runway requires *much* more distance to stop. A later edition of the Cessna 185 POH (Anonymous 1975), which provides correction factors for unpaved runways and a more realistic air temperature of 86°F (typical of Black Rock on a February or March day), puts the landing distance at 707 feet, barely within the limits of Black Rock even after the strip was extended to 732 feet. And of course that figure assumes the runway is level.

For landing the slope at Black Rock was a mixed blessing. An uphill landing would greatly shorten the ground roll but require some fast and precise maneuvering just before touching down in order to slip in front of the hills at the west end of the strip and get lined up with the runway. A downhill landing offered a final approach free of obstacles but would have substantially lengthened the ground roll and made it far more difficult to brake without skidding. Wind also affects landings, and wind direction and velocity are hard to gauge in flight. And any landing becomes trickier as the day heats up. Hot air creates unstable ground thermals, which require faster landing speeds, and that in turn translates into more runway needed to stop. On August afternoons at Black Rock, air temperatures can soar far above 100°F.

Part of Ike's genius as a backcountry pilot was his ability to weigh mentally the variables and determine quickly and accurately whether he could land safely. He dealt with adverse weather conditions all the time, and dodging the hills for an uphill landing at Black Rock should have been a simple maneuver compared to the labyrinthine approach he had to make every time he flew to his mining claim in the Sierra Madre mountains of western Chihuahua. Yet at Black Rock he usually chose to land downhill, probably because this enabled him to land into the wind, which often blows strongly from the west on that part of the island. Head wind or not, downhill landings at Black Rock required precise timing and coordination. To stop the airplane before he ran out of runway, Ike had to get the wheels on the ground the moment he cleared the arroyo bank and then stand on the brakes hard enough to stop but not so hard that he skidded or flipped the airplane. By the day of the crash, he had landed his Cessna at Black Rock about twelve times and, except for the broken tail wheel, his safety record was perfect.[4]

So how short is a 732-foot runway? One can juggle the figures endlessly, but in the final analysis, the only assessment that mattered was Ike's. Like other backcountry pilots, Ike had developed an extensive bag of tricks—some of them dramatic—for getting in and out of tight airstrips, so he didn't much care what the POH said. After a lifetime of this kind of flying, he had evolved a rule of thumb: he needed twice the distance to land as he did to take off. And in Ike's judgment, the runway at Black Rock was just too short.

A Short History of a Short Airstrip

The history of Black Rock really begins with the indigenous people who camped on the old alluvial fan remnant. These folk were probably historic Cochimí Indians or their prehistoric predecessors who periodically came over from the Baja California peninsula. Their story, however, must await its telling for another time and another place.

The modern history of Black Rock begins sometime around 1975 when Ike met herpetologist Charles Sylber. At that time, Charlie was a graduate student studying the island's black chuckwallas (*Sauromalus hispidus*), and he had established a field site in the vicinity of Black Rock. Ike had been flying other scientists to remote field sites on Gulf islands for years, and he saw no reason not to provide Charlie with the same service. For Charlie it would reduce the number of long, expensive, and always uncertain boat trips. For Ike it would provide a reason to land on that part of the island, something he had always wanted to do.

Flying with Ike would not entirely eliminate Charlie's dependence on boats. Sometimes he needed to spend a few days at field sites on other islands before coming to Black Rock, and these island-hopping trips were best done by boat with local fishermen. But if Ike could fly into Black Rock, Charlie could be dropped off there by boat and Ike could come down a couple of days later to pick him up. They could then fly to Puerto Refugio at the northern tip of the island, where Charlie had another field site and Ike already had a landing strip. After a day or two at Refugio, the two of them could fly back to Tucson.

The only problem for Ike was finding a spot near Charlie's study area where he could set his airplane down. On 19 March 1976, he checked out a large playa that had been used by other pilots and generally provided easy landing conditions. Although it was several miles away, there were no major obstacles to prevent hiking from there to the field site. Late that spring they

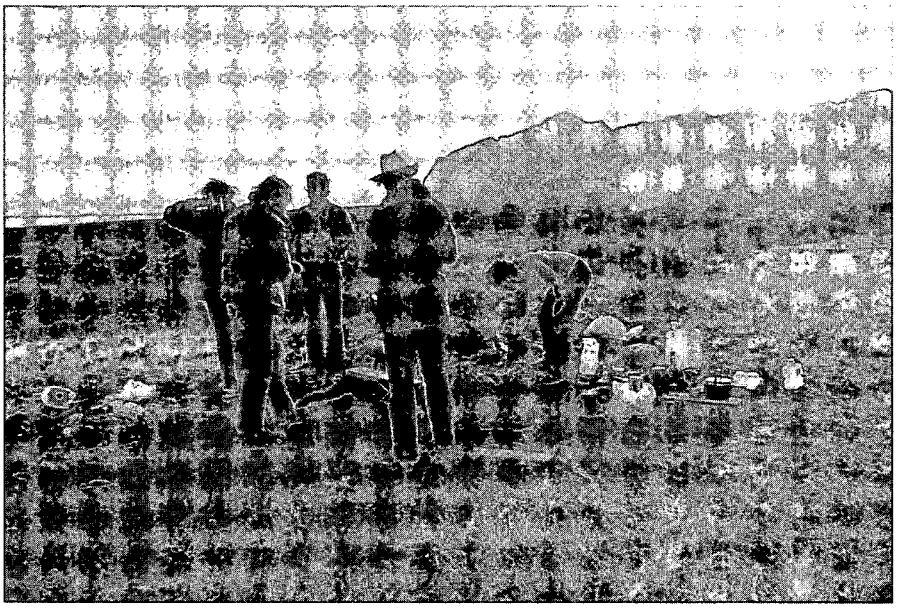
tested the arrangement. On 28 May, Ike dropped Charlie and two assistants at the playa with heavy backpacks containing all their camping gear plus food and water for three days. But by the time they returned to the playa, it was clear that this was not a workable solution. Charlie really needed a landing strip closer to his study area. Ike settled on the alluvial fan as the only feasible location.

The airstrip was built sometime during the summer or fall of 1976. It is said that some of Ike's landing strips were little more than natural clearings where he would land and then spend a few minutes moving rocks and shrubs so he could take off again. The original runway at Black Rock looks like one of those minimal construction jobs, but it actually took considerable labor to prepare it. Since Ike was not in good health, they hired a couple of men from the nearest fishing village to come out and move rocks and plants, a job that took two or three days.

Although the strip was built to facilitate scientific research, Ike's first flight to Black Rock was in support of a recreational camping trip organized by environmental writer Edward Abbey, who was on assignment for *Outside* magazine. Abbey had heard about Ike's backcountry flying expertise and engaged him to fly him and several friends to Isla Angel de la Guarda. Ike must have thought it would be a good opportunity to try out the new strip, so Black Rock is where he took them.

The group consisted of Abbey, river guide Clair Quist, writer Doug Peacock, photographers Terry Moore and Ken Petsch, and painter Sam Scott. Six people, their gear, plus food and water for several days were far more than Ike could carry in one trip. With weight a critical factor and the new airstrip untested, Ike elected to fly them in two at a time.

Abbey and Quist were first. On 4 February 1977, Ike flew them straight from Tucson to the island, stopping only at the border to clear customs. They reached Black Rock late in the afternoon, but when Ike saw the new strip he had second thoughts about landing. He circled the runway several times and concluded that it was too short and too rough to land safely with the weight of two big men and their gear. Instead, he flew over to the playa where he had taken Charlie, made a muddy landing, and dropped off his two passengers and five gallons of their water. With the airplane now four hundred pounds lighter, he flew back to Black Rock and made his inaugural landing alone.[5] Abbey and Quist hiked over and arrived just about dark, guided by Ike's bonfire. The next morning Ike took off for Tucson, leaving Abbey and Quist on their own for the next two days.



SUNRISE AT BLACK ROCK CAMP, 8 FEBRUARY 1977
Left to right: Doug Peacock, Clair Quist, Sam Scott, Edward Abbey, Ken Petsch.
(Photograph courtesy Terry Moore)

BLACK ROCK CAMP, 8 FEBRUARY 1977
Left to right: Sam Scott, Ike Russell.
(Photograph courtesy Terry Moore)

On 7 February, Ike ferried the rest of the group to Black Rock. He flew Scott and Petsch directly to the island from Tucson, again stopping only for customs, while Moore and Peacock drove down to Caborca to shorten their flight. After dropping off Petsch and Scott, Ike picked up Moore and Peacock, and by four o'clock that afternoon, the entire group was happily ensconced at Black Rock.

The next morning Ike took off for Tucson. But before he left, he marked off a second runway that would measure about 1000 feet long. He also left behind a shovel, a hatchet, and a pinch bar, and hinted that people might want to move some rocks and plants for a new runway before he returned. "I didn't come here to build another man's airport," growled Abbey, as he contemplated what looked like a week's hard labor.[6] So the new strip didn't get built, but when Ike showed up about eleven o'clock in the morning on 10 February, he found that the six men had put in a morning's work improving the existing runway.[7]

That afternoon Ike shuttled Moore, Peacock, Petsch, and Scott, two at a time, to Puerto Refugio at the northern end of the island, where the four of

IKE RUSSELL LANDING AT BLACK ROCK, 10 FEBRUARY 1977
Ike is landing downhill, his wheels not yet touching. Edward Abbey holds a stick with his bandanna attached as a makeshift windsock. *(Photograph courtesy Terry Moore)*

them would spend two more days. Although Refugio was another no-go-around strip, it was luxurious by Ike's standards. Not only was it a full 1000 feet long and 30 feet wide, he could land uphill and then take off downhill into the wind.[8]

But for Abbey and Quist the trip was over. Abbey had an upcoming speaking engagement, so Ike flew them from Black Rock to Tucson, detouring slightly to give them a chance to see the small stand of boojums (*Fouquieria columnaris*) near the summit of the island's highest peak.

On 13 February, Ike returned to Puerto Refugio and flew Moore, Petsch, and Scott back to Tucson. Peacock stayed on at Refugio for a solo stint, and Ike picked him up there six days later.[9]

When Abbey wrote about his adventures he often partly fictionalized them—"creative non-fiction," he called it. For the Black Rock trip, he wrote two very different accounts, one for *Outside* (1977a) and the other for *Backpacker* (1977b). Later, a slightly revised version of the *Outside* piece appeared in the anthology *Abbey's Road* (Abbey 1991). While all three versions give a largely accurate picture of the island's environment and natural history, Abbey worried that publicizing it would attract yuppies, Sierra Clubbers, and other undesirable elements to this unspoiled wilderness. Since that was something he wanted to avoid at all cost, he disguised the island's identity by giving it the fictitious names "Isla de la Sombra" and "Isla Encantada," by halving its true size, and in one of the accounts, by locating it in the Pacific Ocean off the west coast of the Mexican mainland. In the original piece for *Outside*, Abbey also claimed that the expedition consisted of just himself and Quist, and that the two of them spent ten days on the island.

Ike's first flight to Black Rock with Charlie dovetailed with the end of the Abbey trip. On 19 February, the day he picked up Peacock, he dropped Charlie off at Puerto Refugio and then returned to Tucson with Peacock. Four days later, on 23 February, Ike flew Charlie from Refugio to Black Rock, dropped him off, flew over to Baja California for the night, and then picked him up the next day. On 18 March, Ike again took Charlie from Refugio to Black Rock, leaving him there overnight and picking him up the following morning. Although there had been no mishaps in all these landings and takeoffs, Ike still considered the runway inadequate. If he and Charlie were going to continue flying there, he wanted a longer landing strip.

Work on the second runway finally began sometime during the late spring or summer of 1977. By orienting it about 35 degrees clockwise from the original strip, the new runway could be made 968 feet long, still short by

most standards but comfortable for Ike. Furthermore, this orientation enabled the downhill end to be pointed directly toward a gap in the hills on the far side of the estuary, providing a straight shot for uphill landings and downhill takeoffs. But the path of the new strip traversed much rougher ground, making construction a bigger job. It had not quite been completed the day that Ike crashed.

The crash was the outcome of a chain of events that began routinely several days earlier. Charlie needed to collect data on both Isla San Esteban and Isla Angel de la Guarda, so he enlisted Ike's help. The plan was for Charlie and his assistant Fred to go to Bahía Kino, hire a fishing boat, and on 13 August, have the fisherman drop them off at San Esteban.[10] Several days later, Ike was to fly to Puerto Refugio, where he would cache a supply of water for their return, and then on to a recently constructed airstrip on San Esteban to pick up Charlie and Fred. From San Esteban the three of them would fly to Black Rock for a couple of days and then back to Refugio, where the rest of their water would be, for another day or two of field work.[11]

On 18 August, Ike took off from Tucson with Charlie's water in the back of his Cessna. He also had two passengers with him. Ike typically liked to invite friends along for the ride whenever he had a spare seat. He did it because he knew that backcountry flying was a treat for many people and because he enjoyed the company. For this trip he had invited Terry Moore, who wanted to take some aerial photos of the islands, and Kris Childers, the twelve-year-old son of family friends.[12] Their destination for the night was Bahía Kino, but Ike wanted to fly there by way of Isla San Esteban to get a look at the new airstrip where he would be picking up Charlie and Fred the next day. Ike had seen it only once, back in March. At that time he noted in his log that it was short and narrow, with approaches blocked by brush, and high brush on both sides—definitely a no-go-around strip.

When they flew over San Esteban they saw an ominous sign on the beach written in rocks: "NO CB." Apparently, Charlie's radio wasn't working, which meant that tomorrow Ike would have to make his first landing on the new strip without any assistance. They flew on to Kino and spent the night on the beach with the mosquitoes.

Early the next morning, 19 August, Ike flew Terry and Kris to Black Rock, leaving them there along with Charlie's water to lighten the airplane as much as possible. Then he took off for San Esteban to pick up Charlie and Fred. But when Ike arrived at San Esteban the wind was whipping up whitecaps on the water and there was a bad crosswind over the airstrip. There was

no way he could land under those conditions, and he returned to Black Rock alone.

For the rest of the afternoon Ike, Terry, and Kris sat out the scorching heat at Black Rock. At five o'clock they flew to Puerto Refugio, where once again Ike dropped off Terry and Kris, along with Charlie's water, while he made another attempt to pick up Charlie and Fred. This time he succeeded, and the three of them flew from San Esteban to Black Rock for the night. It was Ike's one and only landing and takeoff at Isla San Esteban.

The next morning, 20 August, Ike left Charlie and Fred at Black Rock and returned to Refugio. From there Ike, Terry, and Kris flew to Hermosillo. While Charlie was collecting his data at Black Rock, Ike wanted to look around Hermosillo for a drive shaft for the boat he kept in Guaymas. But most of all, he needed to rest. Terry, with no more aerial photography in the offing, caught a commercial flight back to Tucson.

Ike and Kris spent the remainder of that day and all the next (21 August) in Hermosillo. Early on 22 August, they flew to Refugio, arriving around nine thirty in the morning. Ike left Kris with Charlie's water cache, and with the airplane now as light as he could make it, he was ready to fetch Charlie and Fred at Black Rock. He told Kris he would be back shortly.

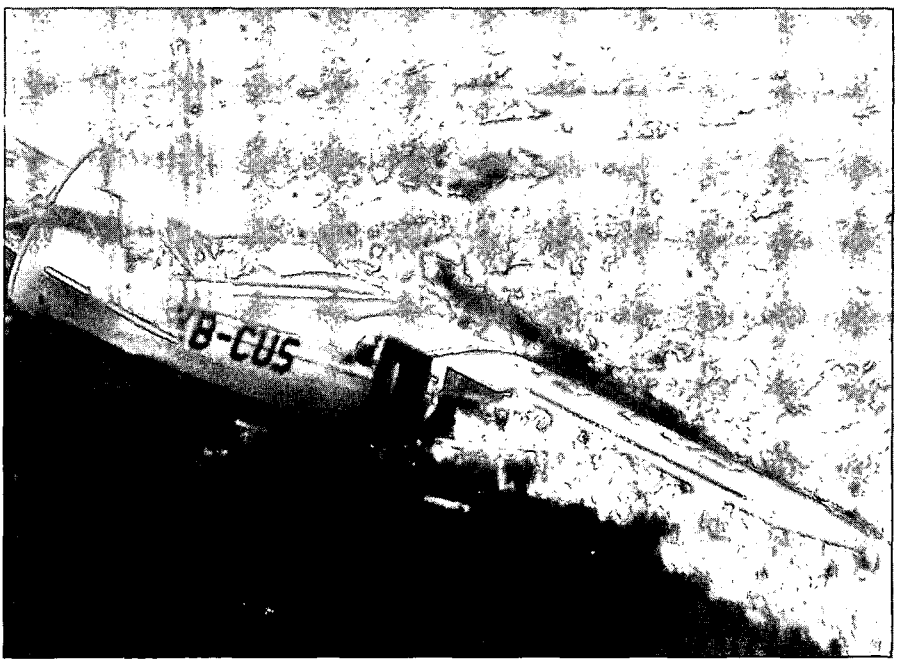
As the afternoon wore on, Kris waited, but Ike never showed up. When Ike had touched down at Black Rock, his tail wheel had caught on a rock. The bracket assembly shattered explosively, throwing a piece of the assembly and the thrust washer to opposite sides of the runway, and leaving the wheel itself dangling uselessly by the steering cables. After assessing the damage, Ike disconnected the steering cables and stowed the remains of the tail wheel assembly in the airplane. Although he knew he could take off from Black Rock without the tail wheel, it was too risky to try it with the added weight of Charlie, Fred, and their gear. Even without that extra weight, he was afraid that a landing at Puerto Refugio might cause enough further damage that he would not be able to take off afterward, and he and Kris would be stranded. Although he was very upset at the thought of leaving the boy overnight, he decided the safest course would be to fly directly from Black Rock to Tucson. After fixing the tail wheel, he could fly back to Refugio the next day, make sure Kris was all right, and then fly on to Black Rock to pick up Charlie and Fred.

But when Ike landed in Tucson that afternoon, he couldn't find the parts he needed, and by late the next morning, he had determined that they would have to be ordered from the Cessna factory in Wichita, Kansas. Unable to

fix the airplane quickly, the situation had suddenly become serious. He had effectively abandoned three people on a remote desert island in the brutal heat of summer, and he was responsible for their safety. With the Cessna out of commission, he turned to an obvious alternative. He and his son Dave had been rebuilding a 1947 Piper PA-14 Family Cruiser, and he could fly this small craft to the island to pick up Kris and the others. Shortly after noon on 23 August, he and Susan Randolph, Dave's wife, took off in the Piper and headed south for Isla Angel de la Guarda.

After a perfect landing at Puerto Refugio and an emotional reunion with Kris, Ike prepared to take off again. He was now a day late and he wanted to bring Charlie and Fred up to Refugio without further delay. At 5:15 PM he told Susan and Kris he would be back in an hour or two, and the five of them would spend the night there. The next day, while Charlie conducted his work at Refugio, he would fly Susan and Kris to Tucson and then come back for Charlie and Fred.

But once again Ike failed to return. At Black Rock, the heat, the crosswind, and the unfamiliar airplane had forced him to abort his first two landing attempts. The stakes were now much higher, so he circled back around for



THE PIPER AFTER THE CRASH, AUGUST 1977
(Photograph courtesy Jean Russell and the University of Arizona Press)

another try. This time he committed himself to landing. But in the hot air, the featherweight Piper still wanted to float, and once again he overshot the upper end of the runway. As the wheels touched and he cut power, Ike knew he might not be able to stop in time. He stood on the brakes as hard as he dared but the lower end of the runway was still coming toward him a little too fast. In a last ditch effort to stop, he pushed a shade harder on the brake pedals. The nose went down, the tail went up, and the little airplane skidded slowly off the end of the runway and plunged into the estuary below. He had missed his landing by only a few feet.[13]

Now five people were stranded on Isla Angel de la Guarda—Ike, Charlie, and Fred at Black Rock, and Susan and Kris at Puerto Refugio. Ike knew that Susan and Kris, with Charlie's water, were okay for the time being, but he also knew the water wouldn't last forever. At Black Rock the situation was much worse. Through some error, Charlie and Fred had used up their water supply, and even the ten gallons Charlie always kept for emergencies were nearly gone. Ike had only the half-gallon water bottle he kept in his airplane. He told Charlie and Fred that they should take his water—he wouldn't be drinking any of it. Even so they all knew a half gallon wouldn't amount to much in the heat of summer. Charlie began considering what kind of desperate measures might be necessary to keep themselves alive.

Susan and Kris were rescued two days later by Mexican fishermen who took them to Black Rock. In the meantime, Charlie, to everyone's relief, had found water in the mountains behind camp. Susan's husband, Dave Russell, had located both groups from the air and had arranged with some fishermen in Bahía de los Angeles to pick everybody up. Although Ike was beaten up from the crash, the others were in good shape, and everyone got home safely. A short time later Dave, Susan, an American friend, and three Mexican fishermen from Bahía de los Angeles came back and salvaged the Piper, an undertaking that turned into yet another harrowing experience.

The salvage of the Piper probably ends the short history of the Black Rock airport, but a few loose ends remain. Dave later heard rumors that the landing strip had been used by drug runners, and the presence of the pick-up truck axle suggests heavy-duty activity of some kind after the events of 1977. There is no physical evidence that the new runway was ever used, even though in its unfinished state it would have been preferable to Ike's original landing strip. Of course some of the tire depressions on the original runway could have been left by pilots other than Ike. But even though it is said that narcopilots have pulled off some amazing feats, it is hard to imagine that anybody but Ike would have tried to land there.

Why There, Why Then?

Although there is no way to know exactly why Ike crashed at Black Rock on that particular day, some of the contributing factors are clear. The runway may have been one of Ike's most demanding landing strips. Weather conditions were at their worst: it was summer, it was late afternoon, and there was a bad crosswind. The radio link with Charlie had been disrupted. And Ike was flying an airplane with very different performance characteristics from the one he was used to. In short he was trying to land at a difficult airstrip under very difficult conditions.

Of course Ike knew all this and landing under such conditions was nothing new. The one factor he might not have been able to consider fully was his own fitness for critical decisions and exacting maneuvers. Ike had suffered all his life from a succession of illnesses that produced uncontrollable pain and chronic fatigue. Although he had always flown with consummate skill in spite of these health problems, by August 1977 it was clear to his family and friends that his overall condition was rapidly deteriorating. What nobody recognized until later was that he was already showing symptoms of the illness that ultimately led to his death. With his health on the decline, Ike may have been closer to exhaustion that August day than either he or anyone else realized. In the six days before the crash, he had made twenty-five takeoffs and landings, eighteen of them on no-go-around "Ikey" airstrips, with only one day of rest. When he circled around for his third landing attempt at Black Rock, he may have been pushing the outer limits of his endurance. It is amazing that he was able to fly at all.

Should Ike have made that third attempt to land? An inevitable question, perhaps, but it is cynical and disingenuous to judge decisions solely by their outcomes. Nobody knows in advance how their decisions will turn out, and Ike would not have tried to land had he not been convinced that he could do it successfully. He made a reasonable decision under extraordinary circumstances. No one can ask more.

Sources and Acknowledgments

Throughout this account I have deliberately kept citations to a minimum in order to preserve the flow of the narrative. It is now time to divulge where the information came from and to thank those who provided it.

Credit for the rediscovery of Black Rock goes to Bill Broyles and Steve Hayden, and I am indebted to both for their careful observations and

thoughtful interpretations of the site (to say nothing of their excellent company in the field).

The history of Black Rock, as reconstructed here, is both a collage and a best-fit scenario, assembled from a number of often contradictory accounts. It is based in part on the recollections of people who knew Ike and were involved in some way with Black Rock. After thirty years, it is no surprise that not everyone remembers events the same way, and navigating the murky waters of ancient memories has been a considerable challenge. That said I am deeply grateful to everyone who shared their recollections: Kris Childers, Terry Moore, Doug Peacock, Clair Quist, Susan Randolph, Bob Russell, Dave Russell, Jean Russell, Luke Russell, and Charlie Sylber.

Fortunately, written records also exist. For Abbey's trip, there are three published accounts by Abbey (1977a, 1977b, 1991: 69–80) and two by Doug Peacock (Peacock 2002: 169–71; Moore and Peacock 1991: 35–49). I have drawn heavily from Susan Randolph's (2002) poignant story of the events surrounding the crash. I am deeply grateful to Jean Russell for making available the most important primary source—Ike's personal notebooks and flight logs—and to Terry Moore for access to his journals and photographs, which proved crucial to sorting out the complicated chronology of both the Abbey trip and the events leading up to the crash. Background material has come from transcripts of taped interviews with Russell family members recorded in 1999 and from the individually authored chapters in an edited volume about Ike and his flying career (Bowen 2002).

I am indebted to Gary Loose, manager of Hunt Field in Lander, Wyoming, for identifying Ike's damaged tail wheel parts, to Bill Raftopoulos of Cessna Aircraft Company for data on Ike's Cessna 185, to airplane builder and pilot Paul Yarnall for technical information about aircraft performance, and to physician Bill Calder, M.D. for help interpreting Ike's medical condition. I thank Kristie Martin of Owens-Illinois Glass Company for identifying codes on the liquor bottle, and backcountry pilot Sandy Lanham and ecologist Gary Nabhan for help in trying to find Black Rock from the air (unsuccessfully) in September 2006. I am grateful to the staff of the Ensenada and Bahía de los Angeles offices of El Area de Protección de Flora y Fauna Islas del Golfo de California en Baja California for their support and for permission to conduct the field work on Isla Angel de la Guarda that led to the discovery of Black Rock. And finally I thank Richard Felger and, as always, Marty Brace, for their perceptive and thoughtful comments on the manuscript.

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Notes

1. The date of 1979 reported previously (Bowen 2002: 197; Randolph 2002: 64; Russell 2002: 163) is incorrect.
2. Although the date of the bottle is also consistent with Ike's flights with Charlie Sylber, Ike did not drink alcohol, and Sylber reports that neither he nor anybody who accompanied him brought alcohol to Black Rock.

3. According to Peter Marshall (2002: 148), one of Ike's rules was "always take off downhill." Doug Peacock and Clair Quist recall their takeoffs as "a bit scary," requiring quick maneuvering around some hills, which would be consistent with downhill takeoffs. However, Charlie Sylber remembers Ike always taking off uphill.
4. This figure is approximate because Ike did not always keep careful or complete records of his flights (Bowen 2002: 196).
5. Abbey's statement (1977a: 58) that Ike had landed at Black Rock previously may have resulted from a misunderstanding. Ike might well have said that he had landed "there" previously—meaning on that part of the island—but in reference to the playa, not the airstrip. Ike's flight logs contain no record of an earlier landing at Black Rock. Although this cannot be construed as proof (see note 4), if Ike already knew how marginal the strip was, it seems unlikely that he would have flown there with too much weight for a landing.
6. Edward Abbey, quoted by Clair Quist in a telephone interview by Thomas Bowen, 3 July 2007.
7. According to Abbey (1977a: 61), enough rocks and bushes were cleared at both ends of the runway to lengthen it by 90 feet. If Abbey's claim is true, the runway was only 642 feet long when Ike made his first three landings and takeoffs.
8. Although the approximate location of the Refugio strip is known, there is no longer any trace of it.
9. Peacock states (Moore and Peacock 1991: 35; Peacock 2002: 169) that he was at Refugio for ten days. According to Ike's flight log, Peacock was expecting Ike to pick him up on 21 February, eight days after dropping him off, but he came on 19 February, two days early.
10. "Fred" is a pseudonym. Nobody remembers the assistant's name.
11. Susan Randolph (2002: 64) states that the original purpose of Ike's flight to Black Rock was to deliver water to Sylber. According to Sylber and Terry Moore, the water was for Refugio, where Sylber planned to collect data after leaving Black Rock.
12. Randolph (2002: 64) erroneously spells his name "Chris."
13. Ike's flight log entry summarizes the entire incident in one word: "wrecked."