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The X-Hunters

Two aviation buffs are tracking down the forgotten history of America's most revolutionary aircraft.

by Lance Thompson

August 8, 1955: A B-29 is flying 31,000 feet above Edwards Air Force Base in California, carrying in its bomb bay the fastest aircraft built to date, the rocket-powered X-1A. Test pilot Joe Walker sits at the controls of the rocket plane, ready to take off.

The risks Walker faces are grave. Mysterious explosions have destroyed two previous experimental aircraft in the bomb bays of their motherships prior to launch--the X-1D in 1951 and an X-2 in 1953. Later analysis will show that the Ulmer leather gaskets in these aircraft were impregnated with a chemical called tricresyl phosphate; when this chemical comes in contact with a rocket plane's liquid oxygen, a compound is produced that is easily detonated when subjected to shocks. As it happens, the liquid-oxygen tanks in Walker's X-1A are also fitted with Ulmer leather gaskets.

Less than a minute before launch, an explosion rocks the X-1A, rupturing its liquid-oxygen tank, ripping out the center section access panels, and blowing open the landing gear doors.

Air Force major Arthur Murray, flying chase in an F-86, observes a tongue of flame and a trail of white vapor emanating from the damaged rocket plane. He advises B-29 pilot Stanley Butchart to maintain speed so that if the X-1A comes loose, Walker will have a chance to glide to a landing. But his principal advice is to Walker himself: "Joe, old boy, get out of that thing right now and get up in the bomb bay."

Though they don't know how firmly the X-1A is attached to the mothership or whether it is on the verge of exploding, crewmen John Moise and Charles Littleton each set one foot on the bomb bay floor and one on the X-1A and help lift Walker out of the rocket plane to safety.

The pilots and crew want to bring the X-plane back intact, but its landing gear now extends below that of the B-29, so the mothership can't land without crushing the gear of the smaller plane. That could set off another explosion.

They decide they will have to jettison the X-1A after all. Over a remote section of the base bombing range, they release the unmanned aircraft, which spirals down in a flat spin and explodes on impact.

A few hours later, recovery crews arrive and set to work surveying the site and photographing the wreckage. The next day, Air Force personnel load the large pieces onto trucks and take them back to the base for study. The rest of the pieces are left scattered among the Joshua trees of the California desert, where they will lie, unnoticed, for almost 40 years.

Countless experimental aircraft from the flight test center at Edwards have ended up in smoking holes in the Mojave Desert, often taking pilots and crewmen with them. Among the fallen are two Northrop flying wings--the wooden N9M in 1943 and the larger YB-49 in 1948; an X-2 in 1956; the NF-104, from which Chuck Yeager barely managed to escape before its 1963 crash; an X-15 that broke up at Mach 5 in 1967; and the XB-70 experimental strategic bomber, which collided with an F-104 in 1966. In the immediate aftermath of accidents like these, the program officers focus on recovering the bodies, carting away the bulk of the wreckage, and identifying the cause of the accident. The investigations are careful but not always exhaustive: small pieces of wreckage may be left behind, for example, and the precise site of the impact may go unmapped.

But in 1991, two aviation buffs named Tony Moore and Pete Merlin began filling in those gaps in the historic record.

During repeated expeditions through the vast Mojave, the pair has discovered the crash sites of each of the aircraft mentioned above. And with each trip, Moore and Merlin add a little more to the history of flight testing at Edwards. "We don't do accident investigation," explains Merlin. "We're not coming up with any new theories. What we do is locate the site, identify the artifacts, and bring them back for others to see them."

They specialize in experimental aircraft that flew from 1940 to 1970, and no place on earth offers the concentration of experimental aviation history found in the Antelope Valley, the stretch of desert that includes Edwards. This is where the most advanced aircraft in the world are tested, some beyond their limits. "Living this close to Edwards is like an archeologist living in Egypt," says Moore. Merlin agrees: "This is the Valley of the Kings."

Moore, hearty and gregarious, is a T-shirt and jeans guy who loves to talk airplanes over a beer. He grew up in the San Fernando Valley, under the sonic booms of Edwards X-craft. Moore got his start as a wreck chaser one day in 1991, while shopping at a pilot supply store in Lancaster, California. The store's owner, Tom Rosquin, had tacked up a photo of himself with wreckage of the XB-70, which he had located a few years earlier. Staring at the photo, Moore grew determined to go to the site himself and search for more wreckage. It took several trips, but he eventually found parts of the XB-70's body and engine. "When Tony came back with pieces," recalls Rosquin, "he went ballistic for finding crashes."

Moore's partner, Pete Merlin, is reserved and meticulous, with a bachelor's degree from Florida's renowned Embry-Riddle Aeronautical University and a background in amateur archeology. Kim MacDonald, a pilot who runs an aviation-theme bar near Edwards, characterizes the pair this way: "If you've got a question, Pete's got the answer. But it takes him a little while to warm up. Tony's the PR guy--he'll talk to anybody."

Both men work at the Burbank, California airport, Moore as a ground crew member, Merlin as a station agent. They discovered they were both interested in aviation archeology during a casual conversation four years ago, and ever since, they've been hunting crash sites together in their spare time.

The pair's greatest success so far has been their July 1992 discovery of the crash site of the third X-15, near Johannesburg, California. As Moore sets the accident scene, a feeling of awe creeps into his voice. "That plane didn't hit the ground--it came apart in the air, going 3,000 miles per hour at 65,000 feet. The X-15 was built like a tank, out of a nickel-steel alloy, and turbulent air shredded it like paper. The test pilots knew that could happen, but they kept going back up there. That's why these guys are my heroes." Merlin continues: "The wreckage was spread over 20 square miles, but we found the largest pieces we ever recovered--an engine access panel, a reaction control rocket for maneuvering in the upper atmosphere, a piece of the horizontal stabilizer, and a section of vertical stabilizer that had the numerals '72' on it. The tail number of the third X-15 was 66672."

Such luck is rare; more often Moore and Merlin have to verify their finds by locating serial numbers, part numbers, and manufacturer inspection stamps on pieces as small as a half-dollar. They can also verify an artifact by studying a detailed photograph of the aircraft, or by identifying a particular construction material or paint. In the case of the N9M flying wing, a bright yellow wooden aircraft, Moore and Merlin tracked down the crash site from a grainy 50-year-old photograph, and when they went out to investigate, they found a rudder hinge and pieces of wood with bright yellow paint.

Moore and Merlin donate almost all of the artifacts they find to the Air Force Flight Test Center Museum at Edwards. "As cool as it would be to have these things at home," Merlin says, "this is where they belong." Museum curator Doug Nelson is grateful for the archeologists' tenacity. "If it came from Edwards," he says, "they're the guys to talk to. They very seldom come back empty-handed."

November 1992: Moore and Merlin decide to locate the crash site of the X-1A. Merlin is optimistic: "Cheryl [Gumm] in the history office told us that they cleaned that site up long ago. We've heard that on every trip, and we always find something." Still, a decades-long rain of bombs, bullets, and rockets, not to mention storms, wind, and dust, may have obscured or obliterated any of the small pieces that were left. This will be Moore and Merlin's most challenging expedition yet.

They begin their search for the X-1A where they begin all their searches--the library. They pore over books, magazines,

newspaper accounts, Air Force crash reports, and witness statements. Sometimes their research extends to interviews with witnesses and participants. To locate the X-15 remnants, for example, Moore called Edwards test pilot Milt Thompson, who provided a map that led the pair to the site.

From radio transcripts and crew statements, Moore and Merlin learn that the X-1A hit the bombing range near a target designated PB-3. But there's a problem: a map of the B-29 mothership's flight path points to a different area of the bombing range.

Later, while visiting the base's history office, they notice an old aerial photo of the bombing range, with one target marked in grease pencil "PB-3." But it's not the PB-3 on the current map. They conclude that the targets have been renumbered since the accident. The old PB-3 is in line with the B-29's flight path, so they are able to narrow their search to a few square miles of desert.

The site now appears to be on the portion of the bombing range under the jurisdiction of the Phillips Laboratory, a research and development complex involved with rockets, missiles, and space technology. It is one of the most sensitive areas of the base, and access is extremely limited.

To conduct their search, they must submit a detailed proposal to the Air Force and obtain an exhausting series of approvals. Previous expeditions on public lands have required several trips to locate a site; this time, they will be lucky to obtain permission for one visit, lasting at most a few hours. Curator Doug Nelson gladly approves the X-1A expedition, but Moore and Merlin must also get the go-ahead from Phillips lab public affairs director Ranney Adams, Colonel Richard Poch, director of the Phillips facility's Operations and Support Directorate, base historian James Young, and historic preservation officer Richard Norwood. Norwood, for one, is in their corner: "Positively identifying a crash site as that of an X-plane, rather than a target drone or a more common aircraft, is a significant achievement," he says. "Every discovery adds to the historical record and database. And, since these are very rare aircraft, there's always the chance they will recover a component that may be useful in a restoration."

The authorization process takes a year. Moore and Merlin use the time for further research. The X-1A's final flight was a mission for the National Advisory Committee for Aeronautics, the forerunner of NASA, so Moore and Merlin contact Joy Nordberg in the NASA Image Technology Branch at Edwards. Luckily, she turns out to have what they need. For the first time, they will have multiple photos of a crash site, which they can use on the expedition to identify key features of the terrain.

Finally, they receive permission to mount the search. Over a year of preparation comes down to one day, June 10--a few hours to search the desert for what may be only a few scraps of old metal.

At 8:00 on the morning of the expedition, public affairs officer Ranney Adams, who will escort the pair, brings them to a lecture about safety on the bombing range. They are warned about rattlesnakes, black widows, unexploded munitions, and "stuff that looks like foam rubber. Don't touch it--it's unexpended solid rocket fuel, and in rare instances it can explode when stepped on." Adams will radio their position back to base at regular intervals. They are instructed to carry water, since the heat will be scorching.

They set off from the old PB-3 site, through a flat, desolate landscape of tumbleweeds, mesquite, and Joshua trees. The Mojave sun beats down from a cloudless sky, and there's not a single breeze to offer relief--the temperature will soon reach 100. A dry creek bed runs through the terrain, and the baked soil is seared in spots by past explosions.

Moore and Merlin pass the giant steel-and-concrete slabs that cover the underground silos from which the first Minuteman missiles were tested. The bombing range is littered with remnants of cable, rusted shell fragments, pieces of bomb casings, and spent cartridges of all calibers. The metal-rich environment would have a metal detector's needle pinned at the red line, and that's one reason Moore and Merlin don't use one. "I have two metal detectors--one on each side of my nose," Moore says. Merlin agrees: "It's the experienced eye. Aircraft metal looks like nothing else you see in the desert."

They crawl under a barbed wire fence with "RESTRICTED AREA" signs posted on both sides. Merlin plots their course with a battered military compass. "This is from the crash of an F-4D in the mountains of Nevada," he says

proudly. "It still works."

After half an hour of scouring the desert, the terrain features begin to match the ones in the old NASA photographs--a notch in a ridge line three miles away, a Joshua tree that hasn't changed in 40 years, a weatherbeaten, sun-bleached fence post that back in 1955 was a weatherbeaten, sun-bleached fence post.

They spot the first pieces of metal--free of rust, because they're aluminum, and encrusted with white paint. The X-1A had aluminum skin, parts of which were painted white. The artifacts, at most a few inches long, would be invisible to anyone more than a few yards away.

The hardy desert scrub brush provides the only shade, and the search dislodges a Mojave green rattlesnake that was taking advantage of it. It has the most toxic venom of all North American rattlesnakes, something the archeologists have to keep in mind as they reach into the mesquite.

Moore and Merlin locate a concentration of debris (all together, it would scarcely fill a shoebox) that marks an apparent point of impact. Moore rushes from one find to the next--an altimeter, an airspeed indicator, a fuel tank pressure gauge, and an Army-issue eight-day clock. Though the time of the impact was 2:17 p.m., the clock reads 4:35. "It was probably sitting out here in the desert, still running, after they hauled away the wreckage," says Moore.

Merlin discovers tubing, battery fragments, and a piece of aluminum containing an aircraft inspection stamp from Bell--the X-1A's manufacturer. The evidence is mounting, but conclusive proof remains elusive. "I know this is it," says Moore. "But we need something positive that'll hold water."

Battery casing fragments are everywhere, and Moore finds one piece with a hand-written "1-A" on the side. Tantalizing, but not conclusive.

An hour later, he locates another piece, which fits together with the first like a jigsaw puzzle. Together, the fragments bear the inscription "X-1A." They've found the crash site.

Once they have cataloged the artifacts, recorded their discovery on a map, and photographed the crash site, the two take off for the Flight Test Museum, on the other side of the base. When they arrive a few hours later and show Doug Nelson the artifacts, the curator lights up. "Hey, you made it!" he exclaims. "That's great!"

"I knew we'd find it," Moore says, "but not that quick."

All that's left is a cold drink at Wing and a Prayer, a nearby bar and grill that caters to the aviation crowd. Proprietors Kim MacDonald and Neil Mason have filled the bar with aviation memorabilia of all types--signed photos of test pilots, instruments from B-17s, 1940s parachutes, and a two-foot piece of black nickel alloy with a plaque beneath reading "...from X-15 number 66672, recovered near Johannesburg, California, by Pete Merlin and Tony Moore, Aerospace Archeology Field Research Team." Other than the museum at Edwards, the pub is the only place where you can see artifacts recovered by Moore and Merlin. (The two aren't completely without mementos, however. On their key rings they carry a washer or fastener from each site they've located.)

What's next for the intrepid pair? "The XB-51," they answer together. "Only two were built, and both crashed," says Merlin, warming once again to the thrill of the hunt. One crash site, in Texas, has been paved over, but the other one is at Edwards.

For the moment, the pair are content to savor another discovery of relics from revolutionary aircraft--worthy additions to a collection that includes pieces of an X-2, an X-15, and the YB-49. "These planes didn't make it back to Edwards," Moore says. "We feel like we're bringing them home."

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