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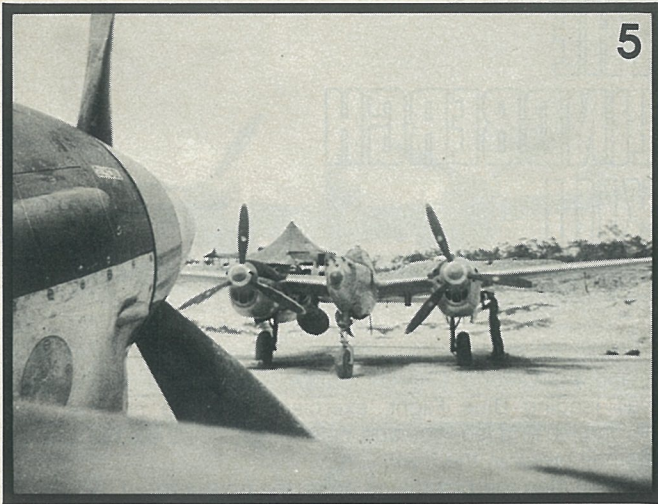
COMBAT FLYING WITH LINDBERGH
IN THE PACIFIC
THE AUTHENTICATED STORY
OF HIS **ONE AND ONLY**
WW II KILL!



GRUMMAN'S
AMAZING
MOHAWK

FRANCE'S WEIRDEST WARPLANE
THE SE-100 "FLYING BANANA"





4. The first of the new Lockheed P-38 J10s to arrive in New Guinea, March 1944. The author helped ferry these up to Nadzab. Prior to that time, P-38 pilots had been unable to pursue Japanese aircraft beyond a certain point on the coast. Now General Kenney, Commander of the 5th Air Force, could let his pilots escort bomber raids to Hollandia and back.

5. A 433rd P-38 at Boroka. This island annex to New Guinea, although primitive enough, was, at least, off the coast of the huge island with its malaria, foul swamps, fire ants, alligators, scorpions, deadly snakes, and torrential downpours that quickly overflowed river banks and turned the interior into a bog of hissing mud.

The fighter weave of the 433rd became restricted. Rain began to fall gently in a silver sheen, highlighted by rays of sunshine filtering through the increasingly dark clouds. This brief interlude of beauty dissolved into a torrential deluge.

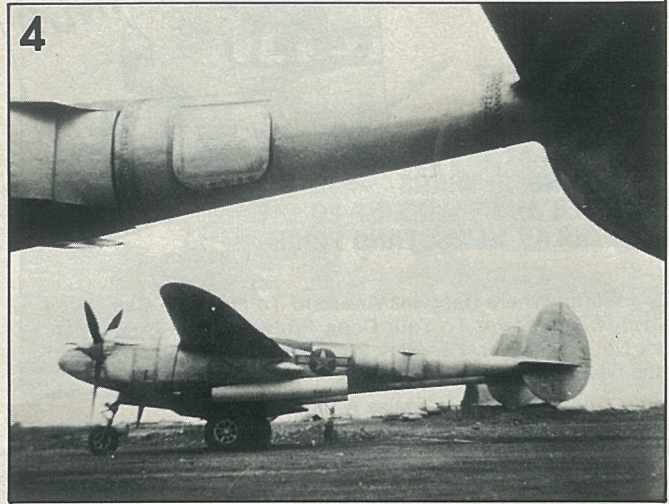
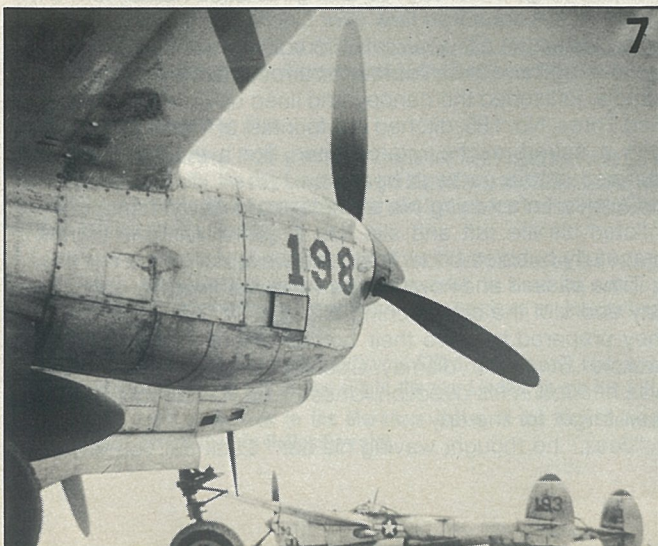
Radio headsets squealed as the B-25s and P-38s plunged through the electrically charged clouds. Turbulence increased. Vision directly ahead became obscured, and the pilots of the 433rd, seeking security through togetherness, tightened their formations.

Radio silence, heretofore zealously guarded, ended when the bomber leader discussed the deteriorating weather with his flight leaders. Possum Red Leader, Major Warren R. Lewis, an ace with nine victories, said nothing and kept the fighters on station. He might not like the looks of the front, but his task was to stay with the Air Apaches.

The sweating fighter pilots hadn't long to wait. The bomber pilot punched his mike button.

"Possum Red Leader. This is Mascot Leader. We can't get through this stuff. We're going home."

"Roger Mascot," acknowledged Lewis. A sense of relief swept through the fighter pilots.



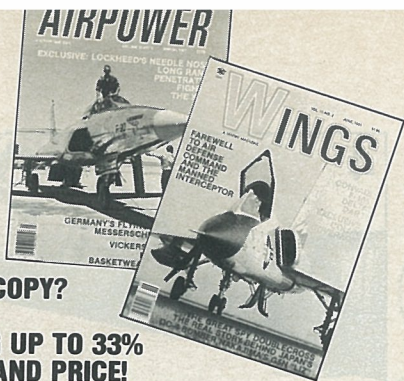
6. Deluxe shower arrangements at the officer's health club, Nadzab. Left to right: Captain Paul Peters, 1st Lt. Robert Herman of the 431st, 1st Lt. William Grady and 2nd Lt. John Purdy. Herman and Grady retired from the Air Force as colonels. None of the four now fly. Peters scored two victories during the war, Herman one, Grady four, and Purdy seven.

7. P-38s at the Boroka strip. These J-10s had replaced earlier J5s three months before. No. 193 in background was flown by 2nd Lt. Alan Sidnam during the mission in which Colonel Lindbergh got his kill.

8. Another view of the P-38 J10 with 300 gallon drop tank.



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THE LINDBERGH KILL

The mass of aircraft turned 180 degrees for the return to Biak Island, but Colonel Charles MacDonald, the CO of 475th who was leading Blue Flight, exercised a group commander's prerogative and led Blue and Yellow flights over the top through a small break in the front.

He guided the Lightnings down the north side of the muddy Macclaur Gulf skirting the Japanese base at Babo where the 433rd had lost Lt. William Hasty to groundfire on the 5th of June. At the Pisang Islands, MacDonald changed heading from 246 degrees to 250 degrees for the final run to Ceram.

Near this point in time, the 433rd enroute home was approaching Noemfor, while the bombers descended to a few hundred feet above the bay.

The 28th of July 1944 just wasn't to be 1st Lt. Herbert Cochran's day. Herbie, who seemed to gain weight on the C rations and bullybeef dished up with such monotonous regularity, was trying to balance himself in his one man liferaft while observing the homeward bound Mitchells of the 345th. Lt. Cochran had made a sudden and unexpected acquaintanceship with the waters of Geelvinck Bay.

It was 07:40 a.m. when Cochran banked his P-38J-15, No. 186, into a tight left turn over the bay, preparatory to joining Major Lewis in No. 170 and Anderson in his P-38J-10, "Virginia Marine," No. 194. Behind Cochran was his wingman 2nd Lt. Ethelbert B. Roberts who never was called Ethelbert, seldom Bert, occasionally E.B., but usually a profane noun said with great affection (Fart).

Without warning, Cochran's right engine shuddered to a stop. He immediately straightened the big fighter, cranked in left rudder trim, increased power to the port engine, and switched from reserve tanks to mains. Absolutely nothing happened. Roberts' P-38 flashed overhead and joined on Anderson's wing.

Cochran punched loose the belly tanks, closed down the coolant flaps, retarded the mixture controls and throttle on the dead engine and completed the procedure for single engine flight. The P-38 was maintaining altitude and under control, but heading farther and farther away from Biak Island. Cochran made a gradual turn to the left towards home. Neither Anderson nor Lewis saw Cochran fall back, and Roberts was to say later: "Hell, I though he'd snafued and gone back home."

The entire squadron flew over Cochran's faltering P-38 and failed to see the ailing aircraft. Incredibly, the left engine gave a slight cough and died. Too low to bail out, Herbie yanked the flap handle, jettisoned the canopy and lined up on a swell. Possum Red Three, No. 186, ditched in a fountain of froth and spray, and with a sound, as he related later, like a thousand tin cans dumped onto a garbage heap.

Quickly unfastening his shoulder harness and seat belt, he inflated his life raft and slid into it as the battered Lightning gracefully bubbled underneath the waves.

Time passed and now Cochran was watching the open bomb bay doors of the approaching Mitchells of the Air Apaches as they prepared to salvo their bombs before touching down at Mokmer Strip. With dismay, Cochran observed that the 345th was headed in his direction. Unseen, he was about to become their target for the day.

"Jeez," he thought waving his oar. "Look out you guys. I'm

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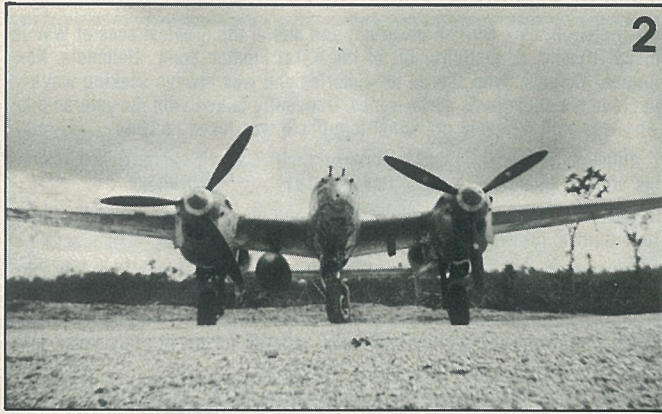
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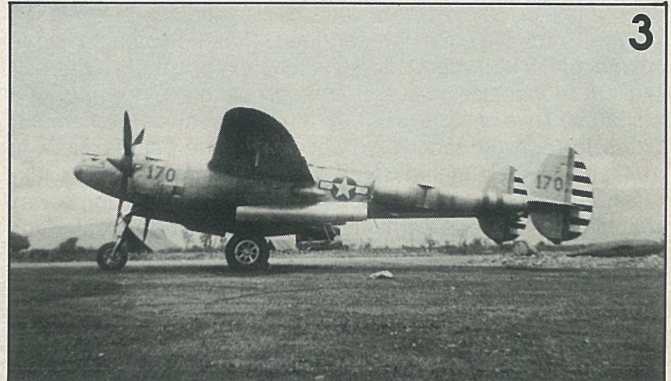
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down here. Don't drop those damned things here. You're gonna kill me."

The B-25s unloaded and missed, but Cochran never forgot those frightening moments.

Hours later, following the snafued mission, Anderson was awakened from a nap by the bedraggled Cochran who finally rowed in and staggered across Sorido lagoon into the squadron area. Anderson stepped outside his tent.

"Hey, Herbie," someone asked. "What happened to you?"

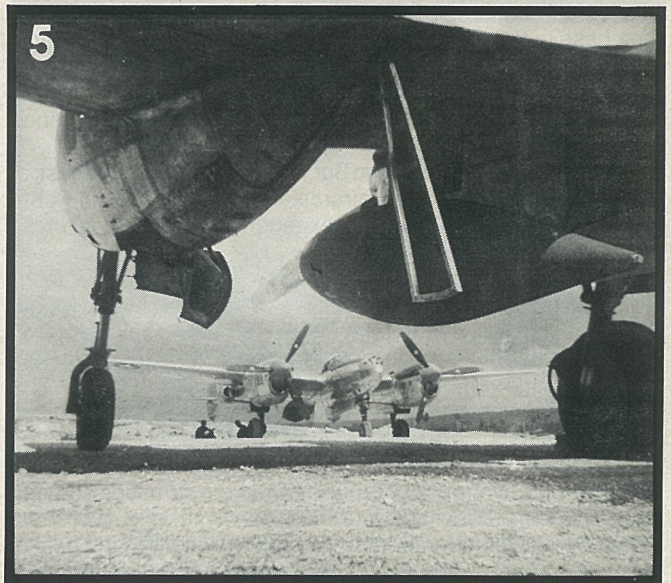
"What happened? What happened? I'll tell you what happened! I darn near got killed, that's what happened!"

A calm person with a marvelous sense of humor, seldom given to displays of temper, it was odd to hear his voice raised a good five octaves in obvious frustration. When he finished his story, he received little sympathy from his assembled comrades. Characteristically, they thought his story was hilarious. Finally, even he began to laugh.

"Why in the hell didn't you guys send out a PBY or PT boat?"

"How could we? Nobody knew where you went."

If there was humor in the campsite of the 433rd at Sorido Village, there must have been a certain air of grimness in the 73rd Independent Flying Chutai far down the Allied bomber



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1. "Putt Putt Maru," flown by CO of 475th Fighter Gr., Col. Charles MacDonald, 27 victories and the third highest scoring ace in the Southwest Pacific, behind Bong and McGuire.

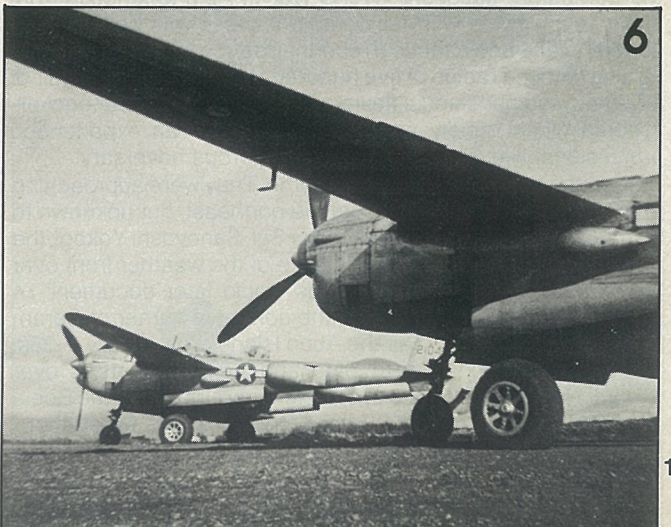
2. The author's aircraft on Biak.

3. Major Warren R. Lewis' P-38 at Nadzab. Lewis led Red Flight and was CO of the 433rd Fighter Sqdn. the day Lindbergh got his victory and finished the war with 9 kills of his own. He was one of the few who had prewar red and white tail stripes painted on his aircraft.

4. Lewis also decided to have all the aircraft of the 433rd painted up in a rather colorful style, since most were basically bare metal. He used the author's aircraft, No. 194, "Virginia Marie," as a pattern. Note bands on engine cowling and wing, and stripes on vertical fins.

5. P-38 No. 191 flown by Assistant Ops. Officer of 433rd, Captain Jack Fisk, who scored seven victories. He led Yellow Flight the day Lindbergh got his kill.

6. New P-38 J10s at Nadzab in the Markham Valley of the New Guinea mainland, just before the big Hollandia raids.



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THE LINDBERGH KILL

lanes at Haroekoe. The chutai, a veteran of the early war campaigns in Malaya and in Java, had settled down to garrison duty in Dutch New Guinea and the Dutch Indies beginning in March of 1942, where month after month it had performed tactical reconnaissance and anti-sub patrols. Often the 73rd dispatched two or three of its aircraft as far north as the Halamahas for convoy escort and anti-submarine patrols. Now, in 1944, it was no longer involved in mundane patrols in a "back-wash" theatre of operations, for Kenney's bomber force was reaching the Imperial army and naval bases with greater and greater ferocity, and the once relatively clear skies were filled, day after day, with the Lightnings, B-24s and Mitchell bombers of the 5th.

Prior to the 21st, a request from the Japanese 35th Division at Manokwari had been honored by the 73rd Independent Flying Chutai when Lt. Akira Saruwata was dispatched northward to fly convoy patrol over 35th Division staff members en route from their base to Sorong. Following completion of his mission, Saruwata headed home from Samate, adjacent to Sorong, and somewhere either over the ocean or over the fetid jungles of Dutch New Guinea his Mitsubishi Ki-51 Sonia, single-engined light bomber, went down.

The CO of the 73rd detailed Sgt. Saneyoshi Yokogi the task of searching for the downed aircraft. Yokogi found nothing but when landing at Samate either experienced mechanical problems or damaged his own Sonia.

With two aircraft down and one pilot missing, Captain Saburo Shimada, the commanding officer of the 73rd Independent Flying Chutai, decided to take matters into his own hands and headed for Samate with his gunner Captain Fukumichi Oda and the necessary parts to repair Sgt. Yokogi's aircraft.

On the morning of the 28th, both aircraft began the long flight back to Haroekoe with, the 26-year-old Shimada in the lead. The sun was warm in the Sonia's big greenhouse canopy as both aircraft, flying a loose but disciplined formation, droned south to their predestined fate.

The Sonia was a remarkable aircraft ranking with the best of the land based, reconnaissance airplanes produced by all of the combatant nations of World War II. Able to function from short, rough fields with full combat loads, it was both a close support plane and a tactical reconnaissance aircraft capable of turning within a radius of five hundred feet. Armed with a pair of 12.7mm wing guns and a flexible 7.7mm gun in the rear cockpit, it could climb rapidly and, in the hands of an experienced professional like Shimada, was a dangerous adversary.

Soon the two planes would be home. They were approaching Amahai and Elpaputih Bay from the northeast, but unknown to Shimada, Captain Fukumichi Oda or Sgt. Saneyoshi Yokogi, the Americans were out in force, in spite of the weather front over Geelvinck Bay. Japanese records would later document 14 American aircraft over Bula on the northeast corner of Ceram Island and another 27 over the Abon Island area, mostly P-38s.

Colonel MacDonald with Blue and Yellow Flights is over Ceram. He leads his P-38s over the enemy strips near the Boela oil fields. A heavy overcast forces the Lightnings to ten thou-

1. Lindbergh, as a civilian observer, and one of the greatest aces of WW II, Major Thomas B. McGuire, CO of the 431st Fighter Sqdn., Hollandia, New Guinea. McGuire, who scored 38 victories and was always seeking ways to improve his squadron's performance, frequently talked with the veteran pilot who was only 42 years old when this photo was taken in 1944.

2. Although he wasn't flying Major Meryl Smith's aircraft at the time he scored his victory, Lindbergh usually flew No. 101.

3. Captain J. Brody, Lindbergh, McGuire, and MacDonald at Hollandia, Dutch New Guinea. (J. Brody)

4. Close-up of McGuire's "Pudgy IV" at Biak, near the time of the July 28th mission, showing 22 victories. Lindbergh had something like six hours in P-38s when he joined the 457th and all of that was in ferrying or orientation flying. Most of the young pilots wondered "what an old guy like this would do in combat."

sand feet. MacDonald banks his P-38, "Putt Putt Maru," for the airdromes at Amahai. He will pass Haroekoe and Lianga strip where he hopes to find airborne Japanese planes.

Enter the 9th Fighter Squadron led by CO Major Wallace Jordan. The 9th arrives at Amahai having encountered few problems with the front which had turned back the B-25s and the bulk of Possum Squadron. Wallace sights what his pilots report as Aichi Val dive bombers, but which actually are the Mitsubishi Ki-51 Sonias flown by Shimada and by Sgt. Yokogi, a reasonable mistake as there is a superficial resemblance.

What of Captain Oda? Was he a pilot? Was he flying the other Sonia? Why Shimada would take a captain with him as a gunner is not explained by the Japanese, although it is known from Japanese records that only three Sonias remained operational within the 73rd Chutai and Shimada may have brought along Oda in some capacity to insure the return of the other aircraft at Samate. It is worthy of note at this juncture to state that the Japanese apparently are unaware that there were two aircraft en route from Samate to Haroekoe on July 28, 1944.

Lt. Willis Treadway's combat report states:

"...at Elaputih Bay, about 10:14/K, while our flights were at 5,000 feet, we observed a single enemy dive bomber, type Val. The enemy plane was flying about 3,000 feet. The Val was green in color and camouflaged brown. We dropped tanks and dived to the attack. The Val was shot down by Lt. Haislip after several passes were made by our planes."

Lt. Haislip reported:

"We proceed to Amahai at 13,000 feet. At Elpaputih Bay while our flight was at 10,000 feet we observed two enemy dive bombers, type Val. They were in no formation, about six thousand feet high. When first observed, they were coming from the North East (*The route Shimada would have used to get home.*)

"We dropped our tanks and dived to the attack. I fired a burst from six o'clock low and then pulled up. My wingman saw the enemy plane go straight into the water."

Lt. Huisman reported:

"The Vals (sic) were in no formation and about six thousand feet high. When first observed they were coming from the North East. The Vals were brown in color and camouflaged with green..."

"After a brief dogfight, Lt. Haislip dove on the Val from the rear and fired a long burst. The Val commenced to smoke and dived straight into the water."

Lt. McElroy reported:

"About seven of us made passes at the Val before Lt. Haislip shot him down. When *my guns stopped firing*, I left for a pre-determined rendezvous point to reassemble my flight..."

Lt. Wade Lewis confirmed Haislip's victory but not before stating: "I saw my cannon shots hit the left wing root, and a fire started. He turned inside me and a lot more planes came in. Lt. Haislip made a no deflection shot as he tried to run for home, and the Val crashed into the water with a large splash."

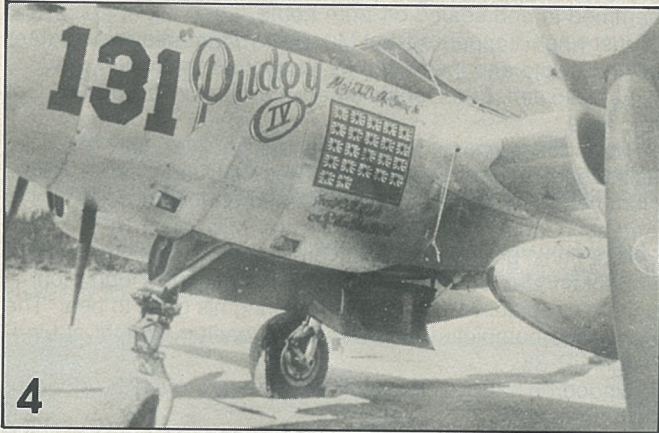
Maddox stated: "...when first observed they were coming from the North East. The Vals were green in color and camouflaged with brown. They had a zig zag design painted on their



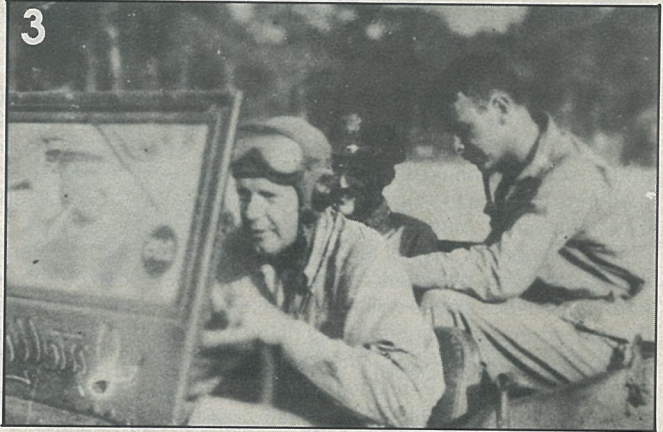
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5. Lindbergh prior to his July 28th mission. Discussing his Atlantic flight in 1927, Lindbergh informed the pilots of the 475th that he detested the name "Lucky Lindy." As he put it, "Luck had nothing to do with it." Instead, he preferred talking about the men who had designed and built the *Spirit of St. Louis*.

6. Another shot of Lindbergh and McGuire at Hollandia. Whenever Lindbergh flew a mission he was surrounded by veteran pilots.



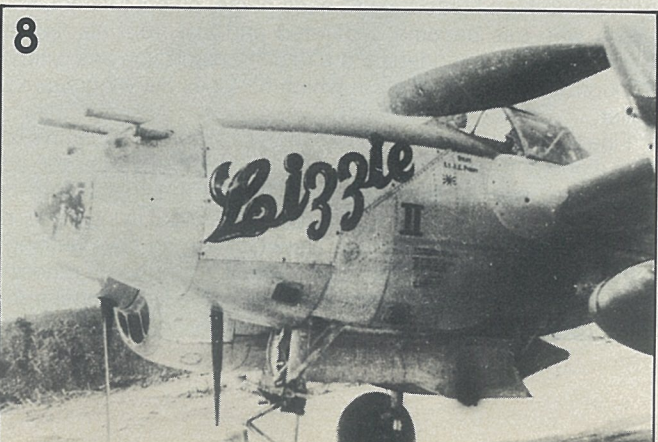
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7. Lindbergh flew several missions with the 475th. Here, he prepares to go on one with McGuire. On several occasions, Lindbergh got separated during a mission and, although he was to be called "mister," he usually ended up being addressed as "Colonel."

8. "Lizzie II" flown by 1st Lt. John "Jack" Purdy. In seven months in the New Guinea area, Purdy had been involved in air-to-air combat only twice, shooting down an Oscar on one occasion. Later, during action over the Philippines, he scored three doubles within 10 days.



8



7

THE LINDBERGH KILL

planes." (This was the 73rd insignia for an abstraction of the numerals of 7 and 3.)

It is worthwhile for the purpose of clarity to interject, at this point, the fact that the Japanese Navy Air Force painted the upper surfaces of their aircraft an even, standard green camouflage color in 1944.

On the other hand, the Japanese Army Air Forces, including Captain Saburo Shimada's 73 Independent Chutai, painted its aircraft a mottled or speckled pattern using two tones of green and brown. In addition, the Army planes often used rather fancy markings such as the zig zag used by the 73rd and as observed by Lt. William E. Maddox of the 9th Fighter Squadron.

The misidentification of aircraft twisting and turning in violent combat through overcast or scattered clouds occurred more often than either side is willing to admit. A case in point is that of the two experienced fighter pilots of the 431st Fighter Squadron who participated in Major Thomas Buchanan McGuire Jr.'s last flight on January 7, 1945, and identified a Hayabusa Oscar as a Mitsubishi Zero and failed to identify a second Japanese fighter which entered the fray as a Nakajima Ki-84 Hayate Frank.

Japanese records and eyewitness accounts indicate, without exception, that the aircraft involved in the combat was from the 73rd Independent Chutai.

Lt. Maddox continues his combat report:

"We dropped out tanks and dived to the attack. The Nip planes dived through the clouds, and our flight became separated, but in the same area. I made several passes (approximately six passes) on the Val and observed many hits. I had the Val on fire once, but the flames lasted only three seconds. *Possum Flight finished him off*, as I had expended all of my ammunition."

The 9th had found Shimada and his wingman and had shot down the wingman. Thirty minutes after the 9th had first attacked, Lt. Colonel Charles MacDonald, flying with Lindbergh, finally picked up the combat, but it hadn't been easy.

MacDonald, straining to hear the shouts and excited chatter over the RT, hoping to gain some clue as to the location of the engagement, listened as, gradually, the exuberance of the 9th pilots gave way to frustration when it became apparent that the second Japanese aircraft might escape.

"There he is. Get him."

"Can't somebody shoot him down?"

"God damn. I'm out of ammunition."

"Somebody get him who's got some ammo."

This exhortation was followed by the frustrated question:

"Who's got some ammo?"

"I'm out."

"So am I," from another pilot of the 9th.

Someone, perhaps Colonel MacDonald, interrupted the cursing pilots of the 9th to query, "What's the matter, Captive? Having some trouble?"

The pilots of the 9th probably did not consider the question especially humorous, and while there is no record of any reply, the men of the 9th seldom were given to passivity when chided by someone from the 475th. Their rejoinders, if any, have been lost in time. It is safe to assume that any response would have contained an element of profanity.

A possible lack of humor was understandable. The 9th pilots had expended all of their ammunition on the two Japanese aircraft, yet one was still very much in the air and might yet make its getaway. The odds for Shimada's survival in the desperately and wildly maneuvered Sonia had been negligible, but somehow he had managed it.

Under the guns of Lt. Maddox, Shimada's Sonia had flamed, but miraculously the fire had died out. After 30 minutes of a classical dogfight in the tradition of World War I, against overwhelming odds, Shimada now was evading the big Lightning fighters as the 9th pilots attempted to herd him into the bay three miles west of Amahai strip.

All of this was being observed from the ground by Japanese officers and enlisted personnel at Amahai. One can imagine the shouts of pride when the much smaller Sonia avoided the thrust of a P-38, and the groans of agony as Shimada seemed hemmed in and sealed off from home.

Just when it appeared that MacDonald's spontaneous fighter sweep would end ineffectually, he spotted the fight.

At 10:45 a.m., MacDonald enters a diving turn from 3,000 feet and fires.

The twisting enemy plane coughs a small quantity of smoke as the gunfire from MacDonald's "Putt Putt Maru" strikes home. Hemmed in by MacDonald's flight and unable to get home to Amahai, Captain Shimada yanks the Mitsubishi Ki-51 into a violent bank, pulling condensation streamers from its wingtips.

Captain Danforth Miller squeezes off a quick burst, but is unable to establish enough lead to bring his guns to bear. The Sonia has completed its turn and is heading straight at Lindbergh's P-38.

Lindbergh has traveled a third of the way around the globe for this moment.

He is able to center his gunsight on the radial engine of the Sonia. The two antagonists are closing with terrific speed. Lindbergh writes in his diary:

"I hold the trigger down and my sight on his engine as we approach headon. My tracers and 20s spatter on his plane. We are close — too close — hurtling at each other at more than five hundred miles per hour..."

Lindbergh strikes the target with a six-second burst as the gap between the onrushing antagonists suddenly disappears. With shocking suddenness, Lindbergh understands something always known by all 5th Air Force fighter pilots. The "Wild Eagle" from Japan does not intend to swerve.

Lindbergh yanks on the control yoke with all his strength. He sees the coolant fins on the cylinders of the Sonia's engine as the Lockheed P-38 literally hurdles the enemy plane. Lindbergh feels a "bump" when his fighter passes over the stricken foe.

The propeller of the Sonia windmills. Smoke pours from its engine. As the mortally wounded aircraft pitches over into its death dive, Lt. Edward Miller fires, blowing pieces from the wing. The Sonia smashes into Elpaputih Bay.

The radio headsets of the 433rd are filled with chatter. Congratulations for Charles Augustus Lindbergh, Jr. It is a heady moment for this man who spanned the Atlantic 17 years before.

With no other enemy airplanes in sight, Colonel MacDonald gathers up high fighters and heads home, all but Mister Lindbergh who has become separated and lost from his fighter friends. He fails to understand a radio transmission and climbs through a heavy overcast in which he loses his wingman, Lt. Miller.

Finally, he makes radio contact with Colonel MacDonald and flies alone to the Pisang Islands, a considerable distance to be flying solo over enemy territory. If Lindbergh feels there is something unusual about a person of his stature flying alone in the dangerous skies of Dutch New Guinea, he says nothing. Later, the pilots of the 433rd laugh about it. Lindbergh rendezvouses with Blue Flight for the balance of the flight home from the Pisang Islands.

The combat report of Colonel Charles H. MacDonald read as follows:

"Details of combat: On 28 July 1944 at approximately 1045K while flying in a fighter sweep over the Ambon area, a Sonia was sighted at 1,500 feet heading south, 3 miles west of Amahai strip. Three planes of the 9th Fighter Squadron were milling around in the area and calling that they were out of ammunition. On sighting the Sonia, the eight P-38s I was leading went down in a diving turn from 3,000 feet. I got a deflection burst, observing hits which started smoke. The Sonia continued in a turn as my wingman fired. It then straightened out and opened fire on Colonel Lindbergh in a head on attack. Colonel Lindbergh was flying No. 3 position as Observer, and effectively opened fire, causing the Sonia to go into a vertical dive into the ocean."

MacDonald had suddenly promoted civilian Lindbergh from a *Mister* to a full *Colonel*, conveniently forgetting his stern order to the rank and file of the 475th.

Lindbergh offered the following in his combat report:

"We were flying at an altitude of roughly 3,000 feet at the time

1. The author with his P-38 J10 at Hollandia. He is equipped with .45 pistol, canteen, morphine syrettes and jungle knife. New Guinea was a very unhealthy place and an ear infection caused by fungus kept Anderson off flying status for three weeks.

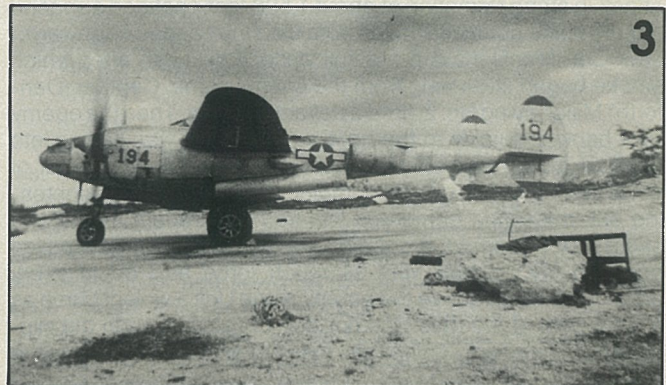
2. Sgt. Tom Ruis, Anderson's crew chief, with author at Mokmer airstrip, Biak. Ruis was a crack mechanic, and author never had to turn back with any aircraft crewed by his sergeant.

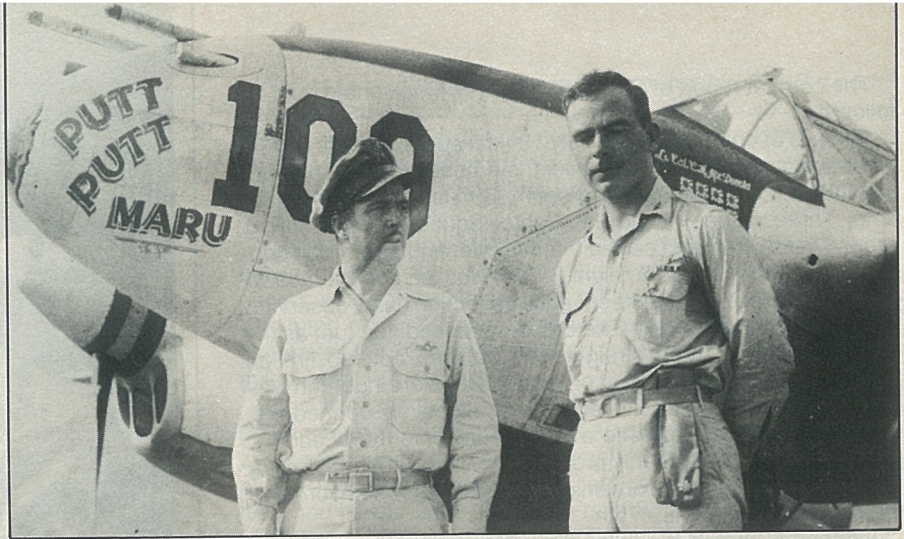


3. Author's machine heading out for a mission with his tentmate, 2nd Lt. Sammy Morrison flying. Morrison flew number 4 position in Yellow Flight the day Lindbergh got his kill.

4. "Fertile Myrtle," a B-25 from the 345th, stripped and cleaned up to fly at top speed (note solid nose). It made regular flights to Australia to pick up food and special equipment, such as whiskey.

5. 2nd Lt. Herb Cochran is shown in group's early days at Dobodura, New Guinea. Photo was taken after mission to Rabaul, where Cochran got two victories. He later dodged B-25 bombs while escaping his ditched Lightning in a liferaft.





Left: That the P-38 possessed great range was amply demonstrated by Flying Officer Bert Simmons, who flew a night search mission from Leyte Island in the Philippines to the coast of China, and return, while searching for a comrade, Wes Heulett, who had gone down that day. The mission lasted 10 hours and 15 minutes. Simmons went on to found Aspen Airlines after the war. Right: General Paul Wurtsmith (left) and Colonel Charles MacDonald, who flew with Lindbergh on the day he got his victory. "Putt Putt Maru" carries the 431st Sqn.'s devil's head insignia on its nose. Spinner stripes were red, yellow-orange and blue, with similarly colored commander's bands on booms.

THE LINDBERGH KILL

of the sighting. I was in No. 3 position as an *Observer*. All Blue Flight pilots dropped tanks and followed Col. MacDonald in his attack in string formation at about 1,500 feet. I noticed a second enemy plane about two miles from the strip headed northward. I saw Col. MacDonald fire a full deflection burst; after which smoke began streaming from the enemy plane. Captain (Danforth) Miller, flying No. 2, fired a deflection burst. Then the enemy pilot banked quickly to the right, and I saw he was getting into position for a head-on attack on my P-38. I fired a burst of several seconds as he was completing his bank and straightening out, observing numerous hits from my tracers and 20mm shells. *For a moment a collision seemed unavoidable.* I pulled back on my controls with as much force as I could exert, passing so close above the enemy plane I felt a violent bump as it went behind me (this was not due to flying through the slipstream). The enemy plane then rolled over and crashed into the water."

It had been a very near thing for Lindbergh, for Captain Saburo Shimada, perhaps mortally wounded, may well have attempted that one final act of desperation witnessed so many times during the war, the act of destroying an Allied aircraft by ramming. In this instance, Shimada's last moments and actions can only be surmised, yet a very brave warrior had fought a gallant fight. In the process, he very nearly killed The Lone Eagle.

In 1976, MacDonald, in a rare bit of correspondence with the author, stated: "You know, Andy, if that mission didn't have the Lindbergh name riding with it, it would have been one of the duller trips we ever made. Well, I was happy for Lindbergh..., but it seems a shame at the expense of a very valiant Japanese pilot who, in effect, made suckers of a whole squadron of P-38s. That's war, I guess. I sometimes think it was too bad we came along..."

Many years later, Colonel Danforth P. Miller, the same Danny

Miller who had flown the mission with Lindbergh on that fateful day, offered the following:

"Dear Andy,... I did tell you the story of my running across the lengthy Japanese Intelligence valediction which I thought described very precisely (the) events in the Ambon area of 28 July 1944 involving Lindbergh."

Colonel Miller then was a member of the Air Evaluation Board in Japan and was researching another matter in ATIS, Allied Translator and Interpreter Section SWPA . . . "a marvelous outfit which could predict enemy action, or explain it through a process of looking for patterns in thousands of bits of data."

Miller recalled information which referred to Shimada as . . . "a respected and beloved Japanese officer, a veteran pilot, and commander of a base in the Ambon area (who) singlehandedly fought 12 P-38s on 28 July 1944 and, after heroic action, met his glorious end. There was much personal information about the hero."

Miller supplied some heretofore unknown information when he wrote, "I was the only one who got camera film; it showed Lindbergh's cannon shells exploding on the Sonia, and it showed that I was shooting some 87 feet behind the Sonia. Yet I was flying at some three hundred yards behind (Colonel) MacDonald in order to provide maximum protection for all concerned. Had I been any closer to MacDonald I would not even have been able to take a picture of the Sonia. In effect, the Sonia escaped MacDonald and me, but lost speed doing so and ended facing Lindbergh.

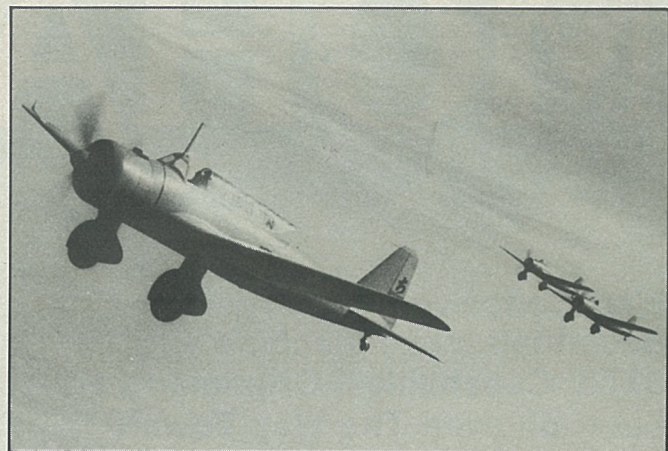
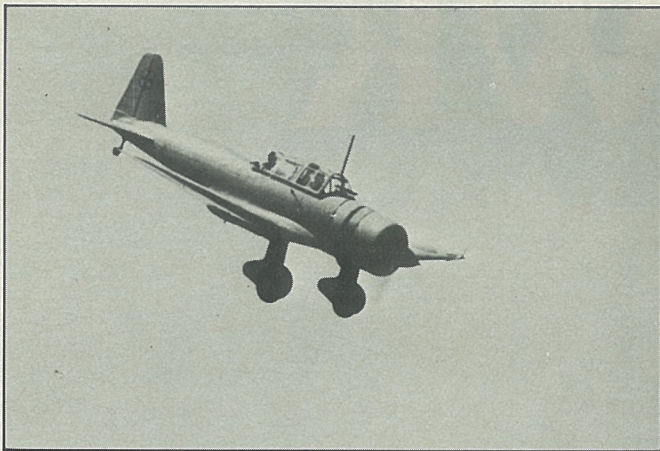
"Later, while in Manila, I made the mistake of telling someone that I had this historic film, and it was stolen from my footlocker."

Lindbergh's security clearance permitted him to receive a copy of the document, and in reply to Colonel Miller's courtesy in referring Lindbergh to it, he replied as follows:

"Dear Colonel Miller:

"I am deeply appreciative for the reports and intelligence you enclosed. I have a copy of my own report on the July 28 combat, and I read MacDonald's report at the time he wrote it; but I had only heard that a Japanese report of the combat existed — naturally, I read the copy you enclosed with great interest.

"Of course, there is no way of knowing exactly what happened to the Sonia. That MacDonald hit it was confirmed by the trail of smoke that started immediately after his pass. That the plane was still maneuverable and the pilot not badly injured was shown by the bank, head-on attack and attempt to ram my P-38. I saw flashes from my 20 millimeters on the Sonia, so the shells



Two views of a Mitsubishi Ki 51 Sonia, in which Captain Saburo Shimada of the 73rd Independent Chutai, was shot down by Lindbergh, after an epic encounter against two U.S. fighter squadrons with nearly two dozen aircraft. Shimada was a veteran pilot and he whipped his maneuverable three ton (loaded) light bomber in and out among the heavier ten and one half ton P-38s, until hit by gunfire from Colonel MacDonald's aircraft. He then headed straight for Lindbergh's P-38 and took several strikes in a near head-on collision pass, before plunging into the ocean. Thirty minutes before, P-38 pilots of the 9th Fighter Sqdn. had jumped Shimada and shot down another Sonia accompanying him, the Japanese veteran escaping through some excellent flying and by virtue of the fact that the 9th had expended all their ammo shooting at him and his companion.

were definitely having effect. The bank and steep spiral to the sea indicated either a wounded pilot or ineffective controls. I think the pilot must have been alive enough to attempt the ram (he could hardly have come closer and still have missed). But I suppose it is possible that the tail end of my burst severed the Sonia's controls and threw the nose upward abruptly. My guess is that the pilot was hit and made a final attempt to ram. At any rate, we must give him credit for great courage and putting up an excellent fight right to the end.

"You and I have the same number of children - 5 - I was out for twenty, but my wife said it was too much. I thought it would be wonderful to have ten on each side of the dinner table (The Lindbergh humor we all had known was still working quite well.) It really was good to hear from you again, and I hope our paths cross in the near future."

With Best Wishes,

Charles A. Lindbergh

General George C. Kenney's directions had become prophetic when he said, "If it came to a matter of self defense, I would not expect him to refrain from shooting..."

Captain Saburo Shimada, the commanding officer of the 73rd Independent Flying Chutai, was not forgotten by the men of the 9th Fighter Squadron nor by MacDonald and the pilots of the 433rd. They still speak of his gallantry. Nor was he forgotten by the Japanese High Command when the Commanding Officer of the 4th Air Army, Lt. General Kumaichi Teramoto, issued the following citation on the 73rd Independent Flying Chutai. The fact that the citation mentions Shimada's last flight indicates that it was meant as a personal citation to Shimada posthumously as much as it was meant to the unit as a whole.

"This is to state that the unit under the command of Captain Saburo Shimada, from November 1943 to early August 1944, undertook maritime escort operations in the North of Australia area and rendered great service where freely operating submarines are constantly threatening our transport convoys. In these operations, the unit flew 88 sorties and provided escort for over 300 vessels. Always using their tactical reconnaissance aircraft's best performance features to the full, the unit ceaselessly watched for prowling enemy submarines and always attacked them when sighted, sinking seven and damaging three, thus fulfilling their mission of convoy escort. Their contribution to preparations for the North of Australia Operation was thus very great.

"In particular, Chutai Commander, Captain Shimada fought

and lead at the head of his men from first to last, using distinguished skill, personally sinking two submarines. But, on July 28, 1944, over Amahai Bay, he encountered twelve P-38s and, having fought bravely alone for thirty minutes, finally met an heroic death in action. The unit's morale, however, was increased even further, and they sank another submarine August 4th.

"Under the Chutai commander's outstanding leadership, the unit displayed a strong esprit de corps centered around him and a great aggressive spirit, exhibiting to the full the spirit of an Army Tactical Reconnaissance Unit and giving unsurpassed military service.

"Therefore I submit this commendation."

August 21, 1944

4th Air Army Commanding Officer

Army Lt. General

Kumaichi Teramoto

One has to wonder what part destiny played in the loss of the first Sonia of the 73rd flown by Lt. Akira Saruwata, a tragedy which was to trigger the events of July 28, 1944.

Had anyone other than Colonel Charles MacDonald been leading the last two flights of the 433rd, would they have climbed above the front and flown on to Ceram? Probably not. Upon such slender threads are men's lives dependent.

There are additional questions which must be asked concerning this mission, questions of a far more academic matter. Apparently the Japanese still are unaware that there were two Sonias involved in the final flight of Shimada. Based upon the materials in the author's possession, it would appear that the great Japanese historian Ikuhiko Hata, who has documented Shimada's last flight, had no knowledge of the second Sonia shot down early-on in the engagement by Lt. Haislip of the 9th. Hata has Shimada placing both his gunner Captain Oda and Sgt. Yokogi at Samate for the flight home, and if this were true, Shimada's efforts against the 9th and the 433rd would be even more remarkable.

The logical assumption is that with two aircraft returning to Haroekoe, Shimada still had his gunner, Captain Oda, with him while Sgt. Yokogi was flying the other Sonia.

Did Lindbergh shoot down Shimada, or was it Lt. James Haislip? The tenacity with which the pilot of the last Sonia evaded the 9th Lightnings for nearly thirty minutes would indicate the presence of an old hand in the cockpit.

Shimada? Probably, but we may never know for sure.

MOHAWK

**First Conceived As A Tactical
Reconnaissance Machine With
STOL Capabilities, Grumman's OV-1
Soon Showed The Way Toward
Improved Tactical Air Support By
Armed Fixed-Wing Specialty Aircraft
Of The Future!**

By Frank Colucci

Photos from the author's collection except where noted.



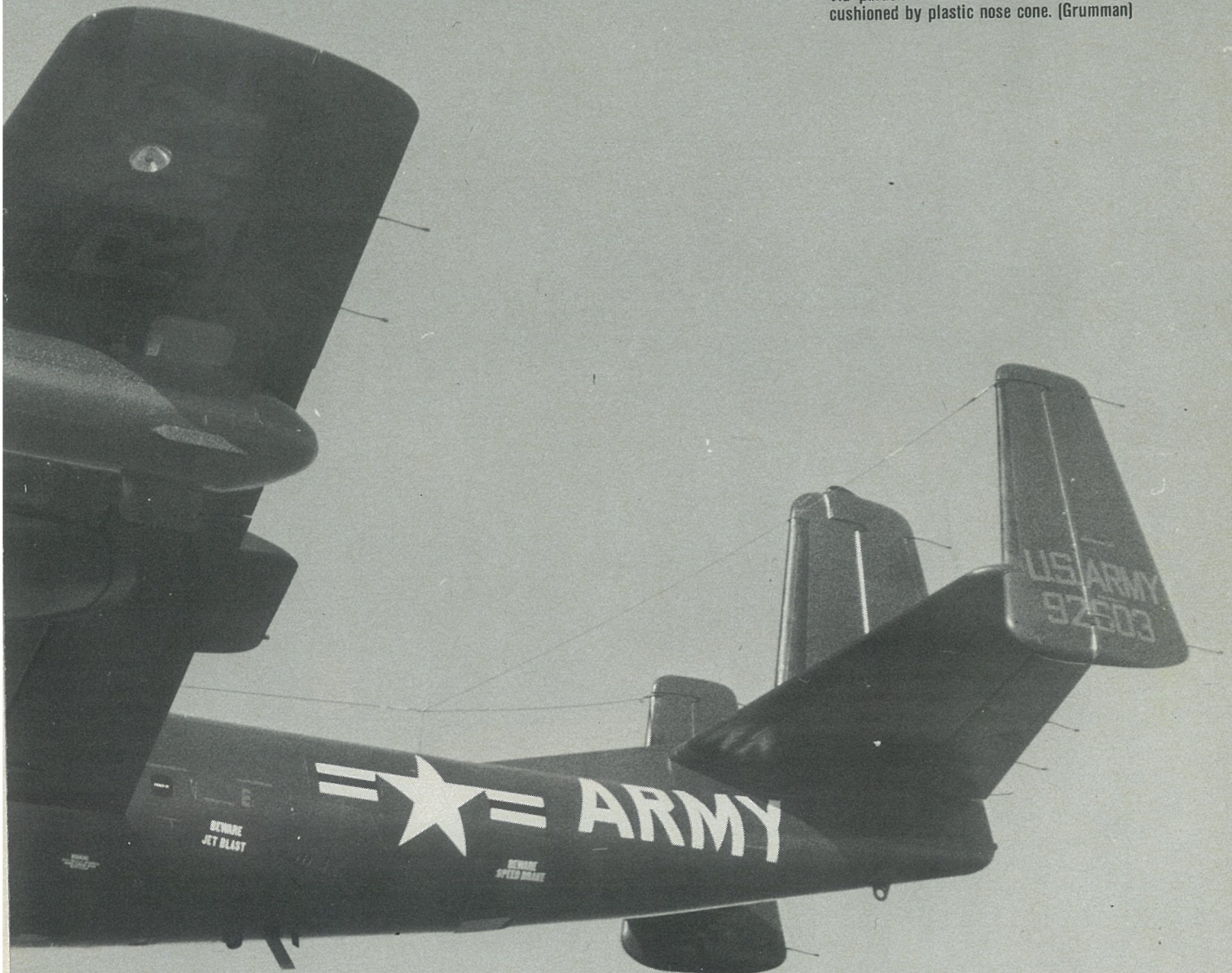
From the time of military balloonists, battlefield commanders have known the value of aerial reconnaissance, and the continuing need to look "over the next hill" has spawned many airborne observation platforms. The Grumman OV-1 is, however, unique among modern military aircraft in having been designed from the outset for battlefield surveillance. Strong, powerful, and purposefully ugly, the Mohawk has given the U.S. Army a versatile eye in the sky for

twenty years, and it promises to have an important future.

Grumman undertook development of the Mohawk in an unusual joint program sponsored by the U.S. Army and Marine

Corps. The two services shared broadly similar requirements for an observation aircraft with Short Takeoff and Landing (STOL) performance and the ability to operate under spartan conditions alongside frontline troops. Grumman and

Designed as a front-line tactical observation craft, with impressive STOL ability, Grumman Mohawk was the first turboprop-engined aircraft to see service with the U.S. Army. Here, first production AO-1AF Mohawk flies with underwing supply pods. Reusable underwing air-drop pods carried 750 lbs. of provisions for ground troops and were dropped via parachute installed in their tail. Impact was cushioned by plastic nose cone. (Grumman)



Lycoming were the unanimous choice of a joint service selection board for airframe and engine manufacturers, and the aircraft was designated OF-1 in Marine markings and AO-1 with the Army.

As unveiled late in 1957, the Grumman G-134 Mohawk mockup had a round, insect-like nose, twin engines, and high T-tail. The roomy cockpit featured a large windshield that gave pilot and observer good downward visibility over the nose. Bulged side windows made it possible for

the crew to look down at any spot on the ground, even directly beneath the aircraft, from any altitude greater than 37 ft.

The mid-wing layout gave the Mohawk a short, incredibly strong landing gear, and the overwing engine installation kept the 10 ft. diameter propeller well clear of the ground while affording the powerplants some protection from groundfire. The OF-1/AO-1 also represented the first fixed wing application for the Lycoming T-53 turboshaft, the engine then flying in

the prototype Huey helicopter.

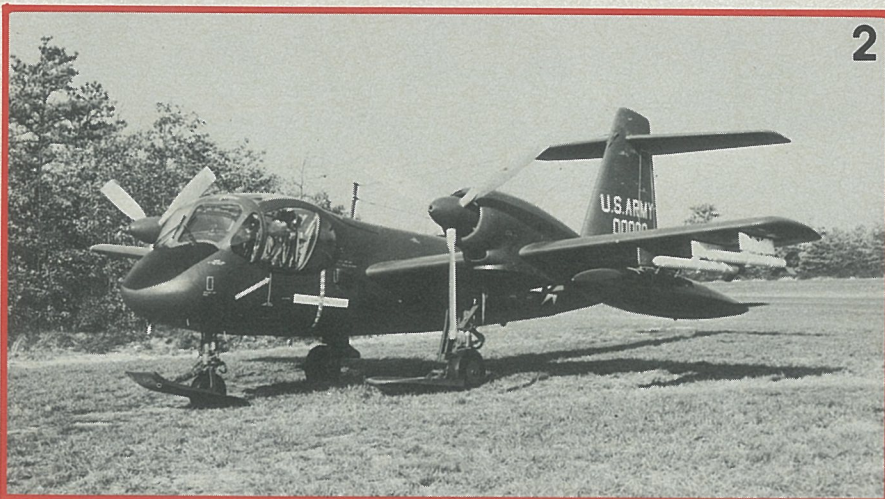
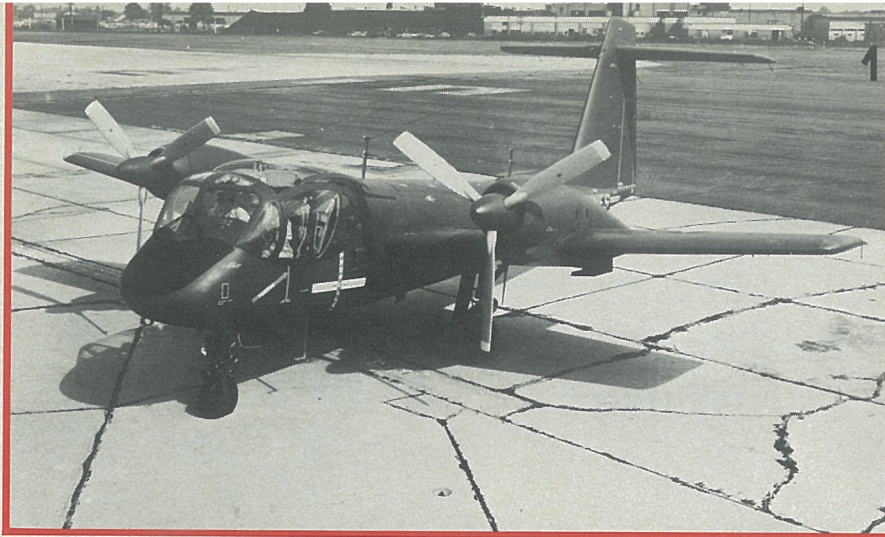
Marine requirements contributed an unusual feature to the design. As originally proposed, the OF-1 could be fitted with water skis that would allow the aircraft to land at sea and taxi to island beaches at 20 kts. Since the Marines were authorized to operate fixed wing aircraft in the close support role, the mockup also sported underwing pylons for rockets, bombs, and other stores.

Soon after the detailed wooden

A Grumman OV-1C Mohawk of the Oregon National Guard, loaded with camera equipment, documents the eruption of Washington's Mt. St. Helens volcano in 1980. (Grumman)



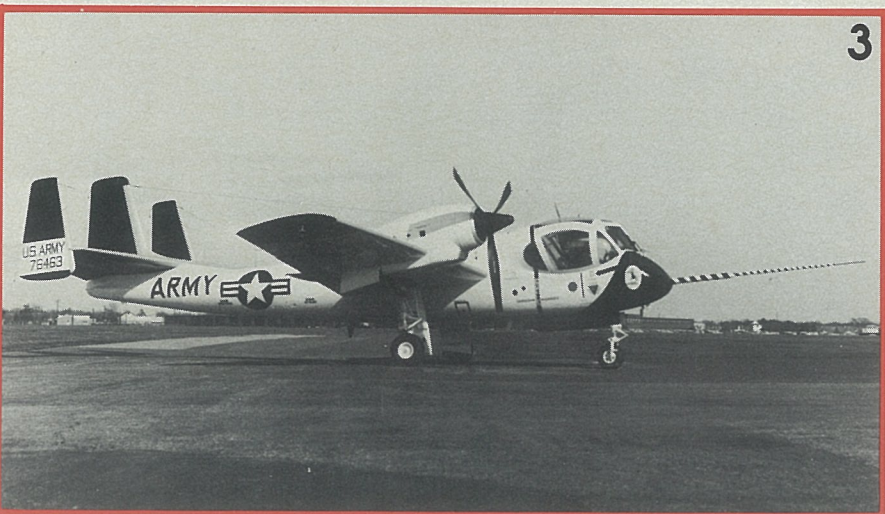




1. Wooden mockup of Grumman G-134 Mohawk in 1957 sports Marine markings and shows original T-tail. Note "eyebrow" windows over windshield and open overhead canopy panels. Joint Army-Marine design program made Mohawk a more sophisticated, more capable, and more expensive aircraft than Army originally envisioned. Ironically, after the Marine Corps dropped out, aircraft was developed solely for Army use.

2. Another view of the AO-1/OF-1 mockup shows Army markings and Marine water skis. Skis would have enabled OF-1 to land at sea and taxi to shore at about 20 kts. Underwing weapons resulted from Marine emphasis on close air support capability, which proved very effective in Vietnam.

3. First of nine YAO-1 prototypes flew April 14, 1959, with distinctive triple tail. Prototypes and initial production models had Lycoming T-53-L3 engine rated 1,005 equivalent shaft horsepower (total thrust from propeller and jet exhaust). Note aft side windows in line with prop warning stripes. Together with "eyebrow" windows, they were deleted from production Mohawks. First Mohawk was heavily instrumented for flight testing and carried long air data sensing probe. Designed to be maintained and repaired in the field, aircraft had interchangeable left-right stabilizers, elevators, and outboard fins. Wings could be removed inboard of engines to ship Mohawk by truck or train. (U.S. Army)



mockup was displayed, the Marines withdrew from the Mohawk program for economy reasons, but in April 1958, the Army gave Grumman the go-ahead for nine YAO-1 prototypes. The joint service roots of the Mohawk did, however, result in the aircraft being evaluated by the U.S. Navy, and all early contracts were placed through the Navy on the behalf of the Army.

By the time the first YAO-1 rolled out, the single T-tail of the mockup had given way to the distinctive three-tailed layout. Grumman engineers found the T-tail would have provided inadequate control with one engine out, and to overcome this, the aircraft would have required a hydraulically boosted rudder, an unwanted complexity in an aircraft intended for operation from rudimentary frontline bases.

Twin tails would have given the Mohawk sufficient single-engine control but poor directional stability in conventional flight due to propwash. The triple tail layout proved best, and in an unexpected example of early "stealth" technology, it created a smaller overall radar return than the original T-tail layout.

Grumman test pilot Ralph Donnell made the first flight in the YAO-1 on April 14, 1959, at the company's Peconic River test facility. The aircraft handled well, and the last of nine prototypes under the original \$22 million contract was flying by the end of the year.

With its short, broad-chord wing, hydraulically operated flaps, leading edge slats and hydraulic speedbrakes, the Mohawk was very much a STOL flying machine. More than half the wing span was bathed in the wash of the big, reversible pitch propellers, and the wing incorporated a pair of hydraulically operated auxiliary ailerons that worked only when the flaps were down, for better low-speed control. Even loaded with test gear heavier than its intended reconnaissance fit, the YAO-1 could take off over a 50 ft. obstacle in about 900 ft. of runway and stop in just 300 ft.

In flight, the Mohawk had a design ceiling of 22,000 ft. and a top speed of about 320 mph. The big fuselage speedbrakes helped the aircraft make ultra-short landings, and they enabled the Mohawk to drop quickly from moderate cruising altitudes to escape enemy fighters. Drawing from a Grumman Ironworks heritage, based on the 20 year production of dependable, robust fighter planes, the sturdy AO-1 was rated plus 5g and minus 1½g, and could reportedly pull up to 7g without structural damage.

Ralph Donnell's masterful demonstration routines with the snappy Mohawk often included a near hover in a stiff wind. The new aircraft had a stalling speed of just 60 kt., and with flaps down a minimum turning radius of only 355 ft. at 1.6g.

Flight testing of the YAO-1 turned up

some slight flutter, quickly cured by smoothing the skin of the vertical tail. The successful test program led to a second \$22 million contract for 35 production AO-1AFs, the first of which were delivered to the U.S. Army Aviation School at Ft. Rucker, Alabama, in mid 1960.

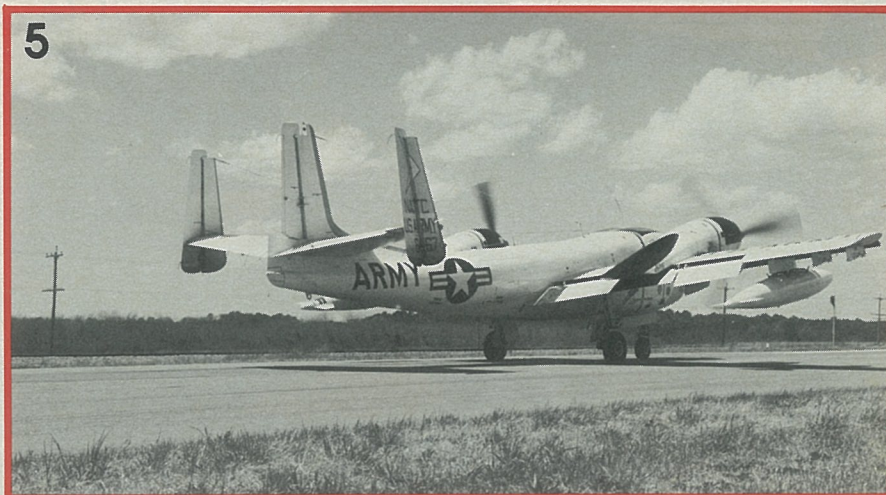
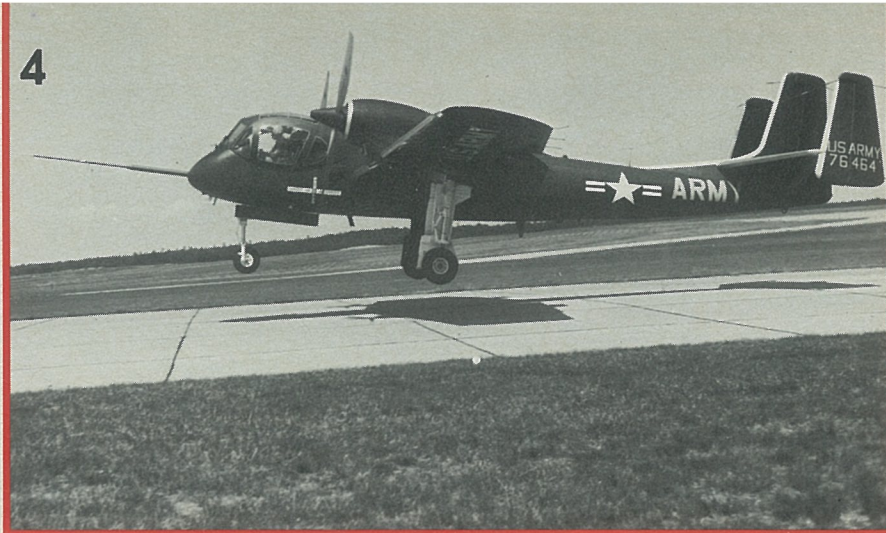
From inception, the AO-1 had been designed to accommodate three different reconnaissance systems: conventional cameras, side-looking airborne radar, and infrared sensors. The early AO-1AF carried a single camera amidships that could take pictures vertically, or tilt 15 or 30 degrees to either side under the control of pilot or observer.

While the Army's first turboprop aircraft entered the inventory successfully, the Mohawk proved very much a "hot" ship to service aviators coming from slow, piston-engined airplanes. Its power and responsiveness tempted pilots to show off and resulted in more than a few fatal accidents. The two-seat cockpit could be fitted with dual controls for training, but operational Mohawks were most often flown by a pilot and reconnaissance systems operator. The right-hand observer's seat might have had the linkages for control stick and rudder panels, but the controls themselves were rarely in place.

With the big propellers so close to the cockpit, and with the Mohawk destined to spend much of its time at low altitudes, conventional crew bail-outs were impossible. Grumman therefore provided the AO-1 with twin Martin-Baker ejection seats that could propel pilot and observer to safety from zero altitude at any airspeed greater than 100 kts. The transparent overhead panels also could be jettisoned, but normal ejection sequence blasted the crew right through the canopy. It took some time for Army ground and flight crews to learn how to maintain and use the new seats properly, but once procedures were established, the notoriously hard seats proved themselves lifesavers.

The second of the Mohawk recon systems spawned a new model, the AO-1BF (later OV-1B). First unveiled in 1960, the B model had its Side-Looking Airborne Radar (SLAR) in an 18 ft. long fiberglass pod suspended from the right side of the fuselage. To save weight, the fuselage speedbrakes and wing leading edge slats were deleted, but the wings themselves were extended 6 ft. for additional lift. The B also incorporated an autopilot that helped fly uniform radar mapping patterns.

Despite its ungainly appearance, the SLAR-toting B handled quite well. In 1971, a single example was loaned by the Army to the U.S. Geological Survey for geologic and hydrologic studies under the direction of Herbert Skibitzke. Over the next four years, systems specialist and pilot Mary Lou Brown was to fly the USGS Mohawk on survey missions all over the United States.

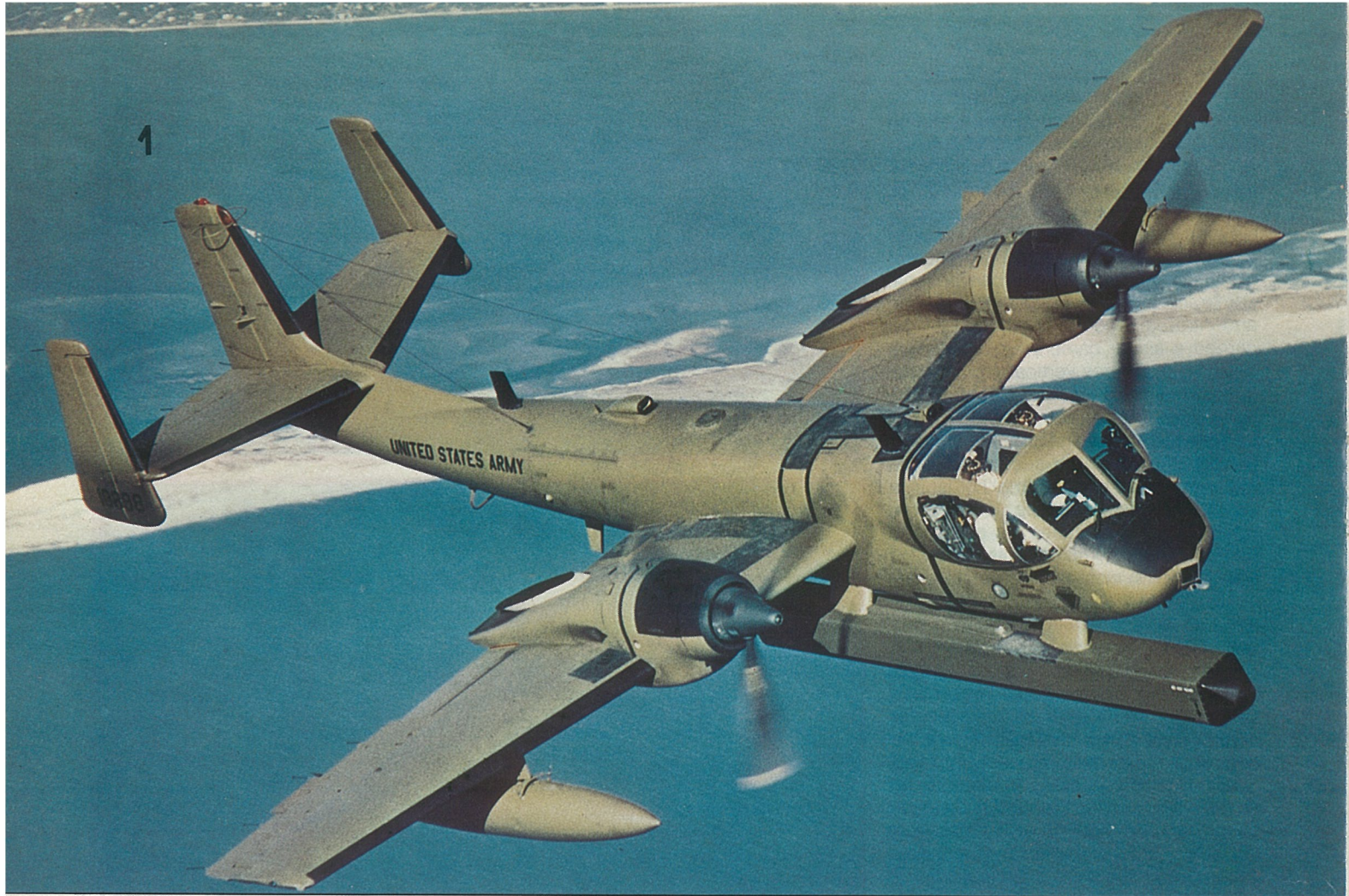


4. Wearing olive drab, second Mohawk prototype takes off in July 1959. STOL AO-1 had landing gear stressed for sink rates to 17 fpm and low pressure tires for soft, unprepared surfaces. Landings could be made in 300 to 500 ft.; takeoffs in 900 to 1,000 ft. (U.S. Army)

5. Fifth YAO-1 prototype shows Naval Air Test Center Markings at Ft. Eustis, Virginia, 1961. Even though Marines dropped out of Mohawk development before first flight, aircraft was evaluated by Navy, and early contracts placed by Naval Bureau of Aeronautics.

6. Clean production Mohawk in flight. AO-1AF (OV-1A) carried single KA-30 camera in fuselage. Camera could take pictures vertically or swivel 15 to 30 degrees, to either side, under control of pilot or observer. Production totaled 64 OV-1As.





1. Prototype OV-1D carries large, more-easily removable SLAR pod. It can also be fitted with radiation sensors for nuclear attack assessment, and it has a sophisticated data annotation system that codes all photos, radar maps and infrared imagery with precise location, altitude, and other information. (Grumman)

2. OV-1A sports overwing flare dispensers. Each box-like dispenser contained 52 upward-firing flares. Accidents with these eventually led to development of underwing strobe pod. OV-1A measured 41 ft. long with 42 ft. wingspan. Normal takeoff weight was 12,700 lbs.

As she recalls: "The Mohawk was a delightful plane to fly. Perhaps I should qualify that statement. The B model had a longer wingspan . . . and it was considered to be the safest model. We had no experience with the A or C models; however, we knew of several accidents with those models that were attributed to the shorter wingspan.

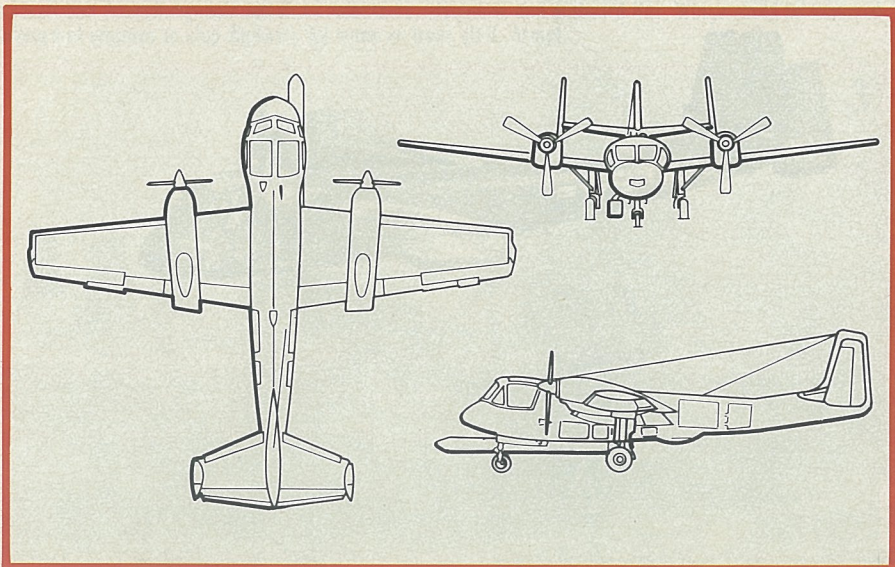
"Our pilot checkout procedure was informal and abbreviated. First, we read the manual. Then, Skibitzke rode in the

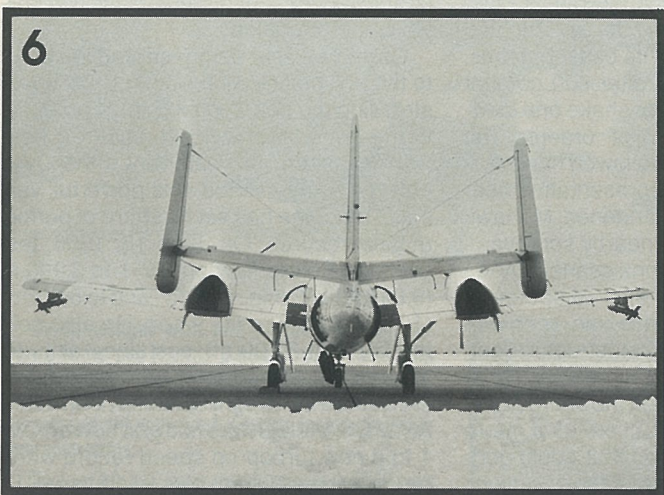
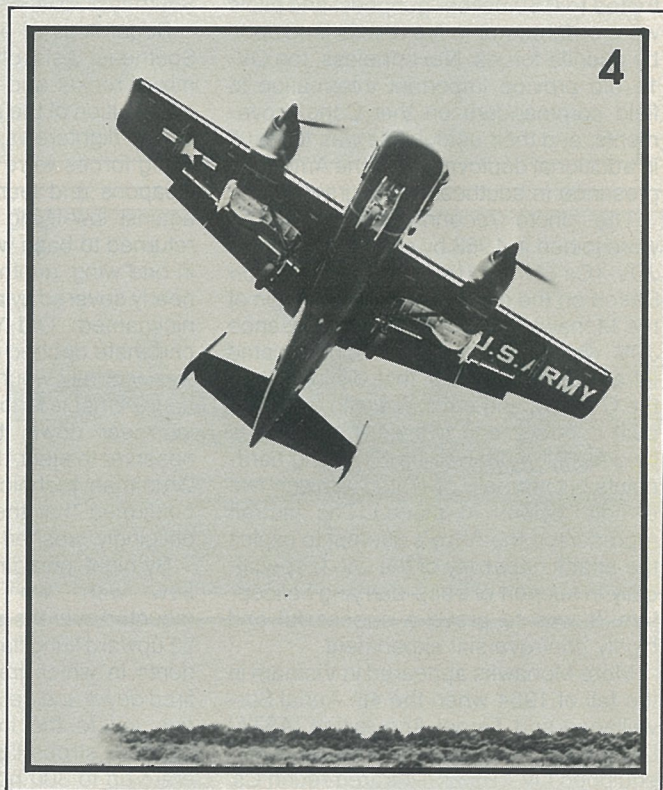
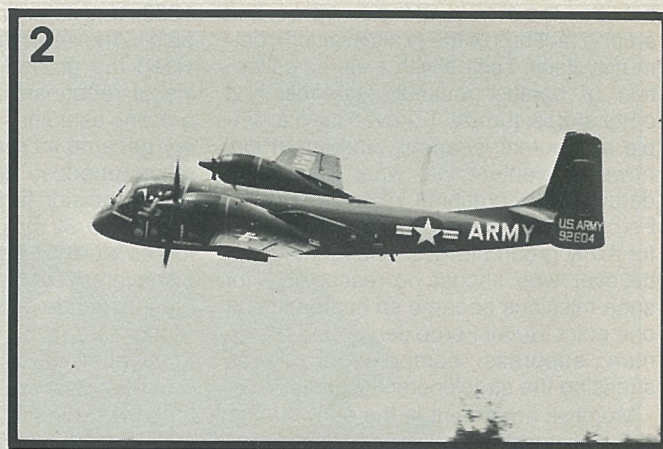
right seat observing while a qualified Army instructor flew the plane. They then traded places, and Skibitzke piloted the plane with the instructor in the right seat. The process was repeated twice with Skibitzke being the check pilot for Ruby Sheldon and me. After several takeoffs and landings, we felt quite confident in the Mohawk."

The radar imaging capability of the Mohawk was to prove a significant advance in both peace and war. The SLAR could look through foliage and map terrain, presenting the observer with a film image of the earth below only minutes after the area was scanned. In military operations, the image was split in two parts — one showing fixed terrain features, the other spotting moving targets.

In mid-1961, the first Mohawks to serve with U.S. forces overseas were delivered to the 7th Army at Sandhoffer airfield near Manheim, Germany. Before its formal acceptance, the camera-carrying AO-1AF was flown by Ralph Donnell on a tour of 29 European airfields to show it off before the U.S. Army field commanders and potential European customers.

Germany and France had shown early interest in the Mohawk, and Grumman actually signed a license production agreement with the French manufacturer Breguet in exchange for American rights to the Atlantic maritime patrol aircraft.





3. Down on the deck, second production A model shows its form. Mohawk had excellent handling characteristics but proved tricky, particularly if pushed to extremes of flight envelope at low altitude.

4. Mohawk in "Short Takeoff" mode shows full-span leading edge slats, large flaps just outboard of engines, and auxiliary ailerons between flaps and ailerons. Mohawk wing has aspect ratio of 5:3, and one British test pilot compared its handling characteristics and performance to the Gloster Meteor jet fighter, with exception that Mohawk had better rate of roll.

5. First production Mohawk is shown with air-drop supply pod — this time without stabilizing fin. Production AO-1AF had de-icer boots on wing and tail leading edges. Note aft portion of side blister window has been faired over.

6. Triple-tailed Mohawk had flaps inboard of engines and auxiliary ailerons between engines and ailerons. All primary flight controls (ailerons, rudders, elevators) were manually operated through rods, cranks, and cables. Auxiliary ailerons, speed brakes, and flaps were hydraulic.

Projected European versions of the Mohawk were to have had the more powerful DeHavilland Gnome turboprops, but orders never materialized. Two radar-equipped OV-1Bs were, however, evaluated in both German and French markings in 1963.

The Berlin Crisis led President Kennedy to bolster U.S. forces in Europe and, as a result, eleven OA-1s were hurriedly cocooned for shipment to Germany in November 1961.

Stateside test work with the AO-1 continued. The aircraft performed well at temperatures down to -50°F during a deployment to Fort Greely, Alaska, and in February 1962, two AO-1As maintained near perfect availability during the arduous Alaskan winter exercise *Operation Great Bear* at Fort Richardson.

When the Department of Defense reorganized American military aircraft design-

nations in 1962, the Mohawk models were tagged OV-1A for the visual recon/photographic version, OV-1B for the SLAR-toting variant, and OV-1C for the infrared reconnaissance bird.

That same year also marked the debut of the Mohawk in the Far East when the first OV-1s were delivered to U.S. Army training units in Japan.

The OV-1 was soon to take part in one of the earliest elements of American involvement in Vietnam. In July 1962, the 23rd Special Warfare Aviation Detachment (Surveillance) was formed. The unit arrived in the Republic of Vietnam in September with six OV-1As to provide reconnaissance capability for the South Vietnamese Army (ARVN). They were flown by American pilots and South Vietnamese observers.

The ordnance-carrying potential of the OV-1 soon generated a long-running feud

between the Army and the Air Force, and among factions of the Army aviation community itself. Tested with a varied collection of bombs, rockets, gunpods, and other stores, the OV-1 proved itself a nimble and potent weapons platform. It did, however, venture into what was considered the operational realm of the Air Force by providing fixed-wing air support for Army ground forces. The running battle over who should be responsible for such missions became so heated that at one point the Air Force demanded Grumman suppress company brochures stressing the attack potential of the OV-1.

Mohawk armament in the early stages of the Vietnam war was specifically restricted to 0.50 caliber gunpods, and pilots were ordered not to fire unless fired upon by guerilla forces. Nevertheless, the OV-1s did provide important information to field commanders on Viet Cong movements, and their usefulness was to result in additional deployment as the American presence in southeast Asia grew.

The photo reconnaissance OV-1As were joined in 1963 by specially modified JOV-1Cs of the 11th Air Assault Division Based on the more powerful C version of the Mohawk, the armed reconnaissance JOV was stripped of the sophisticated infrared sensing gear that distinguished the C model and equipped with gunsight, dual controls, and two additional stores pylons. (All Mohawks had six wing hard-points but normally operated with only two or four pylons in place.) The aircraft represented the Army's attempt to exploit the attack capability of the OV-1, specifically in support of troop-carrying helicopters. It was to prove a successful and highly controversial experiment.

More Mohawks appeared in Vietnam in the fall of 1964 when the 4th Aerial Surveillance and Target Acquisition (ASTA) Detachment arrived with a mix of radar-equipped OV-1Bs and infrared recon Cs. By spring, 1965, the thirty Mohawks in Vietnam had been combined in the 73rd Aerial Surveillance Company based at the former seaside resort of Vung Tao, 35 miles southeast of Saigon.

Despite the value of the OV-1s in providing American and South Vietnamese field commanders with their own, responsive reconnaissance capability, the U.S. Army remained unsure of the value of the Mohawk. The very nature of the joint Army/Marine program had forced design compromises that made the aircraft an expensive and, sometimes, openly resisted item in Army budgets. Orders for the OV-1 stopped in Fiscal 1964, and the controversy in the Pentagon over the armed Mohawk peaked with a 1965 directive that prohibited the Army from operating armed fixed wing aircraft.

Fast, quiet, and rugged, the 'Hawks in Vietnam proved their worth time and again. At the full-scale battle of Ia Drang in

1965, and later in the Bong Son campaign, the few Mohawks available provided the ground forces with important visual reconnaissance reports, and the growing usefulness of SLAR and IR imagery became increasingly apparent to the other American services. The Air Force used precision targeting data from OV-1s to direct B-52 strikes. Navy coastal patrol forces were directed to infiltration points discovered by Mohawk radar; and the Marines made good use of Mohawk night recon data in the conduct of *Operation Starlight* in August 1965.

Operational success led to additional Mohawk orders in 1966, and by 1968, five surveillance companies were operating in Southeast Asia.

Regardless of official policy, OV-1s in Southeast Asia often flew armed with a mix of rocket and gun pods. The rugged constitution of the aircraft proved a blessing for flightcrews, particularly when Viet Cong forces were equipped with heavier weapons and learned how to use them against low-flying aircraft. One Mohawk returned to base with more than 90 holes in one wing, another with its empennage nearly severed by an anti-aircraft hit. One, nicknamed "Old Yeller" for all the zinc chromate dabbed over its battle patches, was mortally wounded after 900 combat hours. Unable to lower or shake one landing gear down, the pilot ordered the observer to eject, then followed himself. A Grumman technical representative later confirmed that the abandoned Mohawk obligingly crashed in a nearby scrapyard.

By night, photo reconnaissance OV-1s flew with two box-like dispensers mounted over the aft wing roots, each with 52 upward firing flares. Catastrophic accidents in which improperly loaded flares fired *down* and detonated the entire package led to the introduction of a more effective strobe light pod that could generate up to 300 powerful flashes a flight, one every 3 seconds.

Of far greater value was the radar and infrared imagery provided by OV-1Bs and Cs. Day or night, in any weather, the Mohawks could paint details of enemy movement and disposition on continuous film strip maps of the terrain below. The SLAR system could look to the left or right of the flight path, or scan both sides at once. The "Red Haze" infrared system painted a picture of the earth directly under the aircraft, detecting telltale heat traces of truck engines, campfires, or other disturbances ordinarily hidden by darkness, camouflage, or the density of the natural jungle canopy.

The Viet Cong developed a fearful respect of the all-seeing Mohawk. They reportedly dubbed the quiet OV-1 "Whispering Death," and they offered a standing reward of 50,000 piastres (then, 118 piastres to the dollar) to any gunner downing a Mohawk.

From the first American presence in Vietnam to the final withdrawal, the OV-1 provided an important dimension in intelligence gathering.

Last of the principal Mohawk versions to enter production was the versatile OV-1D with more powerful T53-701 engines, improved avionics, and interchangeable mission pallets that make it possible to switch the aircraft from infrared to SLAR configuration in about an hour. The first four OV-1Ds were prototypes converted from earlier production airframes, and the first flew in 1969. These were followed by 37 new-build aircraft, the last of which was delivered in December 1970.

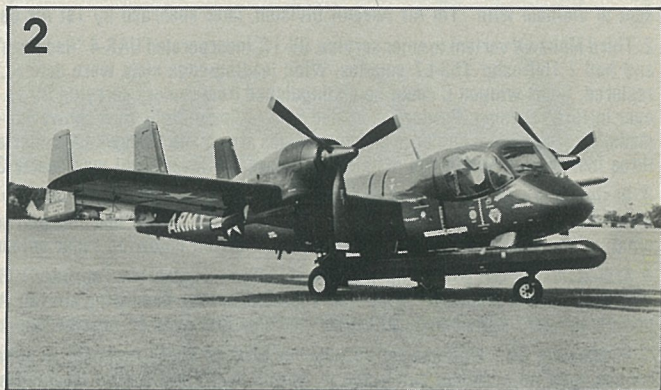
While the OV-1 was never the subject of heavy export sales, two olive drab D models were transferred to Israel direct from U.S. Army stocks in 1974, and their delivery was kept a closely guarded secret for more than a year. Despite the Israeli penchant for secrecy, the aircraft were flown out of Lod International Airport. A Pan Am copilot reportedly photographed one from the cockpit of his waiting jet and was met in Rome by Israeli agents demanding the film! The aircraft are evidently still in Israeli service, conducting classified surveillance operations.

Grumman also demonstrated the OV-1 to the Philippines Air Force in 1974, again stressing the counterinsurgency potential of the armed Mohawk. No sale resulted.

In the score of years since the OV-1 entered Army service, this powerful, versatile machine has set its share of performance records. On June 16, 1966, test pilot Jim Peters flew an OV-1 to 3,000 m (9,842 ft.) in 3 min., 41 sec., and to 6,000 m (19,685 ft.) in 9 min., 9 sec. He also held the OV-1 at 32,000 ft. sustained altitude, all world records for a turboprop aircraft in the Mohawk's weight class. A month later, Army Colonel Edward Nielson flew an OV-1 to a new turboprop speed record when he covered a 100 km closed course in 12 min., 48.8 sec. at an average speed of 292 mph.

Unusual in that it marked one of the few world record attempts to be made by an Army tactical unit, an OV-1C of the 293rd Aviation Company based at Fort Hood, Texas, set three new time-to-climb records in June 1971. The unpressurized Mohawk with uprated T53-L15 engines also climbed to 39,880 ft. peak altitude and sustained 36,352 ft. Before their flight, CW2 Thomas Yoha and Capt. Richard Steinbock had to pre-breathe pure oxygen to eliminate nitrogen from the bloodstream and prevent decompression sickness at high altitude.

The specialized sensing capabilities of the Mohawk have proven useful to several civilian government agencies. With its radar modified for the survey role, the single OV-1B of the U.S. Geological Survey participated in a series of geologic and hydrologic studies, mapping frac-



1. OV-1B inflight with APS-94 Side-Looking Airborne Radar pod (SLAR). B model had an auto-pilot and could fly 4½ hours with two 150 gal. drop tanks. With same T-53-L3 engines as OV-1A, heavier B was slower and did not have A model's snappy handling characteristics.

2. The first AO-1BF (later OV-1B) shown in 1960 with its distinctive Side-Looking Airborne Radar pod. B model Mohawk retained KA-30 camera in fuselage but had wing slats and speed brakes deleted to save weight. Wingspan was extended to 48 ft. to generate more lift.

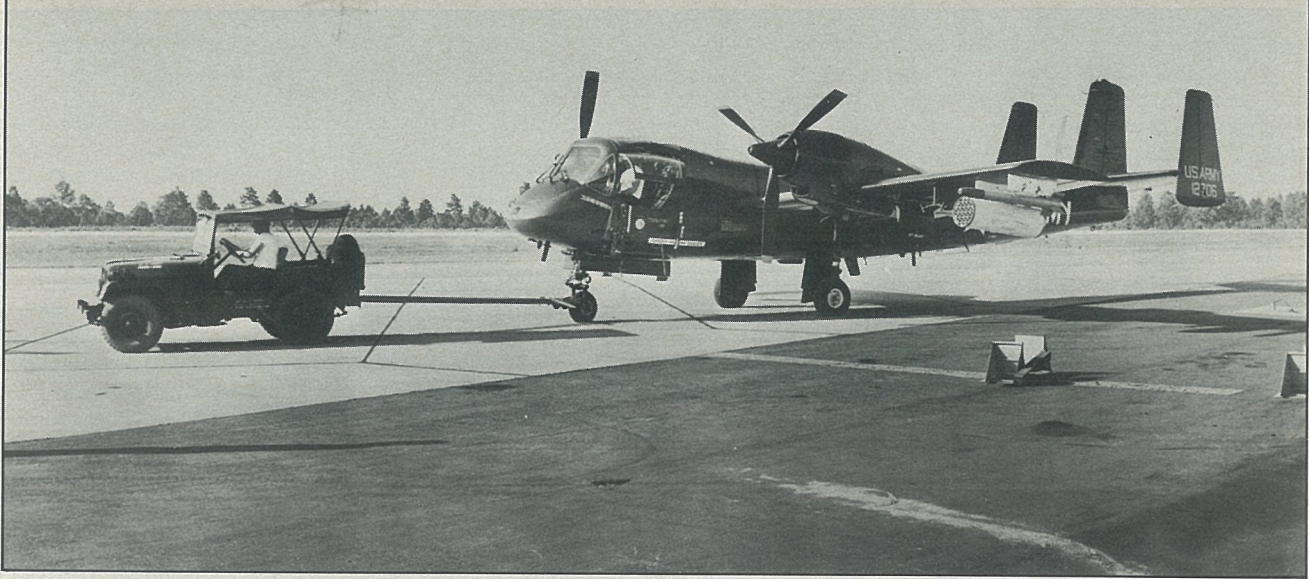
3. Older OV-1A during tests of snow/mud skis in 1963. If skis were fitted, nosewheel doors were removed. Nosewheel well was plugged by ski itself after retraction. Main gear skis rotated 94 degrees for retraction. Stripes on fuselage were for photographic record of aircraft motion and fuselage flexing, a procedure that is widely followed throughout industry.

4. Mohawk in German markings was one of two OV-1Bs evaluated by *Heersflieger* (West German Army Aviation) in 1963. The aircraft flew 386 demonstration flight hours with both American and German pilots and maintained near 95% availability. They were later painted with French roundels for another series of tests but no sales resulted.

5. SLAR-carrying OV-1B at Ft. Greely, Alaska, in February 1965. Note 10 ft. diameter Hamilton Standard propellers were normally feathered on ground to keep them from turning freely in wind. Grumman built 101 OV-1Bs. (U.S. Army)



1



1. More powerful OV-1C gave birth to armed JOV-1C variant with dual controls and gunsight. Aircraft were sent to Vietnam with 11th Air Assault Division, later absorbed by 1st Air Cavalry.
2. Third Mohawk variant to enter service. OV-1C, incorporated UAS-4 "Red Haze" infrared sensor in fuselage and had 1,150 eshp T53-L7 engines. Wing leading edge slats were deleted, but fuselage speed brakes restored. Short-winged C could be distinguished from camera-carrying OV-1A only by slight ventral bulge over infrared scanner. Production totaled 81 OV-1Cs. In-flight view shows bug-eyed cockpit canopy, which made for good vision, but large amount of glass area made Mohawk uncomfortably hot. Enough to sweat off three lbs. during an average mission. Top speed in level flight was nearly 300 mph.
3. Designed to take punishment and shoot back, Mohawk had 246 lbs. of crew armor including 1/4 in. thick aluminum cockpit floor and flak curtains. Photo shows .50 cal. machine gun pod being loaded on outboard wing pylon. This OV-1A also has experimental terrain following radar antenna on nose.
4. Armed OV-1As taxi out during exercise at Ft. Stewart, Georgia, February 1967 — two years after Dept. of Defense officially prohibited Army from operating armed, fixed-wing aircraft. Mohawk has 19-round rocket pod on outboard pylons and .50 caliber machine gun pods on intermediate stations. (U.S. Army)
5. Firepower: OV-1 with gun and rocket pods pulls up after firing pass on gunnery range. Nimble Mohawk proved to be an excellent gun platform, but its speed and control touchiness were the cause of frequent accidents early in its operational career. More than one was lost on gun passes when one engine failed and the immediate resulting roll flipped the aircraft into the ground.

tured rock formations, limestone sink holes, and other phenomena to help document water resources.

The first survey mission flown by the USGS was to detect surface water in the jungles of Panama as part of the Inter-American Geodetic Survey. In September 1971, project head Herbert Skibitzke was on the way to the Canal Zone when bad weather diverted him to Tapachula, Chiapas, Mexico. Low on fuel, he found the runway covered with slick, rain-soaked volcanic ash. Ordinary braking would have caused any conventional aircraft to swerve dangerously on landing, but the reverse thrust of the twin-engined Mohawk brought it to a safe stop.

In 1974, the USGS OV-1 surveyed the route of the Alaskan oil pipeline, and later that year, it helped study pack ice in the Beaufort Sea off the north coast of Alaska. In the frozen Arctic, using an ejection seat to abandon a crippled aircraft meant almost certain death by exposure. The OV-1B was consequently equipped with underwing pods packed with emergency flotation gear that would let survey crews ditch and survive. Fortunately, the situa-

tion never arose.

Supporting the lone Mohawk posed its own problems. "Maintenance was a nightmare," according to Mary Lou Brown, "especially in the Arctic. The aircraft and all its components were highly specialized. Parts could be procured only from the Army, and special tools were required for all the special parts. The hydraulic system was particularly vulnerable to the extremely cold temperatures of the Arctic; but then a main gear collapsed on landing at Phoenix Sky Harbor where the temperature was more than 100 degrees. The SLAR antenna made an excellent skid... On one memorable Arctic flight, Skibitzke had departed Fort Wainwright, in Fairbanks, after the plane had been in for maintenance, to return to our base at Point Barrow. As he approached the Yukon River, there was a resounding thud as first one gear and then the other dropped out of the wells and dangled beneath the plane. Attempts at recycling were ineffective. With about 400 miles of frozen tundra and the Brooks range between him and Point Barrow, he turned back to Fort Wainwright for another main-

tenance session."

The Mohawk continued its valuable survey work until 1975 when the aircraft was turned over to the Naval Air Test Center at Patuxent River, Maryland.

Another "renegade" OV-1 served with the Environmental Protection Agency in the early seventies. EPA bailed an OV-1C from the Department of Defense and used the panoramic nose camera and infrared sensing system to document oil spills, strip mine land damage, industrial waste flows, and other phenomena. The aircraft was flown from the EPA facility near Las Vegas, and returned to the Army in 1976.

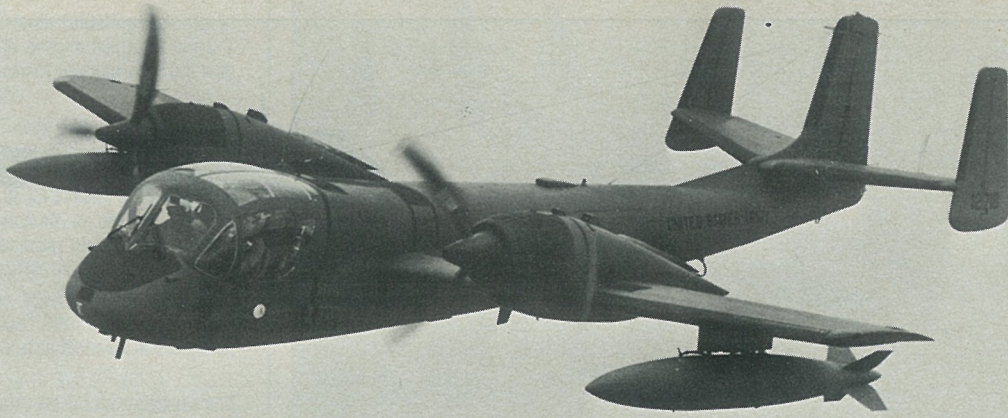
After more than eight years of service, four OV-1Cs still fly with the U.S. Customs Service, hunting for drug smugglers with a non-standard, nose-mounted infrared system.

NASA too has found some uses for the Mohawk. An OV-1B was modified by Grumman to carry a small jet engine under the right wing. With it, carefully controlled flight profiles are flown over a test range to measure aircraft noise characteristics.

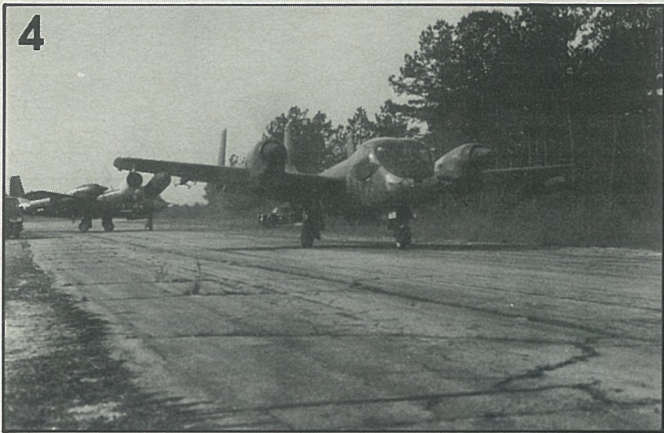
Additional early-model Mohawks have been brought up to the latest OV-1D standard, and if service longevity is a measure of design success, the OV-1 is undoubtedly a successful airplane. By the end of 1980, the Army still had 25 OV-1Bs, 26 Cs, and 84 Ds in active and reserve units. Starting in 1972, the Army National Guard began to receive the Mohawk, and today, the Guard has 13 OV-1Bs, 24 Cs, and 16 Ds serving with three units in Georgia and Oregon.

Grumman at one time proposed a single-seat attack version of the Mohawk with powerful T-55 engines and 30mm cannon in response to the Air Force AX competition. The production contract eventually went to the Fairchild Republic A-10. Another Mohawk derivative with an

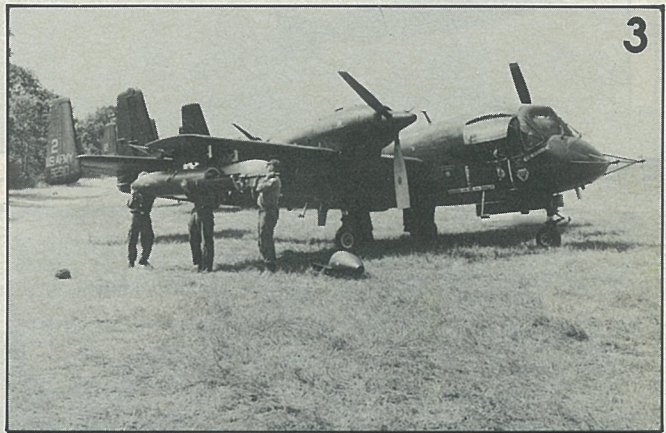
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extended nose for extra seats and special electronics never advanced past the drawing board.

There is, however, a specialized, little publicized Mohawk in service. The RV-1D performs classified electronic intelligence duties and is distinguished by two large underwing pods.

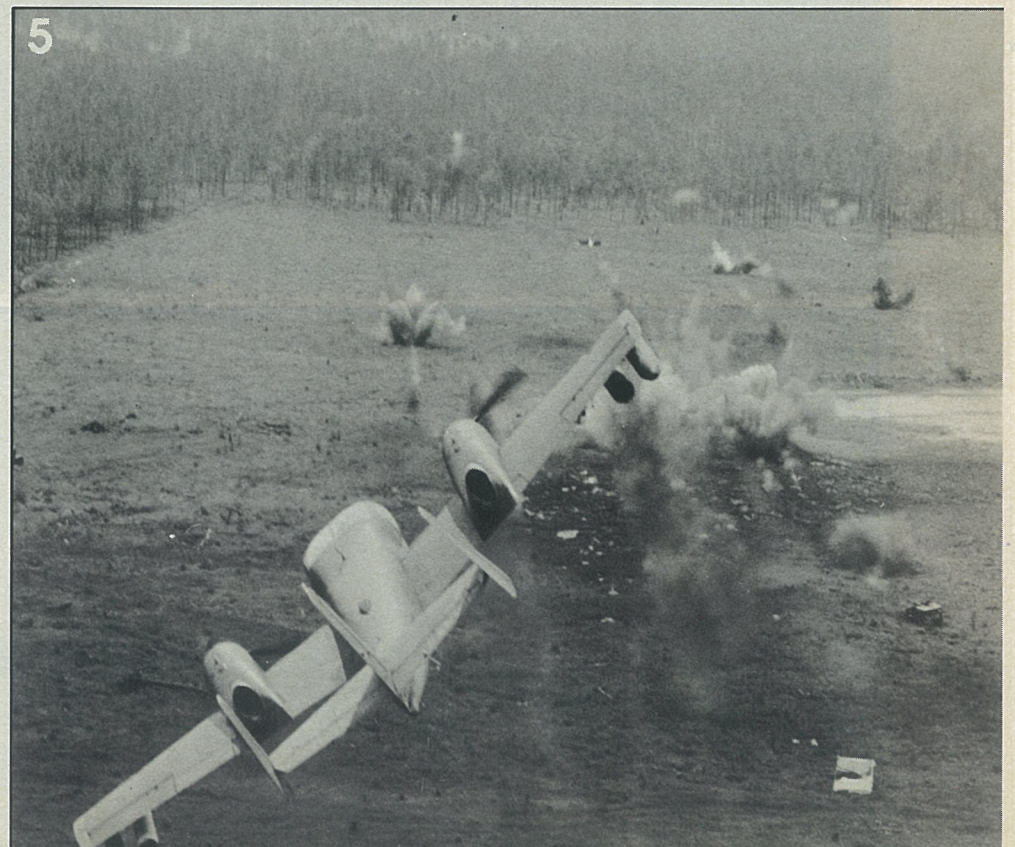
Grumman continues to update Mohawks at the company's Stuart, Florida facility. And with new avionics and nap-of-the-earth flying tactics, Grumman's bug-eyed, multi-sensor bird is expected to serve with the Army well into the nineties.

Overshadowed by sleek spyplanes and all-seeing satellites, the OV-1 remains a potent, responsive reconnaissance platform — one that will stay in the frontlines of aerial intelligence gathering for some time to come.

Acknowledgement — The author wished to express special thanks to the following people for their help in the preparation of this article: Mr. Allen Cobrin, Mr. Herman Schoenburg, Ms. Lois Lovisolo, and Mr. Joel DiMaggio of Grumman Corp.; Ms. Mary Lou Brown of Hydro-Data, Inc.; Mr. Steve Miller; and Mr. Donald Weinstein

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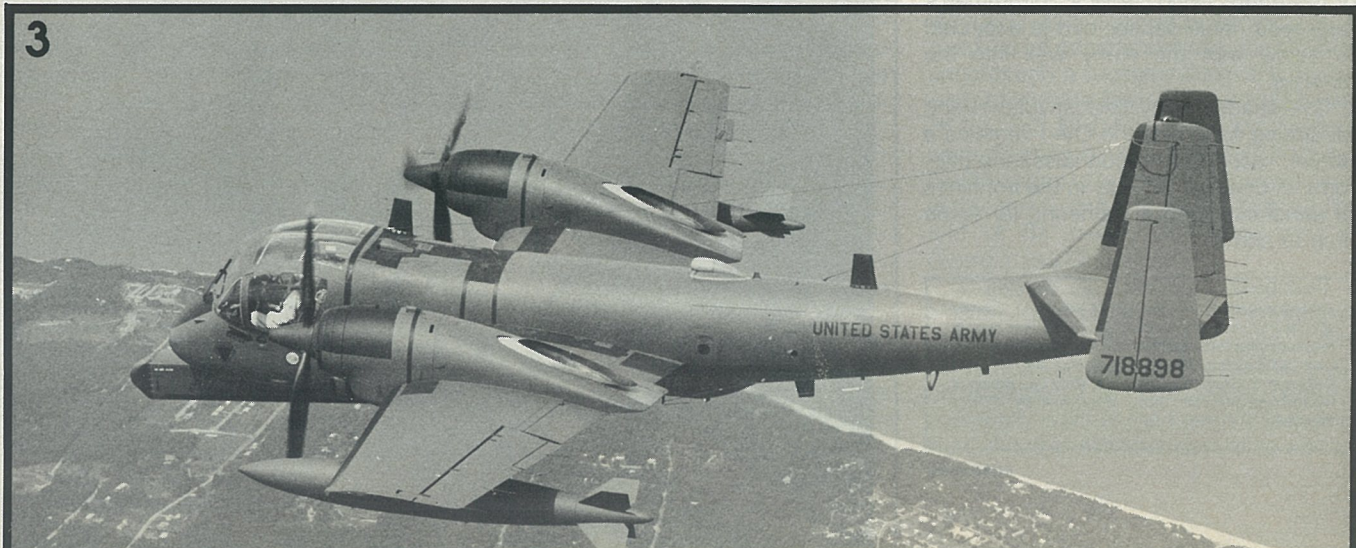


1. Radar-podded OV-1B and infrared-sensing OV-1C fly formation. Together, the two Mohawk variants gave American forces in Southeast Asia round-the-clock battlefield surveillance capability. Both types retained optical camera to supplement their sophisticated reconnaissance systems. OV-1C also had message-dropping chute.

2. Mohawk tested with terrain avoidance radar is checked out at Fort Huachuca, Arizona, in 1966. Two-seat OV-1 had Martin Baker ejection seats that could carry crew to safety at speeds greater than 100 kts. from any altitude. These were later upgraded to permit safe ejection at speeds down to 60 kts.

3. Prototype OV-1D incorporated most of the many changes found in 37 production D models. Powered by 1,400 eshp T-53-L-701 engines, OV-1D has a strengthened airframe with the 48 ft. wingspan of the OV-1B and fuselage speedbrakes of OV-1A and C. It carries camera, SLAR, or IR reconnaissance systems in interchangeable pallets that let field commanders quickly configure aircraft for job at hand.

3



FRANCE'S FLYING BANANA

Photos courtesy Dr. P. Riviere and the Millot Collection.

Imaginative and Futuristic, The SE-100 Was Designed For A War Years In The Future, But France Was Faced With An Enemy Who Would Invade Within Months!

By Alain Bombeau & Gerry Beauchamp

In 1934, France was the first power to disregard the theories of Italian General Douhet on matters of aerial defense. One of Douhet's erroneous tenets held that a group of bombers flying in close formation was quite capable of defending themselves, without the help of escorting single-engine, single-seat fighters. That year, France contradicted this widely accepted belief by announcing competition to produce 300 twin-engine, two-seat escort fighters, which were also to act as flying command posts for single-seat fighters.

Among the planes which emerged from this specification, but were eventually used for totally different roles when war came, were the Potez 63 and Breguet 690 series. The first for observation and light bombing, the second for ground attack. Yet even before the Potez 63 had won the 1936 competition, an official specification had been issued to find a replacement aircraft.

The rather nebulous notion of the flying command post had been abandoned by then in favor of a program calling for 300 heavily armed, twin-engine, three-seat, escort and deep penetration fighter-bombers. Range was to be 1200 km (746 miles) with an endurance of three hours at 90% of maximum speed. This speed was to be in the order of 550 kmh (342 mph), very fast for the time. The designs were to use non-strategic material (wood), be powered by engines of not more than 1,000 hp each, and capable of carrying bombs for ground attack.

Among the prototypes submitted under this ambitious specification, the military took particular notice of the unusual looking project presented by Mercier and Lecarme, of the Liore-et-Olivier design office (LeO).

The first drawings, submitted during the second quarter of

1936, depicted an aircraft, the silhouette of which had never before been seen. While its general appearance and the innovations which characterized its construction gave the plane's banana-like fuselage a futuristic look, the unorthodox design was largely inspired by preliminary research work on in-flight experimentation of full-scale flight devices that limited stress and strain on the wings and incorporated an anti-skid system in turns.

This LeO 50 was the last plane to bear the Liore-et-Olivier designation, as on 21 December 1936, the firm was nationalized in a move to boost and standardize production, and became part of the Societe Nationale de Construction Aeronautique du Sud-Est (SNCASE) complex.¹ Redesignated the SE-100, development of the unconventional three seater continued during 1937.

Aware that powerful enough engines might not be available to power the plane when the time came to fly it, the design team carried out an in-depth streamlining of the airframe. The need to use non-strategic material meant that the wooden wing would be of one piece and plywood covered. The fuselage was built up of welded steel tubes, with duralumin panels covering the elliptical bulkheads attached to the tubes. This resulted in an overweight machine, with a ratio of 250 kg/sq.m (51 lbs/sq. ft.), too heavy for the wing area provided and for the two 800 hp Gnome-Rhone Mars twin row, 14 cylinder engines allocated.

The unique design of the wing was engineer Mercier's brainchild. The structure comprised a one-piece spruce torsion box with laminated spars. The built-up leading and trailing edges were attached to the box by stainless steel straps. The front face of the torsion box had attachment points for the powerplants and nacelles, while the rear face had attachment points for the full span flaps. To alleviate the weight problem, full span flaps had been chosen for maximum lift. This relegated the ailerons to the wing tips. The ailerons were articulated obliquely to the span axis at the extreme tips. As experimentally studied, this scheme also provided an anti-skid measure in the turns, with spoilers planned for a later stage. There were no bolt holes through the torsion box planks to weaken the structure and the SE-100's engine nacelles and cowlings were similar to those on the well received and much larger LeO 45 bomber.

The narrow, deep fuselage was of elliptical cross-section with a strongly arched top line. This banana characteristic would give the plane its nickname of "Limande" (Slim) but the

¹Corporation For Aircraft Construction, South-East Dept.