

TORA³

By MAUNO A. SALO

JACK CANARY'S IMPERIAL JAPANESE NAVY AIR FORCE

Jack didn't live to realize his IJNAF, having crashed into a hillside near Reading, Penn. on 19 August 1968. He was then ferrying the sixth BT-13 to Long Beach, California. Four days later he succumbed to uremic poisoning resulting from burns received in the crash, two days short of his 52nd birthday. (See NEWSLETTER No. 8, November 1968, pg. 27).

Jack had spent almost half his lifetime at North American Aviation, Inc. at various endeavors, mainly as a technical representative for their AT-6, B-25, P-51, and later, the F-86. It was his familiarity with the T-6 that enabled him to seek and bid the contract for supplying airplanes for the forthcoming motion picture, TORA TORA TORA.

Jack acquired his taste for supplying movie airplanes by building two replica Fokker Triplanes for the filming of THE BLUE MAX while in Germany. With a small group of constructors he became actively in the business of making new Bucker Jungmeister aerobatic biplanes (famous during the 1930's). Following is an account of the modifi-

cation of the airplanes for TORA TORA TORA after Jack delivered them.

TORA TORA TORA is a film story of the Japanese air attack on Pearl Harbor. It called for the use of twelve Zero (actually Zeke 21) fighters, nine Kate torpedo bombers and nine Val dive-bombers. For the American forces there were to be an SBD-1 (Douglas A-24), a pair of P-40E's, one Catalina PBV-5A and five non-airworthy Catalinas and some fake P-40's for ground props. The modification contractors were Steward-Davis and Cal-Volair, both of Long Beach Airport.

Steward-Davis handled the Val's, the SBD-1 (A-24) and the Catalinas. The basic airframe for the Val (Aichi 99) was the Vultee BT-13 fitted with a Pratt & Whitney R-1340 engine instead of the original R-985. To give the conversion more authentic dimensions, the fuselage was lengthened by insertion of a 26" steel tube "link" behind the rear cockpit.

There was more to the conversion than meets the eye in

Zeke 21 hoisted for loading aboard USS YORKTOWN at North Island NAS on 3 Dec. 1968. This one had retractable tailwheel but no arr-

esting hook, and 2-blade propeller. Colors are pale green, red insignia underwing, red band, black cowl. (Photo — Harry S. Gann)



the film. Since the BT-13 engine diameter was larger than the Val original the fuselage was re-skinned (except the rear portion) and the cockpit edges were moved upwards 7¼ inches to give the lowered canopy effect noticeable on the Japanese originals. The fuselage thickness was increased by five inches at the rear of the canopy, and the rear canopy was made to swivel upwards for the rear gunner. The rear seat was also reversed.

Fibreglass structure was used extensively for the modification, for the large dorsal fin, wheel covers, dive brakes, wing tips and the tubular gunsight. The wings were lengthened 38" by removing the original tips, extending the original tips, extending the spars, and capping these with an aluminum tubular bow, covered by fibreglass "skin."

Three of the Val's have 3-blade propellers and workable carrier arresting hooks. The oldest BT-13 in the lot is c/n 308, manufactured 9-27-40, and is one of the old blue and yellow Army trainers. The Val's were finally painted pale green with red trim and black cowls. Numbering was not authentic. The first one completed was A1-231.

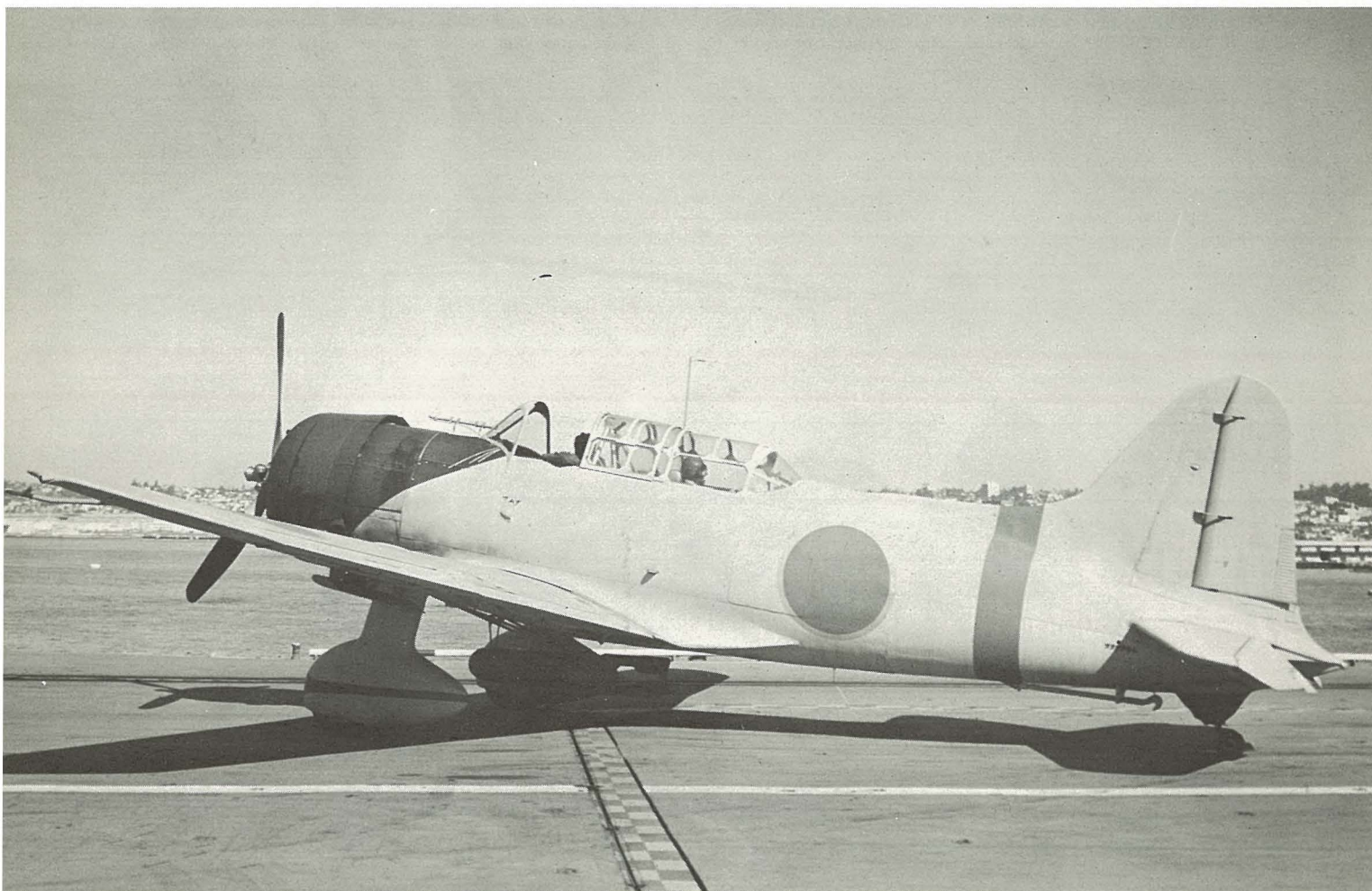
Steward-Davis test pilot is a veteran BT-13 jockey, having flown some 5,000 hours in South America as a smoke writer and in fact, N56336, the prototype Val conversion was his own airplane and already had the R-1430 geared engine. 45 pounds of ballast was mounted on the

floorboard in the rear seat to correct CG location. How did they fly? Pretty well, and even better at low speeds than as original BT-13's. Cruising speed is 150-160 knots, and climb rate is better.

The Douglas A-24 was an old ag-craft from Oregon, then belonging to the Marine Corps Museum, and loaned to Twentieth-Century Fox Studios for the film. On its railway trip from the East Coast it suffered some landing gear damage and the wing/landing gear fittings were removed, straightened, welded, reinforced and reheat treated. Much work was done to patch the wings and it was one of the last airplanes to leave the modification shop.

The Catalina flying boat hulls were made floatable and the engines were removed and a plywood bulkhead substituted, to which the propeller hub was bolted. One flyable Catalina was refurbished and repainted, marked to represent Admiral Halsey's airplane at the time of Pearl Harbor.

The first Zeke 21 and the first three Kate modifications on basic T-6 airframes were performed at Long Beach Airport by Cal-Volair, and the remainder of the two types were modified by them at Oxnard Airport, 80 miles away. Some 100 men were involved in the work at peak effort, many of them working long hours and weekends to meet the film's schedule.



A Val on board the YORKTOWN, 3 Dec. 1968. Three Val's had arresting hooks such as this one. Colors are pale green, red Japanese

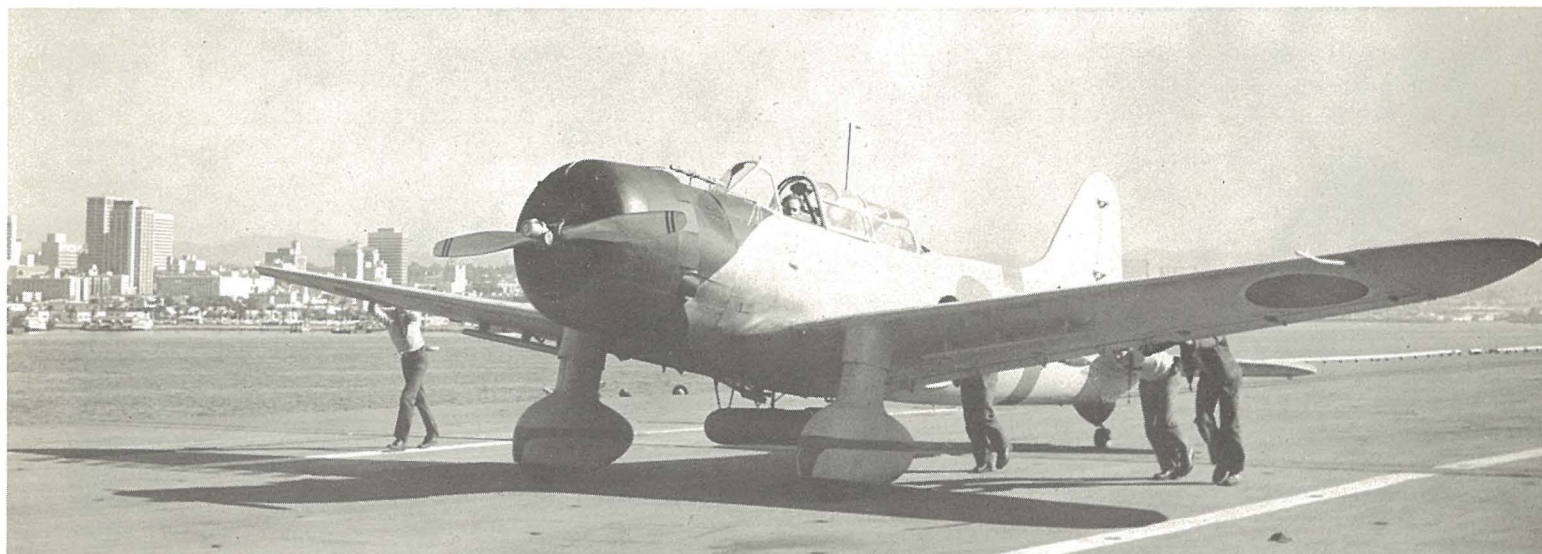
national insignia with narrow silver stripe surrounding it, black cowl, red stripe on fuselage and wheel fairings. (Photo — Gann)



Another Zeke 21 loading on YORKTOWN, U.S.S. VALLEY FORGE in background. (Photo - Gann)



P-40E-1-CU, s/n 41-1456, formerly N1207V of Tallmantz Collection. (Photo - Gann)



A Val on the YORKTOWN's deck, San Diego in background. (Photo - Gann)



Another view of the P-40E at North Island NAS, awaiting loading for Hawaii. Colors were standard for U.S. Army aircraft of 1941 period, with GHQ unit number on fin. 3 Dec. 1968. (Photo — Harry Gann)

To convert the T-6 to Zeke the main effort was in the area of the cockpit, wheel wells and wing tips. Each had to be made into a single-seat airplane, then new canopy, windshield and forward deck in front of the cockpit installed. The wing tips were modified to the characteristic Zeke shape with fiberglass, and droppable fuel tanks were constructed of fiberglass also. Rudder profile was changed at upper and lower ends, a scoop was added to the engine cowl, and slots cut into the fuselage sides. Finally a very large spinner was mounted over the propeller hub. As in the case of the Val's, some Zeke's had 3-bladed propellers and workable arresting hooks. And again, they were painted pale green, red trim and black cowls.

Canary's proposed modification of the T-6 airplane into the Japanese Kate gave everyone a monstrous headache. Firstly, the B5N-1 Kate was a three-place airplane with a rather long airframe. So the basic structure of the T-6 was mated with a BT-13 empennage. To achieve the three-seat effect dimensionally the fuselage was extended both fore and aft with steel tube frames; 16 inches forward of

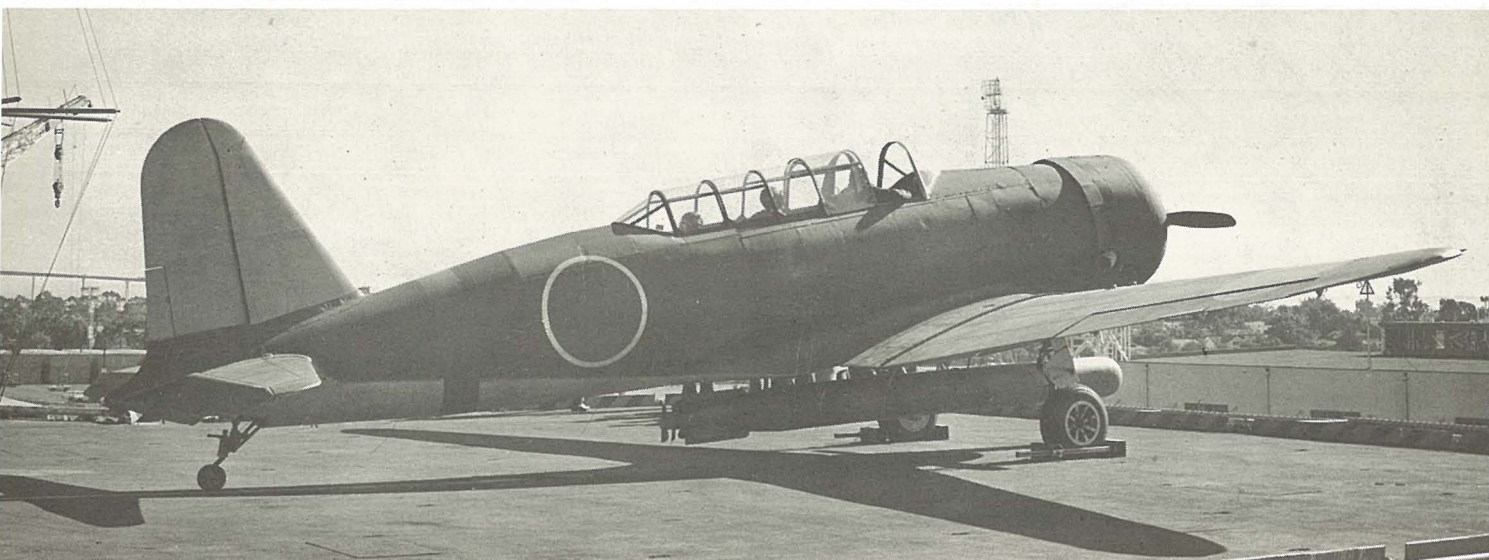


A plastered P-40. Same P-40E in a plaster cast. The cast was later used for manufacture of fiberglass P-40 fuselages for movie props in filming of attack on Pearl Harbor. (Photo — Mauno Salo)

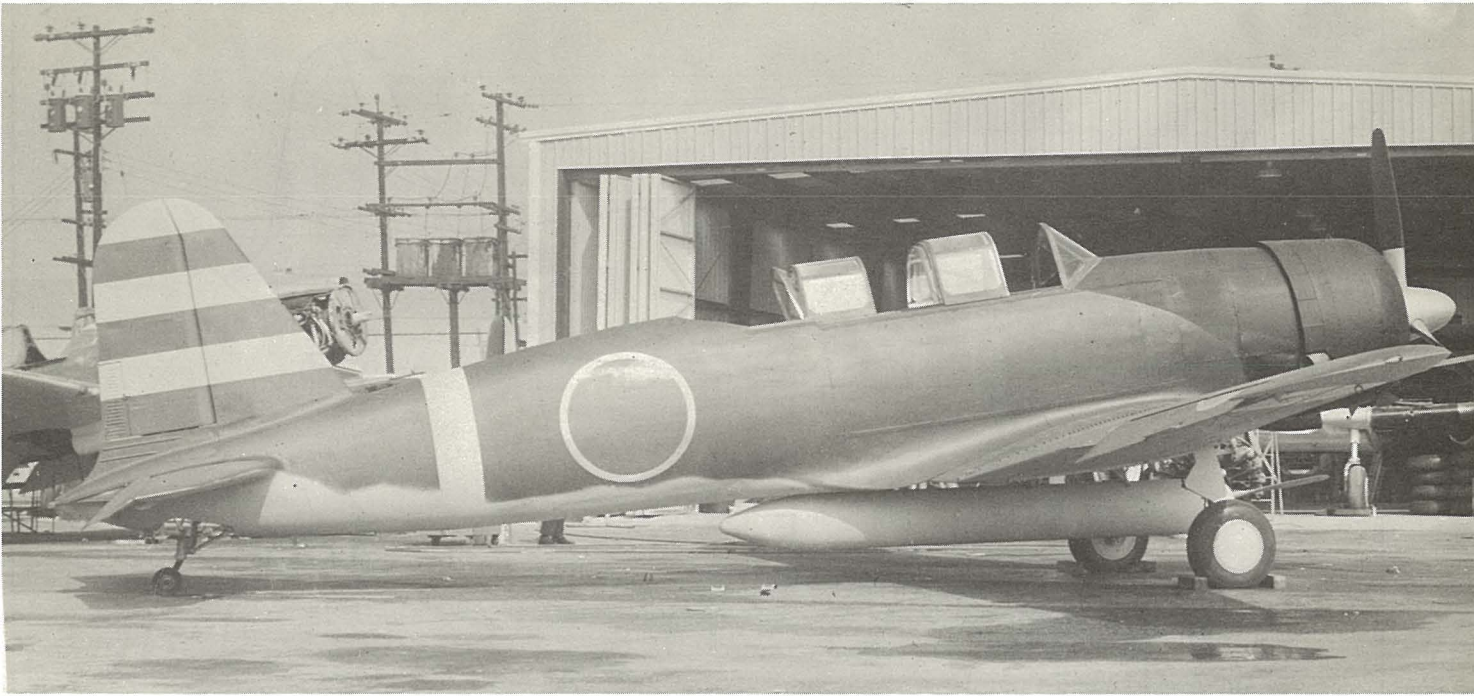
the firewall and a 7 ft. extension aft of the rear cockpit. To this the BT-13 tailcone and flight surfaces were attached. Much work was involved with re-skinning and addition of the rearward facing seat. New canopies, in five sections, were built, with the rear one swivelling upwards. Nor did the Vultee fin and rudder escape attention to proportion, these more nearly to the Kate outline. Again, wingtips were constructed of fiberglass to provide the rounded effect and necessary extension.

The first Kate completed was ex-N3239G, with a geared R-1430-50 Wasp engine and 3-bladed propeller. The example shown in the accompanying drawing was the second of the Kate's converted from a Canadian Harvard. The Kate's were each finished in a dark sea-green color with gray undersides and red rear fuselage bands. The command airplane of the film's script, No. 301, was given red and yellow horizontal stripes on the fin and rudder. Other T-6's were shipped to Japan and were assembled there from "California kits."

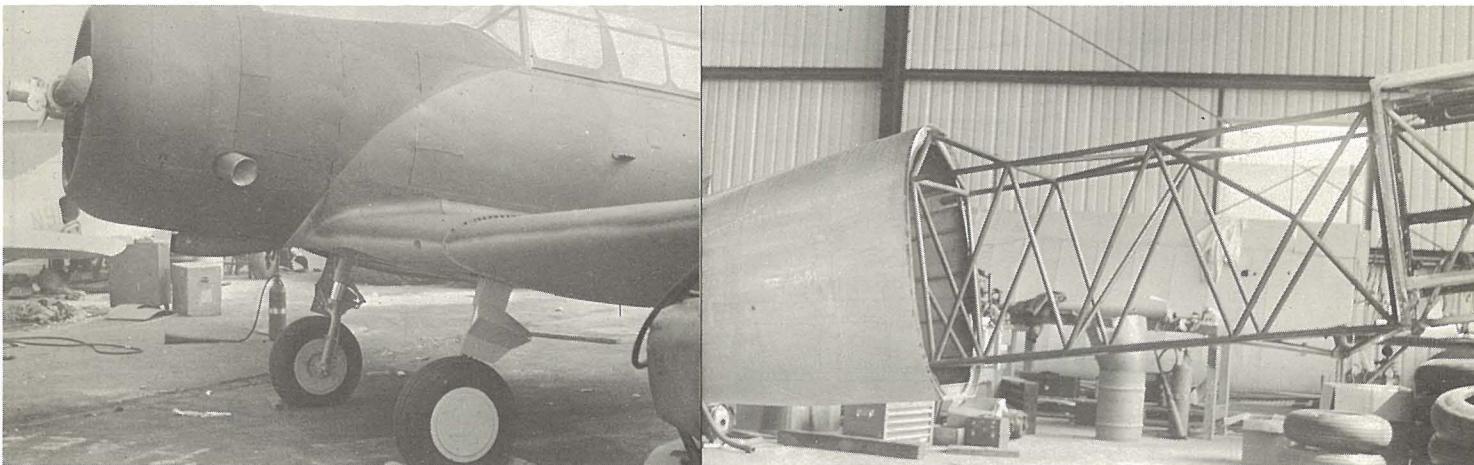
There were originally two P-40's, "E" Model, one being the former Tallmantz Aviation N1207V (P-40E-1-CU,s/n



Kate. Colors, green upper surfaces, grey under, white stripe around insignia, red band on fuselage, grey fin and rudder. (Photo - Gann)



A Kate nearly complete, Oct. 1968. Wooden fins and propeller were later added to dummy torpedo, red band to fuselage. (Photo - Salo)



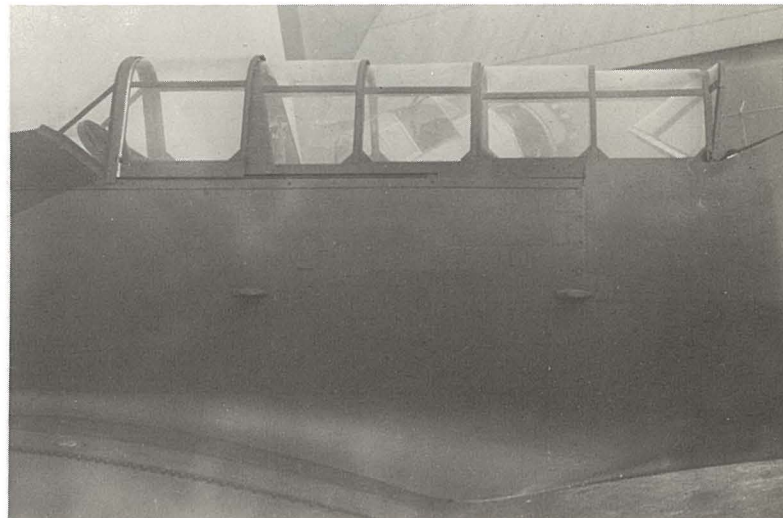
Second Kate, No. 313. Reworked landing gear leg fairings, dummy left hand exhaust. R-1430 exhausts at right. (Photo - Mauno Salo)

Second Kate, ex-RCAF Harvard 20292. 7 ft. fuselage extension was preassembled in separate fixture, bolted into fuselage. (Photo-Salo)

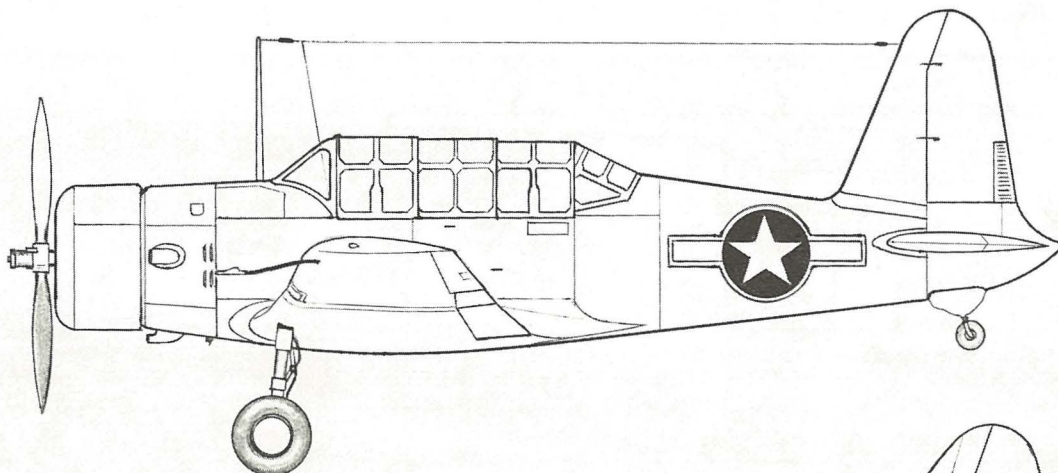
41-1456), and the other was a "basket case" from Upper California. The latter was not completed in time due to parts shortages and another P-40E was substituted at the last moment.

The movie "props" were interesting; 27 P-40's were constructed. Oh-Seven-Victor became the model for a plaster mold. Studio craftsmen quickly made 27 fuselages of fibreglass, utilizing the mold, then attached Beechcraft C-45 wings. Some of the "props" received surplus Allison engines for realism (reelism?). The dummy P-40's were to be expended during the filming of the Japanese assault on Pearl Harbor.

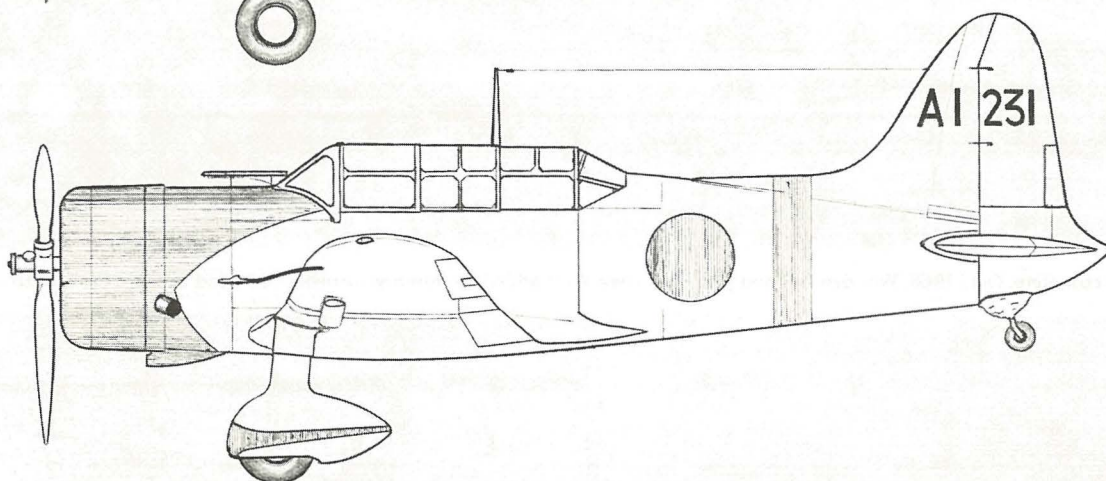
While the first Kate was under conversion one Zeke and a Val were flown East to check out carrier landings and takeoffs, which were successful. Following completion all airplanes were flown to Marine Corps Air Station, El Toro, for additional pilot training, and finally to North Island



Kate/ex-T-6. Canopy rebuilt for raised fuselage sides. (Photo - Salo)



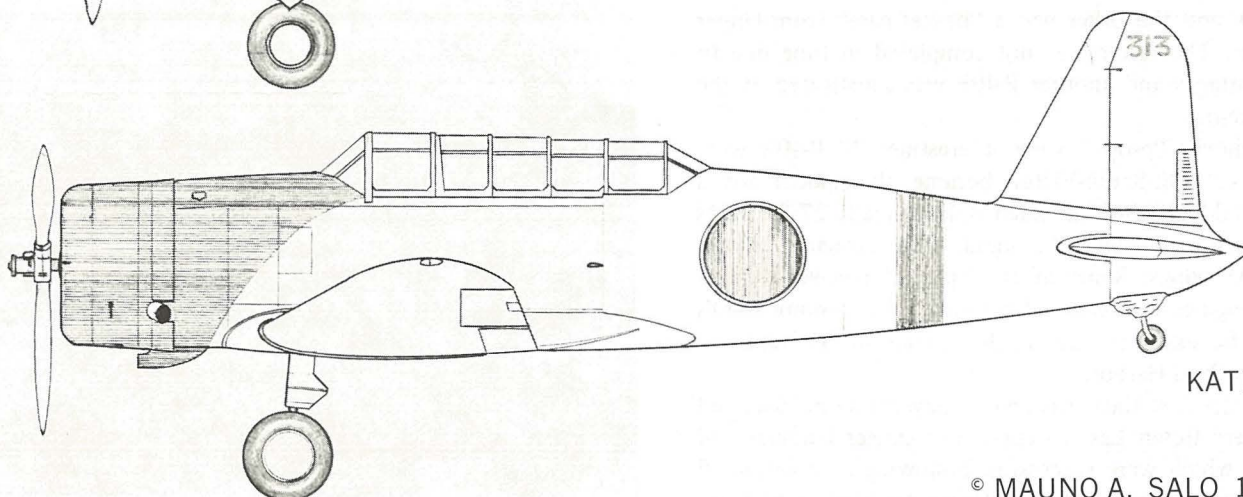
BT-13



VAL



T-6



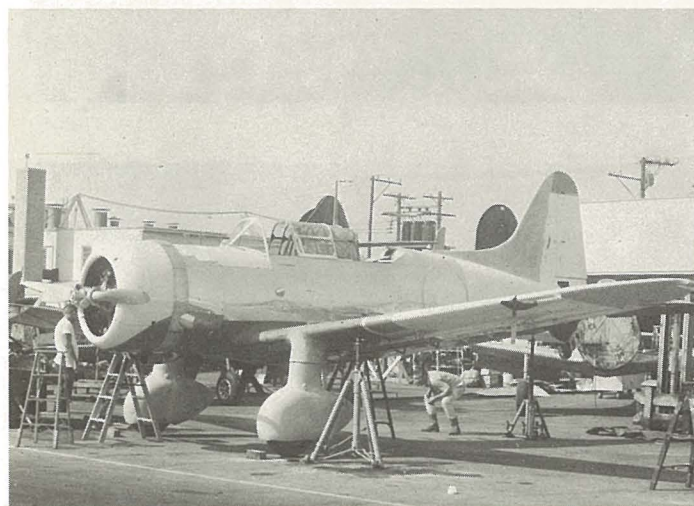
KATE



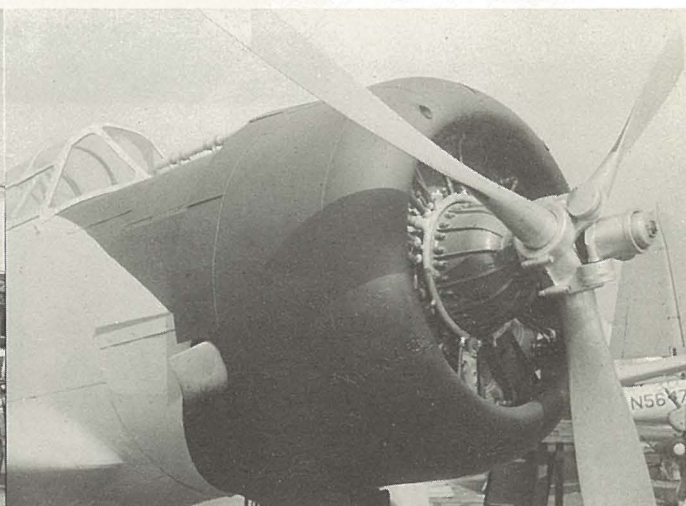
Val/ex-BT-13. Arrow points to 26" extension in fuselage.



Val after re-skinning, with fibreglass fin installed.



Val/ex-T-6, N56336, prototype modification airplane.



With geared R-1430-50 engine.

(Photos — Mauno Salo)

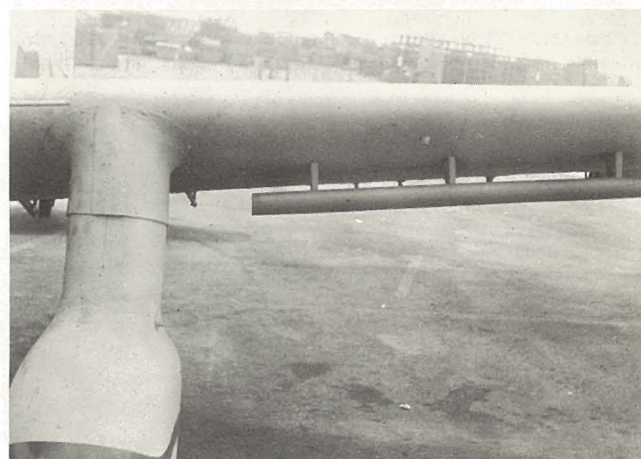
Naval Air Station. Here they were loaded aboard the USS YORKTOWN (CVS-10) for transportation to Hawaii.

The pilots hired for the filming of the motion picture were mainly service pilots from the Navy, Marine Corps and the Air National Guard. They were told to expect "at least a 40-day stay." As of 2 March 1969 this had been already overrun, with more to come. Base pay was reported to be \$192 per day with a guarantee of 20 days minimum.

Some difficulties were experienced. Two airplanes, up to the date of this writing, were lost during filming in Hawaii. One pilot was killed in a strafing run on a sugarcane field in January 1969 and in February a Kate plunged into the water off Barbers Point following engine failure. Pilot Frank Eger of Oahu was rescued by an Air Force helicopter.

A great deal of money was expended for the making of TORA TORA TORA, estimated variously at 18 to 22 million dollars. Like other A.A.H.S. Members I would like to see some of the filmed flying scenes that will not reach the screen. I feel sure that Jack Canary would wish success for the movie as much as he hoped his IJNAF would be.

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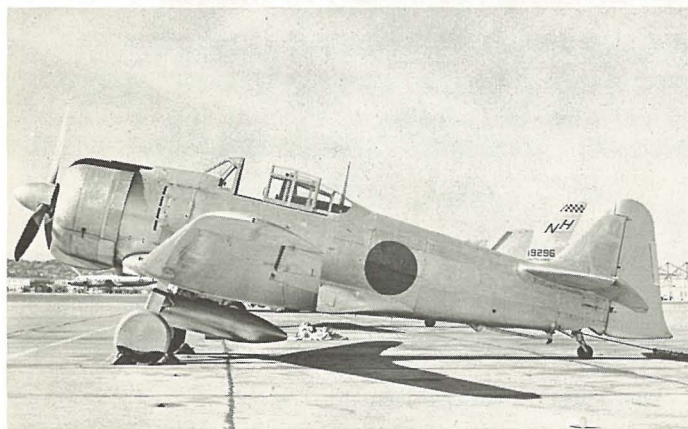
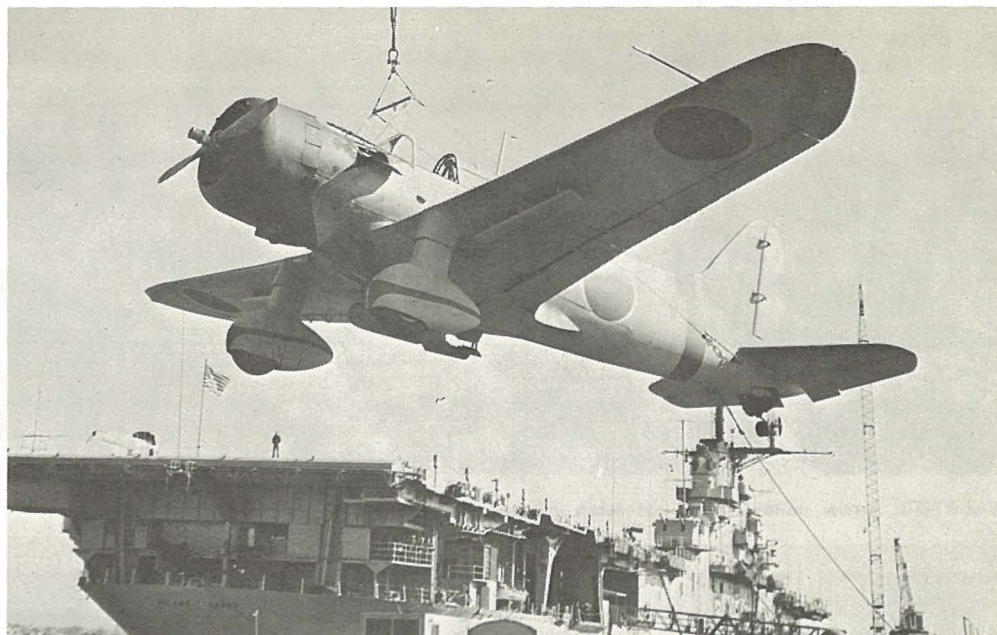


Val with dummy dive brakes and modified I.g. fairing.

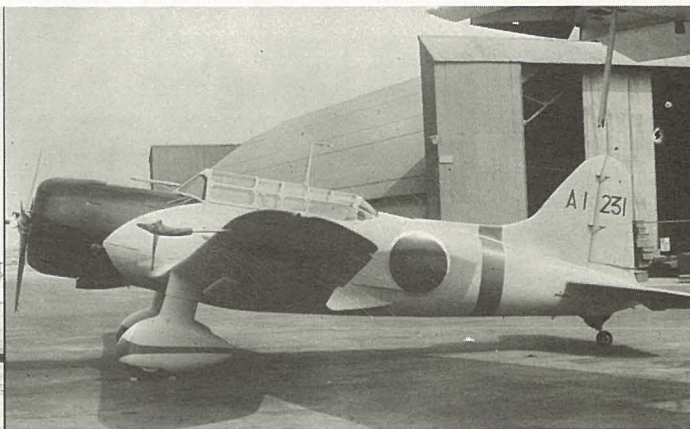
BT-13 / Val conversions

FAA Registry	Movie Number	FAA Registry	Movie Number
N56478	A1 230	N65837	A1 236
N56336	A1 231	N56867	A1 244
N67629	A1 232	N18102	A1 245
N2200S	A1 234	N63163	A1 246
N54865	A1 235		

Val hoisted for loading aboard YORKTOWN, with VALLEY FORGE in background. Dummy dive brakes are clearly shown, also silver stripe around insignia under wings. This Val had no arresting hook, 2-blade propeller. (Photo Harry S. Gann)



This Zero/Zeke 21 was in natural aluminum finish, 3 Dec. 1968. No underwing insignia, nor ring around fuselage insignia. (Photo-Gann)



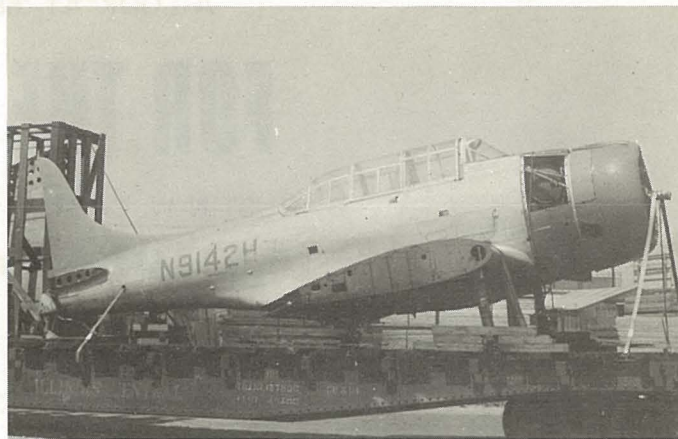
First Val, A1 231, minus arresting hook, at Steward-Davis on 28 Sept. 1968. Val was code name for Aichi 99, D3A-1. (Photo-Salo)

Unfinished Kate at Cal-Volair, Long Beach, Oct. 1968. Propeller spinner was later removed to comply with appearance of Japanese Kate, landing gear leg fairings also later revised. (Photo — Mauno A. Salo)





Zeke modification prototype, Aug. 1968. Became A1 101. (Photo-Salo)



A-24 on loan from USMC Museum, became SBD-1 in film. (Photo-Salo)



All nine Val's evident here, on YORKTOWN, 3 Dec. 1968. Print from color slide shows yellow stripes on fin as dark. (Photo - Gann)

ADDENDUM:

Since this article was placed in schedule for the Summer issue we have further report concerning the loss of two of the airplanes. Our report reads:

The aircraft are based at Barbers Point NAS with field maintenance handled by Aviation Specialties of Mesa, Ariz. Since the start of the filming operation two of the airplanes have been lost, one due to pilot error, with engine not involved and the second ditched following a loss of power.

The first incident occurred on 1/13/69 while practicing dive bombing maneuvers. From all reports gathered the aircraft, a Val, A1-201, Reg. No. N63227, apparently did not recover from a high speed stall, crashed into a sugar-cane field and burned. The pilot was killed. The engine, a geared type 1340, departed the aircraft upon impact and was found approximately 75 feet from the wreckage. The engine was not considered to be a causative of the crash.

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A later report advised that Murrayair Ltd., a crop-dusting outfit in Honolulu had purchased the engines and requested particulars on the engine, S/N, etc. At present the engine remains somewhere in the middle of the cane-field and due to this the engine serial number was not available. The Aviation Specialties personnel could not provide S/N either as they advised that Log Book was burned along with aircraft.

On 2/19/69, a second aircraft, Reg. No. N2819G, a BT-13 re-designated Kate 318, was ditched into the ocean owing to a reported loss of power following take-off from Barbers Point NAS. The pilot reported seeing the engine cowling lift, apparently due to a blown jug. It was further admitted that the engine had been over-boosted prior to cylinder head failure. Subject A/C was ditched with no injuries to the pilot. The aircraft sank and there are no plans to salvage at this time. Records indicate that engine S/N ZP103915 was installed on the aircraft.