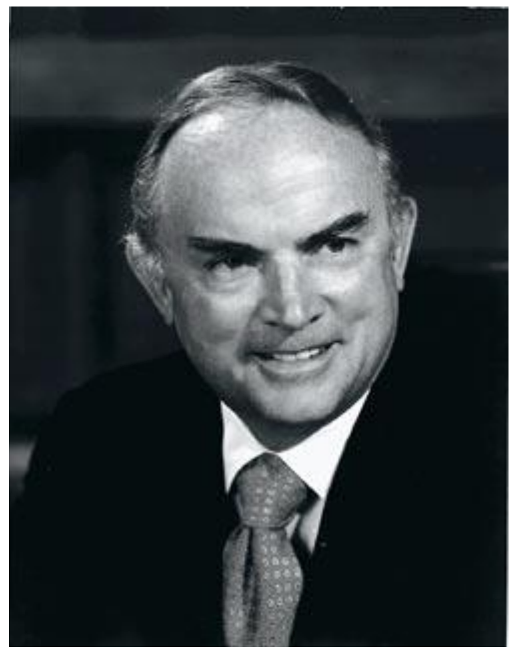
President Chance Vought - 1961
Paul Thayer **President LTV Aerospace Corp. - 1965** **1948 to 19**
Chairman and C.E.O. LTV Aerospace Corp. - 1970

One of the truly great leaders of the Aerospace Industry, William Paul Thayer, Chairman and CEO of LTV Aerospace Corporation. was as much at home in the cockpit of a jet fighter as he was in the presence of the giants of the business and military world. Taking over the reins of the LTV corporation when it was at its lowest ebb, he brought the organization from the verge of bankruptcy to a healthy, viable leader in its field. Dynamic, charismatic, tough, wily and friend to all of his employees, are but a few of the attributes that form his character.

Paul has always been a winner. A Navy fighter ace in World War II, he joined Vought as a Test Pilot in 1948 and rapidly progressed to Chief Test Pilot in 1949, Flight Test Director, Vice President of Sales in 1951 and finally Company President in 1961. In 1970, the parent LTV Corporation fell into deep financial distress and Paul was called upon to tackle the biggest challenge of his career, saving the corporation. And save it he did! Facing down the major creditor and energizing every element of the organization, he not only brought the firm into the black but set new records for sales and reestablished LTV as a major player in the industry. With the corporation in sound shape, he accepted the invitation of President Reagan to serve as Deputy Secretary of Defense. He was sworn in on 12 January 1983 and served with distinction.



A native of Henryetta, Oklahoma, he attended high school in Wichita, Kansas and spent a year at Wichita State University. After a year off working in the oil fields as a roughneck, he returned to college at the University of Kansas and enrolled in the Civilian Pilot Training Program to become a pilot. He entered Naval Aviation Cadet Program in mid-1941, receiving his wings and commission in March 1942. He was assigned to Squadron VF-26 flying the Grumman F4F 'Wildcat' and became an ace with 6 confirmed and 4 probable aerial victories and 9 more Japanese aircraft destroyed on the ground. He also shared in the sinking of a Japanese destroyer with 4 other Navy pilots. having fought the good war he resigned from the Navy as a Lieutenant Commander. After 2 years as a TWA transport pilot, he joined Chance Vought Aircraft Company as test pilot.

In retirement, Paul is as dynamic as ever, flying his Confederate Air Force F4U-1 Corsair at air shows, flying around the world, participating in African Safaris, he continues to be a man of adventure. He also continues to be a friend to all of his employees and regularly attends Retiree functions where is always welcomed by the Vought 'family.'

At the time of this incident in 1949 Paul Thayer was Vought's Chief Experimental Flight Test Pilot. He become President of the Vought Corporation in 1961, President of LTV Aerospace Corporation in 1965, Chairman and CEO of LTV Aerospace Corporation in 1970 and was appointed Assistant Secretary of Defense in 1983.

The story, told by Paul Thayer:

On this occasion, the flight plan called for a maximum speed run, (V max), with afterburner on, at 12,000 feet just to see how fast it would go in level flight at that altitude. I got out to about 30 miles to the east of the air field at Patuxent Naval Air Test Center, turned around, pushed the throttle to wide open with afterburner on and accelerated to V max. About the time I got there, the engine exploded.

It was later determined that the main bearing failed, seized the main shaft and all the turbine blades, and guts of the engine, flew through the engine case and then through the fuselage. This debris cut some of the control cables, knocked out the hydraulic system and disabled the air speed indicator. I still had limited control of the airplane and communication with the tower.

At that point I was several miles east of the field at 12,000 feet and decelerating at a pretty good rate. I thought I might be able to make it to the field so I called the tower and said, "If I get over the field at 2,000 feet, I'll make a dead-stick landing otherwise I'll eject." I got over the field at a little better than 2,000 feet but I really needed to know my airspeed to make the landing.

There was a friend of mine in the air in a F8F who saw me coming in and knew my problem based on overhearing the conversation between me and the tower. He volunteered to fly on my wing and call off my air speed. He got on my wing and I got fairly close to lining up with the long run way running east and west but I had too much airspeed so I tried, with this friend of mine still on my wing calling off air speed, to make a turn away from that runway and back into another runway running northeast/southwest.

I wanted to touch down about half way down the runway. I left the landing gear up because I didn't have any brakes and I would have just rolled forever if I had the gear down. I made a good belly landing, skidded off the end of the runway, and ended up about 100 feet from the 18th hole of the golf course adjacent to the field, which startled the hell out of a foursome that was just getting on the green. I was unhurt, the airplane was a strike and beyond repair.

So as soon as I got to a phone I called my wife, Margery, who was back in Fort Worth at the time, pregnant with our daughter Brynn., I called her and said, "Honey, I just wanted you to know that I cracked up one of Uncle Sam's airplanes but I'm ok. "If you hear about it on the radio or TV, (I'm not even sure if we had TV, this occurred in 1949), don't worry, I haven't got a scratch, I'm ok."

She said (which most women who hear the story don't quite understand), "well honey, I think that's good experience for you because the next time you have an emergency in the air you may know better how to handle it." That statement kind of took me back a little bit. I expected to get some real sympathy but I got zero, and rightly so, because being married to an experimental test pilot she had to steel herself against having any emotions to overtake her normal set of emotions because she knew that someday she might get a call that I had been hurt. So she decided that she wasn't going to let this affect her normal way of life, which was a great way to look at it.

XF6U-1 Pirate - Design

Vought's design used the conventional, straight low-wing configuration with NACA 65-212 airfoil. Not only did airfoils of this series have lower form drag (CDo) due to laminar flow over the forward portion of the airfoil, but the series (also known as "supercritical") had a higher drag-rise Mach number than the older NACA airfoils, such as the symmetrical 0012 or cambered 23012 of equal thickness. In addition, the XF6U-1 had the new NACA-developed leading edge air inlet in the left and right wing roots.

The most outstanding design feature of the XF6U-1 was the Metalite panels used to cover the wing, fuselage and tails. Metalite had first been used successfully on Vought's XF5U-1 airplane. Metalite panels of low-density balsa wood core, bonded on both sides to aluminum skin, were formed in molds, cured in a large autoclave and joined at wing ribs or fuselage bulkheads with flush rivets. The inherent stiffness of the Metalite panels minimized the number of ribs or stiffeners required for a strong, low-weight structure. Close tolerances on mating panels and Navy glossy paint made the finished airplane an aerodynamicist's dream of mirror smoothness and low drag.

Armament consisted of four 20-mm cannons in the fuselage nose section. Gun gas ports were near the engine air inlets. Early gun-pit firing tests caused come concern about ingestion of gun gas into the air inlets. Gun tests did not progress far enough to show flight effects.

The airplane had large outboard trailing-edge plain flaps for roll control. These ailerons used the new NACA internal overhang balance with curtain seal and 40% proportional power boost to reduce lateral stick forces to under 10 pounds. Inboard slotted extensible flaps were used for high lift. The wing had enough dihedral to make roll due to yaw (Cl) = 0.002. The vertical tail was sized to make (Cn) = -0.002. These were specification values at the time. The horizontal stabilizer and elevator were sized for a 3% MGC (mean geometric wing chord) minimum stick-fixed static margin and a c.g. range of 12% MGC. A bobweight was sized for proper stick force per g. The elevators had trim tabs and linked balance tabs for stick force tailoring. Low-speed wind tunnel tests conducted at MIT confirmed the predicted flying qualities. High-speed wind tunnel tests were not considered essential, which was shortsighted considering flight test compressibility problems, the need for swept wings, and the addition of an afterburner to attain transonic performance.

The XF6U-1 had unsymmetrical jet-engine exhaust. The question of induced power effects was answered in the 7x10-foot low-speed wind tunnel of United Aircraft Research Division, in Hartford Connecticut. To simulate engine exhaust, six commercial portable air compressors were rented and their combined output piped into the 0.15-size wind tunnel model. By operating the compressors at full flowrates, it was shown that pitching moment induced by thrust was zero at several wind tunnel airspeeds.

The XF6U-1 had tricycle landing gear (a Vought first), a bulbous canopy for side and down vision, wing-root air inlets, four cannon ports, and unique bulbous wing tips. The latter were to allow wing-tip tanks to roll away, without ejection, when released.

With a new jet engine and a predicted long takeoff distance (characteristic of the first generation jet airplane), safety of flight was a concern to Vought and the U. S. Navy. Consequently, the initial flight tests were made off-site at the dry lake in Muroc, California, later to be named Edwards Air Force Base. Some World War II bomber test facilities (principally a large modern hangar with office space), BOQ and open-air barracks were available in 1946 for flight test activities and living quarters. The wing and fuselage were disassembled at Vought's factory in Connecticut, trucked to California and reassembled.

The first flight of the XF6U-1 (BuNo. 33532) was made on October 2, 1946. Fortunately, the miles of dry lake landing space allowed a successful dead-stick landing. The Westinghouse engine used a new oil mist lubrication system. All 6 gallons of engine oil were consumed and the engine froze in less than an hour. Westinghouse had no spare engine and worked overtime to provide a replacement engine some 45 days after first flight. With careful monitoring the engine performed all right thereafter, but with frequent exchanges.

Shortly after the second or third flights, unprecedented rains descended on Muroc to make it a lake again. Flight operations were canceled for many weeks, except for those of deep faith who used the 1-mile-long concrete runway. During the engine and lake layovers, there was plenty of time to manually read photo-observer data and analyze it. For the uninitiated, a photo observer of 1946 was a separate instrument panel in a black box with a light source and a World War II gun camera, which could run at single frame or continuous film speed. The engineer went from frame to frame of film to get his data which consisted of counter number, indicated airspeed, rate-of-climb, altitude, engine rpm, fuel flow, free air temperature, and a few other engine-related readouts useless for airplane performance purposes. There was not room for instrumentation relating to flying qualities. Priority was on engine and flight boundary evaluation. On one flight there might be room for roll rate but not stick position, or yaw angle, but not rudder position. Correlation between pilot comment and photo observer was by means of counter number. Mach meters were new and initially unavailable at Vought, so the engineer had to use indicated airspeed, free air temperature and pressure altitude to calculate Mach numbers. (Such was life in the good old days, using a slide rule, mind you! Do you know what a slide rule is? Ask your grandfather.)

On about the tenth flight, the pilot reported a strange "rudder jab," or kick, in the rudder pedals. For the next ten flights the pilot reported more occurrences of rudder jab. There seemed to be no correlation with airspeed, engine rpm, or altitude, but calculated Mach number was 0.76 to 0.80. The problem was attributed to shock-wave interaction between the horizontal and vertical tails at their intersection, a new compressibility phenomenon. The fix was to add a torpedo-shaped fairing at the stabilizer fin intersection, which had the effect of reducing the local thickness at the intersection and increasing the local critical Mach number.

Another problem was inadequate directional stability as reported by the pilot. Confirming flight test data such as rudder angle versus steady state yaw angle or cycles to damp to half amplitude from a yawed condition were not available because of instrumentation/photo observer limitations. All available hard data indicated that directional stability should have been adequate.

After about 6 months, the second XF6U-1 was flown from

Vought’s factory in Stratford, Connecticut, to Muroc in about four short hops with ground crews at each stop. The following illustration depicts XF6U-1 with a dorsal fin added.

The intention was to use the dorsal to thin the horizontal-vertical tail intersection to improve if not fix rudder jab, and, at the same time, fix the directional stability inadequacy.

After about a year of flight testing at Edwards, the two airplanes were flown to the Navy’s flight test center at Patuxent River, Maryland. Further flight evaluation was conducted by Navy test pilots. With no afterburner, performance of the XF6U-1 was showing up as inadequate, especially on a hot day, when compared to the competition, which was rapidly going to higher-thrust engines, afterburners and swept wings.

XF6U-1 number one was modified by the addition of an afterburner and dorsals to become the F6U-1 prototype, the first afterburner equipped service aircraft. The strips on the tailpipe were temperature-sensitive paint for survey. The fuselage aft section was aluminum in place of Metalite.