Vought and Space Exploration

Chance Vought Corporation had separated from United Aircraft in December of 1954. Less than seven years later, it was merged into the conglomerate headed by Dallas financier James L. Ling. Ling had begun acquiring companies in 1956. In 1960, he merged with Vought's next-door neighbor, Temco, a general manufacturer with special strength in civil and military aircraft.

In 1961, Vought itself was acquired by the conglomerate of James Ling and became part of the new Ling-Temco-Vought.

Ling's quiet purchase of Vought stock became public news early in 1961. After considerable controversy, Vought's Board of Director approved plans for the merger, which were carried out in August of 1961. Gifford Johnson served as president of the new subsidiary for a short time. The office was then taken over by Paul Thayer, longtime Vought employee and legendary test pilot.

Although the company was acquired, renamed, and re-organized, Vought's dedication to aviation continued. A month after it became part of Ling-Temco-Vought, the company was chosen by the Air Force to team with Ryan Aeronautical and Hillier Aircraft on the construction of the XC-142A. This large and extremely powerful aircraft was extensively tested by all three services as a V/STOL transport.

Vought led the way in V/STOL aircraft and then won the contract for the Navy's light attack aircraft (A-7A) in 1964. Vought was once again making Navy planes at full speed.

A few years later, Vought Aeronautics became the largest division of LTV Aerospace under Thayer, with J. R. Clark as General Manager of the division. All of Vought's non-defense subsidiaries had by then been sold.

Vought Missiles and Space Division was equally active. After Regulus, its programs had included Jindivik, Scout, Saturn 1B and several other projects for space exploration. The Michigan Division of LTV Aerospace developed and produced the Lance battlefield missile.

By 1969, the company seemed assured of success. It formed new subsidiaries for helicopter and general aviation work and added a division for ground transportation. The Ling-Temco-Vought conglomerate had grown to contain something like 200 companies. But a decline in financial markets showed just how far Ling had over-extended himself. Things began to come apart.

But by 1970, the troubles of the conglomerate became increasingly Vought's own problems.

Vought was forced to lay off nearly half the division's employees. Paul Thayer was moved up to replace Ling. Forbes Mann replaced Thayer as head of LTV Aerospace, while Sol Love took over as president of Vought Aeronautics. The mission for everyone: cut costs, cut companies, get back to the

Model Number : XC-142A
Model Name :
Model Type: V/STOL Transport

After the end of World War II and during the Korean War, the helicopter demonstrated its versatility for hovering flight in support of ground troops and for rescue. However, the large diameter rotor required for hovering flight compromised forward flight speed, payload and range. Because of this, both the military services and the aircraft industries were conducting studies (costing over $200,000,000) of aircraft configurations that would provide an aircraft with both a hovering capability and a short takeoff and landing (V/STOL) capability. Flight controls should be similar to those in helicopters during hover and conventional aircraft in forward flight. Early in the 1950's, the first generation of V/STOL aircraft emerged as tail sitters, wire hangers and hybrid helicopters. Technically they were considered a success since they flew with some degree of control and their performance as demonstrated for short periods at air shows was spectacular. However, V/STOL aircraft were clearly not developed sufficiently for operational use. Lockheed developed the XV-4A, Ryan developed the XV-5A lift-fan aircraft, Curtiss-Wright developed the X-19 and Bell developed the ducted-fan X-22. In Canada, the tilt-wing CL-84 was Canadair's V/STOL demonstrator, while Germany's Dornier Company developed the DO-31. The three major military services (Army, Navy and Air Force) considered that this flying hardware experience would support the development of a prototype V/STOL airplane that could augment helicopters in transport-type missions. If this prototype program was successful, an airplane based on the prototype experience could be developed. Professor Perkins of Princeton conducted a V/STOL study for the Department of Defense in 1959. This study helped create the XC-142A tilt-wing V/STOL program.

The three services jointly developed a Request for Proposal (RFP) for a V/STOL transport airplane that could be evaluated in an operational environment. The RFP was issued to all interested helicopter and aircraft manufacturers in January 1961, with manufacturers' proposals due in April 1961. The U.S. Air Force was the procuring service.

Model Number :
Model Name : Project Fire
Model Type: Characteristic Test

Project FIRE was a research program established to measure plasma characteristics on re-entry bodies of the Apollo configuration at relative velocities of 37,000 ft/sec (over 25,000 mph). The three basic goals of the experiments were fully met. They were to measure total and radiative heat transfer and the radio signal attenuation, and to establish materials behavior. Basic knowledge of materials response during hypersonic re-entry was gained which permitted the optimum design of heat shields and provided a maximum of protection with a minimum of weight.

Both FIRE launches were successful. Flight 1 was launched on 14 April 1964 and Flight 2 was launched on 22 May 1965. The FIRE vehicle was composed of an Atlas D Launch Vehicle manufactured by General Dynamics/Convair, the Velocity Package manufactured by the LTV Astronautics Division of LTV Aerospace Corporation, and a Re-entry Package manufactured by Republic Aviation Corporation.

The launch vehicle placed the spacecraft into a ballistic trajectory along the Eastern Test Range; the Velocity Package then oriented to the proper attitude and, at a pre-determined time, ignited the solid propellant rocket motor driving the Re-entry Package back into the atmosphere some 5,000 miles down range near Ascension Island.

The basic structure of the Velocity Package consisted of two circular shells, one within the other. A metalite shelf located between the outer and inner shell sections provided support for the major part of the Velocity Package equipment. A Velocity Package Adapter provided the structural and electrical interface between the Velocity Package and the Launch Vehicle and the Re-entry Package. Propulsion for the Velocity Package was provided by an ANTARES II A5 (ABL X-259d) solid propellant rocket motor manufactured by the Allegheny Ballistic Laboratory. A heat shroud, manufactured for LTV by the Douglas Aircraft Company, protected the spacecraft from aerodynamic heating during the boost ascent.

The Velocity Package also included a guidance system for maintaining stability and control, a telemetry system for transmitting flight data, and an ignition/destruct system.

Model Number : XMGM-52A
Model Name : Lance
Model Type: Surface-to-Surface Battlefield Missile

Lance, initially called Missile “B,” was a highly mobile, division support weapon system replacing the LACROSSE guided missile and the HONEST JOHN rocket.

Early in 1962, contractors were asked to submit proposals for LANCE. Eight industrial proposals were received, and study contracts were awarded to Ling Temco Vought and to the Chrysler Corporation. In November 1962, Ling Temco Vought was selected as prime contractor for development and initial production of the LANCE missile system.

LANCE was deployed by the United States,Germany, Israel, Netherlands, Belgium, and Great Britain

Characteristics	
Diameter	22.04 in
Lenght	243.79 in
Weight	3373 lb
Range Tactical WH	47 miles

Range Nuclear WH	75 miles
Speed	3 mach
Speed is the same as a rifle bullet 2280 mph.	
Warheads	
Tactical: 825 BLU 63B Bomlets	
Nuclear: 10 KT	
Propulsion	
Liquid Rocket	
.Fuel: Unsymmetrical Dimethylhydrazine (UDMH)	
Oxidizer: Inhibited red-fuming nitric acid (IRFNA)	
Boost Thrust: 42,000 lb	
Sustained Thrust: 4,500 lb	
Guidance System	
Inertial (DC - Auotomet)	
Quanitity Produced	

Self-Propelled Launcher

Characteristics	
Length	259 in
Width	106 in
Height	86 in
Combat Weight	22700 lb
Engine	
Model 6V53 6-cylinder Two-Cycle Detroit Diesel Compression-Ignition	