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The Key to Survival

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Huenecke, Klaus. *Modern Combat Aircraft Design*. Annapolis, Md.: Naval Institute Press, 1987. 254 pp. \$28.95

Beautifully illustrated and filled with elegant diagrams, Huenecke's book appears to be just another coffee table book on combat aircraft, but it is not. It is a solid technical book that provides a comprehensive treatment of the aerodynamics and engineering realities that govern the design of specialized combat aircraft.

Huenecke opens with a discussion of the performance requirements associated with each of the basic missions of air superiority, battle-field interdiction and close air support. Fundamental aerodynamics for combat aircraft is introduced with treatments of both high subsonic and supersonic flow, and forces on wings and control surfaces. The issues of longitudinal, lateral, roll and directional stability and control are covered with a special focus on the problems of high-speed maneuvering flight. Gas flow in jet engines is explored along with the problems of the design of high-speed air intakes. A section on the air intake designs for the F-15 and F-16 is included, illustrating two quite different approaches to the problem. Finally, consideration is given to cockpit and avionics design, the effect of aircraft armament on wing performance, and artificial stability.

The text, translated from the original German, is clear and concise. This is a book that will be of particular value to test pilots,

aeronautical engineering students and those involved in the preparation of specifications for the selection of modern combat aircraft.

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Braybrook, Roy. *V/STOL: The Key to Survival*. Osceola, Wi.: Motorbooks International, 1988. 224 pp. \$39.95

V/STOL, an acronym for Vertical/Short Take-Off and Landing, appears to be a practical way of operating aircraft. Prime real estate is not needed for airfields; military bases need not impose on the civilian sector for any more room than a parking lot; ships no longer need the dangerous, expensive, and hell-to-maintain catapult and arresting gear. Why then, any discussion on V/STOL? If the technology is there, build the thing and move on! This proposition is examined in depth by Roy Braybrook in his well-researched book, *V/STOL: The Key to Survival*.

Despite the title, the author remains objective as he takes the reader through a clear, comprehensive, and well-illustrated discussion of V/STOL capabilities versus those of conventional aircraft. As it turns out, there are significant trade-offs, even with today's technology.

Braybrook makes the case for V/STOL by examining the vulnerability of airfields. He uses the Falklands/Malvinas conflict in 1982

as one example, focusing on the single runway at Port Stanley. The British had V/STOL capability in their tactical aircraft, the Argentines did not. He very effectively leads you to his conclusion, then shares the frustration that exists.

An authoritative piece of work, this book leaves you with the feeling that we are about to break through into a new realm of aviation. However

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Kotz, Nick. *Wild Blue Yonder*. New York: Pantheon Books, 1988. 313 pp. \$19.95

Subtitled *Money, Politics and the B-1 Bomber*, Kotz's book is a look at the political machinations among the air force, the airframe manufacturers, the Congress, several administrations and the anti-defense lobby over the development and deployment of the B-1 bomber. Having been killed several times, the program proved to have more lives than an alley cat—whose social style and wiliness were adopted by the several parties to the matter.

The B-1 has its roots in the transitional debates about long-range air power that occurred in the 1960s as intercontinental missiles began to take on the primary load for deterrence and nuclear retaliation. With increasing Soviet air defense capability, it became clear that the B-52 fleet could no longer be relied

upon to penetrate Soviet air space. Yet many felt that a manned bomber offered a flexibility not found in ICBMs.

The first solution was the B-70, which proved too vulnerable (at its high altitudes) to radar detection and destruction. The B-1 grew out of various proposals for a bomber capable of both high altitude, high speed penetration and low altitude, terrain-following penetration. Leaving aside the likelihood of such aeronautical virtuosity, the B-1 appeared to many to be poorly positioned between two new technologies: the stand-off launched cruise missile and the stealth bomber. The B-1 seemed to do nothing that was not better done by one or another of these. Why then was it built in spite of several cancellations?

Kotz's thesis is that the B-1 was built as a result of the tenacity of those with self-serving interests. The air force wanted a manned bomber and funneled research and development money to the program to keep it alive after cancellation by several administrations and congresses. North American Rockwell needed the bomber production to stay in the military airplane business. Many other companies across the nation stood to benefit from subcontracts. Production was spread across an impressive number of congressional districts, with the attendant concerns for employment.

Kotz builds his book around tales of influence-seeking and jockeying. The air force, North American Rockwell and the major subcon-