NO SHORTCUT TO AIR POWER — U.S. Jets Capture Records; Industry Proves Leadership

By Rep. Melvin Price

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As long as the very real menace of Soviet warplanes over us and the whole world, we will be inviting national suicide unless we keep militarily strong enough to meet attack and decisively defeat the enemy.

Since military leaders freely admit that the first blow in any war would be struck from the air, and that no armed force of modern times may win without air superiority, it is obvious that we must build our air power to a point of safety, and maintain a capacity of production to meet any threat.

Recognizing this, it becomes doubly important for us to realize that the building of air power cannot be achieved quickly. First, we must recognize and understand the inescapable time factor in aircraft development and production. Second, it is tremendously important that we project that factor into a stable long-range procurement program.

Fluctuations Costly

In design, tooling, research, supply, and manpower the aircraft industry could save untold millions of the taxpayer's dollars if it could avoid the erratic fluctuations which have marred its course since we first called for military planes in World War I. In Congress, where authorizations and appropriations establish the scope within which this industry can operate, we need to learn more about the vast complexity of manufacturing modern aircraft.

Production of aircraft cannot be turned on and off over night. A minimum of 24 months is required to put bombers in production for a new fighter. This is in addition to the design cycle, which requires several years. It adds up to three and one-half to five years before new (See “Air Power,” Page 3)

U.S. Jets Capture Records; Industry Proves Leadership

Although a late entrant in the field of design and development, jet planes built by the American aircraft industry now hold virtually all the world’s recognized performance marks, and the American industry was the first to produce twin-jet night fighters, four-Jet bombers and jets capable of landing on carriers.

With the notable exception of Russia, the American industry has built more different types of jet planes produce a greater number of all types of jet planes than all the rest of the world combined.

First in Combat Planes

At the present time, the only nation which has put a jet bomber into combat operation is the United States. Already a more advanced jet bomber is coming off America’s production lines in increasing numbers. These are the first multi-engine large bomber aircraft to be put into production in the world, although there have been unsubstantiated rumors that Russia is beginning production of bomber type jet aircraft, and Great Britain has announced production contracts for a jet bomber.

Since late in World War II, 53 different jet types of military planes to war against the common enemy have been developed in America. They have provided the American aircraft industry with a tremendous backlog of experience from which to develop new advanced types now in the design stage.

Ready to Make Transports

It is on these new designs that the U.S. expects to base its world leadership in jet development. The experience gained in producing jet aircraft since late in World War II is providing the American aircraft industry with the basic knowledge required to produce and develop superior transport aircraft whenever the markets and financing are available for this new advance in commercial transportation.

America has designed and built 20 different types of jet engines in both the turboprop and turbojet categories and at the same time has developed a series of rocket engines which give additional performance to conventional powered aircraft.

(See “Records,” Page 4)
Why Aircraft Production Is Behind Schedule

By DuWill C. Ramsey (Admiral, U.S.N., Ret.)
President, Aircraft Industries Association

One year and three months after the outbreak of war in Korea, with World War III still a menacing possibility, the aircraft industry is behind schedule in relation to the goals set by military planners.

The slippage in production stems from specific problems fundamental in any large expansion effort by a complex industry. Many of these problems were foreseen by the aircraft industry and by important suppliers. But under a semi-mobilization economy, with manufacturers of military equipment competing with booming civilian industries for materials, controls have been inadequate and government production agencies have not succeeded in avoiding bottlenecks.

The most serious problems to date have not arisen in the field of manufacture of airframes. Despite the difficulties of semi-mobilization, this basic industry has made a rapid and effective transition from the manufacture of jet engines, electronics and other precision-built components of modern high-performance military planes. It is officially estimated that the jet engine industry is six months behind schedule.

Materials shortages, particularly aluminum, copper and steel, are now being felt in the aircraft industry—in some places severely. Indications are that these shortages will be general and far more severe by the fourth quarter of this year and may cause sizable reductions in schedules of airframe production. The tight supply of structural steel already is holding up many construction projects for urgent expansion of some aircraft plants and related facilities.

In World War II we eventually overcame the materials shortages for aircraft in a year or two. Meanwhile, however, the urgent problems created by machine tool bottlenecks cannot be easily relieved. It is simply a case of building new machine tools. And here the priceless commodity of time means everything.

The recently created Aircraft Production Board under the capable direction of Harold R. Boyer, a top production engineer drafted from private industry, is now concentrating its efforts on the machine tool bottleneck to make fulfillment of aircraft schedules possible.

The problems are enormous. Mr. Boyer estimates that jet engine manufacturers alone could use the entire output of the nation's machine tool production capacity. The current rate of tool production is about $675,000,000 per annum. But by the end of this fiscal year machine tool orders to the value of nearly $3,000,000,000 will have been placed for defense production purposes, according to the Munitions Board and Office of Defense Mobilization.

Although there are about 250 firms producing machine tools, the industry is relatively small. When called upon for staggering increases in production, its problems are obvious. They deserve special treatment. The government is recognizing this by increasing profit incentives, allowing higher costs where the tool builders are forced to subcontract, and attempting to insure protection of investment. Even with these measures, the deliveries of machine tools to the aircraft industry will not be significantly increased for at least another 10 months or a year.

Having surveyed the whole broad problem of meeting aircraft schedules, Mr. Boyer stated: "If I don't do another job here, I'll be satisfied if I get the machine tool industry expanded."

This situation, one of vital concern to the nation, illustrates how the aircraft industry is absolutely dependent upon its suppliers. It is fruitless to fill up factory ramps with airframes for which there are no engines. New and improved engines cannot be turned out in the quantities required until the machine tools are produced and installed.

Finally, among the aircraft industry's problems, great segments of American industry all across the country must synchronize their production efforts to keep continuously improved and refined planes coming out of our factories at the rate desired by the military. While machine tools are the crucial problem now and in the months to come, the aircraft industry depends also on many other industries, small and large. The latest survey showed orders placed with more than 61,000 subcontractors and suppliers in every state. The lack of one small, complex component in a modern plane could render it useless for combat.
AIR POWER
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Aircraft design concepts can be translated into combat aircraft.

Just recently the Air Force awarded what it calls "Phase I," or design study, contracts to three firms for new high-speed interceptors. Eventually, one or more of these studies may be accepted for further development, but two can be ordered. If it meets the performance and other requirements of that future role, it will be put into production. But that prototype won't fly before 1954. And remember, once this prototype is ready, then it will be required for its production. Right now, with semi-mobilization of aircraft factories, sometimes can't hope to get delivery on a relatively simple machine tool for another 36 months.

That intercepter we may need against the Russians in 1954, 1955 or 1956.

The expansion we can get in the aircraft industry is determined by the size of the industry and the time expansion begins. World War II experience gave us a rule of thumb that under the impetus of all out mobilization production rates can be accelerated three times with the period of time the date that go ahead is given, and can again be tripled by the end of two years. It is impossible to increase this curve of acceleration in production activities.

How Manufacturing Ingenuity and Scavenger Hunt for Metal Sent Sets up to the Yalu

The costly effect of material shortages in the manufacture of aircraft or their accessories in an acute shortage of engineers which is becoming increasingly serious and the numbers of engineering graduates from U.S. universities are on a constantly declining curve.

The complexities of the jet-electronic-supersonic age call for scientists and engineers of the highest quality. Their training for this specialized field takes time—a lot of it—but erratically fluctuating industry can't attract them nor justify their expensive training. Thus, when the nation's need for them is greatest, there are few to be had.

It's time we recognize that our national survival in the foreseeable future may depend primarily upon the aircraft industry. It's time we make provision for its enormous complexities by giving it a chance to do its job on a sound, stable, long-range basis. It will be expensive to build up and maintain the necessary air preparedness. But we must keep improving our aircraft lest the enemy hurt better ones against us, and keep our aircraft manufactureing industry in all its wide ramifications on a broad enough base to meet emergency needs and sustained production if the shooting starts. The cost of airplanes is high, but as someone has aptly said, in a very real sense they represent the "cost of living."

Another important aspect of the instability of the present year-to-year method of placing aircraft orders is reflected in the requirements for engineers and the inadequate number of engineers available. At the peak, the aircraft industry employed two million people; by 1947 it was down to 167,000. Consequently, the industry did not encourage college students to enter engineering courses since it was impossible to get delivery on a relatively simple machine tool for another 36 months.

Shortage of Engineers

America today is at best a second-rate air power. Our combat strength while our arms reach present goals—more than 9,000 planes, now will be about 27,000 modern planes... This is a far cry from the air power of 1940 which must have to hold her own, let alone provide the air superiority that is necessary to prevent defeat...

"The American Legion supports an increase in our Air Force and Naval Air Arm to enable them to carry out their obligations. To do this, an Air Force of 150 groups with 20,000 first-line combat planes is the rock-bottom minimum. For the Navy, 7,000 first-line combat planes are required. These planes must be built and production of new models maintained without delay. Their cost will be high but in a very real sense they represent the cost of living."

"We must never again permit a shortage of research and development funds to retard the development of modern planes. All of our combat types in production are based on designs which began before World War II ended. We have a six-year time lag to make up. We have no time to waste."

"To be outnumbered is asking for defeat. To be outnumbered is as well as outnumbered is sure suicide."—Erle Cooke, Jr., National Commander, The American Legion, July 20, 1951.

Air Quotes

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A one-ounce piece of duralumin tubing holds the drop tank in the wings—and the supply of duralumin in this country was very small. The aircraft company had on order in a Massachusetts plant a direct welding machine which could speed production of the tanks. This machine was rushed to completion and flown to California. Then came the materials problem.

The manufacturer of a jet fighter operating in Korea held a peacetime order for just one supply tank per airplane. These are the number of engineers required for the small peacetime industry was not high. Now there is an acute shortage of engineers which is becoming increasingly serious and the numbers of engineering graduates from U.S. universities are on a constantly declining curve.

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VITAL CIVIL AIR FLEET TANKS AVAILABILITY PERCENTAGE OF BASIC MATERIALS SUPPLY

Maintaining and replacing America's fleet of commercial airliners and utility lightplanes is important to national defense. They take only an infinitesimal portion of the total critical metals available. Chart shows the amounts of these metals available for the 1951 Third Quarter for all productive purposes and the amounts allocated by DPA for commercial aircraft.

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<th>MATERIAL</th>
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<td>ALUMINUM</td>
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SOURCE: DEFENSE PRODUCTION ADMINISTRATION

Facts and Figures

Four of the six critical labor areas currently listed by the Labor Department are in aircraft and engine production centers—Hartford, Wichita, Indianapolis and San Diego.
The aircraft industry now is feeling the sharp pinch of materials shortages and due to the recent Alcoa strike, it will be unable to obtain sufficient supplies under the COPA program for the satisfactory operation at desired rates.

This is primarily because sufficient quantities of sheet, copper and aluminum have not been allotted to meet the total defense production program of the Armed Services, according to the Industry Planning Service of the Aircraft Industry. Unless this situation is remedied, aircraft production schedules will have to be adjusted downward, AIA said.

The first shortage was in structural steel, all of which is now handled by one refinery. A number of proposed aircraft plant expansions are at a standstill due to lack of structural steel. Airframe experts are requiring additional space for enlarged engineering staffs, unable to carry on work for which they are being paid.

The Services have classified all proposed plant expansions into groups, that many aircraft projects are not in preferential position—-in fact some are as low as 71st on the list.

Forgings will be in very tight supply for the next two months, due to the recent Alcoa strike and the fact the Willys-Overland re-activated plant at Erie, Pa., has now been shut down. Alcan, a Canadian subsidiary of Aeoa, is providing some forgings. The Munitions Board and the Aircraft Production Resources Agency are studying the possibilities of establishing additional facilities.

Most recent difficulty is a shortage of sheet aluminum. Available aluminum ingot for castings is handled by the National Production Authority, which as yet, has no controls on aircraft production. Alcan, a Canadian subsidiary of Aeoa, is providing some forgings. The Munitions Board and the Aircraft Production Resources Agency are studying the possibilities of establishing additional facilities.

Recent difficulties are caused by the inability to obtain sufficient supplies of aluminum, especially in small sizes for aircraft production. The aluminum shortage is caused by the high rate of production of the defense program, and the need for large quantities of aluminum in the aircraft industry. The shortage is expected to continue for several months, and some experts believe it may last for a year or more.

For example, the Boeing Company has been unable to obtain sufficient quantities of aluminum to meet its production schedules. The company has been forced to reduce its production rates and has been unable to meet its contractual obligations.

The short-term solution to the aluminum shortage is to increase production rates and to increase the production of aluminum in the aircraft industry. The long-term solution is to increase the production of aluminum in the United States and to increase the production of aluminum in other countries.

The shortage of aluminum is expected to continue for several months, and some experts believe it may last for a year or more. The shortage is expected to increase as the defense program continues and as the production of aluminum in the aircraft industry increases.

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