THE AEROSPACE INDUSTRY AND NATIONAL RESPONSIBILITIES

Remarks before the
Los Angeles Chamber of Commerce
by Karl G. Harr, Jr., President
Aerospace Industries Association

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"We in the aerospace industry and its Association are dedicated to maintaining the integrity of the competitive private enterprise characteristics of this industry. It is not self-interest alone that motivates us. Rather, we firmly and sincerely believe that only through this system can the full creativity and ingenuity of our people be mobilized to provide the superior products required to fulfill the nation's defense and space needs."

The Aerospace Industry and National Responsibilities

BY KARL G. HARR, JR.

THIS is an attempt to place in perspective what I believe to be a phenomenon unique in American industrial history. This phenomenon is the nation's aerospace industry as it has evolved over the past decade or so, and as it exists today. There has never been anything quite like it in the peacetime, or even the wartime, history of this nation.

This broad assertion requires documentation.

In the history of our nation's wars, the aerospace—then the aircraft industry—like all other American industries was called upon by the Government to tool up as fast as possible for mass production of everything that could help the war effort. With the cessation of hostilities the enormous industrial structures so created were dismantled, again as fast as possible. Like our mobilization and demobilization of manpower, our construction and destruction of the industrial base was a direct concomitant of the declaration of war and the declaration of peace.

How times have changed!

For more than a decade we have had neither war nor peace. The national security problems of our Government have been totally different from anything that has gone before. Essentially, insofar as is pertinent to American industry, they have centered around two national goals: To keep the U. S. defense posture adequate to the challenge

and to launch the U. S. into a position of world preeminence in the new dimension of space exploration.

This has meant many things to the aerospace industry. It has meant a change from a production type operation to a research and development type operation. It has meant a great increase in the variety of product being built. It has required a tremendous change in the type of facilities and manpower used. It has meant the industry has had to achieve an extremely high degree of flexibility as changing needs and requirements have dictated expansion or contraction in particular product lines. It has also raised a fundamental question which merits the attention of our best minds.

QUESTION FACING INDUSTRY

How does an enormous, fiercely competitive, private enterprise industry chart its course when the essential elements of its future, the size and nature of its market, is wholly beyond its capacity to control, influence, or even accurately appraise?

This is the question that faces all executives within the aerospace industry, and which has direct and important implications for hundreds of thousands of workers as well as for the general economic health of many states and communities throughout the country.

It is a question unique in our national industrial history. It is a question which merits the gravest attention of our best minds—in industry, in the Government and in our universities.

Except for the single criterion of dollar volume of sales in which it is exceeded this year by the automotive industry, the nation's largest industry is that industry which supplies the hardware for the achievement of our national goals in defense, space exploration and civil aviation.

Statistics demonstrate this fact. Its sales in 1963 totaled between $20 and $21 billion, which was slightly more than 13 per cent of the products manufactured by "durable goods" industries and 5 per cent of all manufactured products. It accounts for 3 per cent of the Gross National Product. Aerospace exports last year accounted for more than 6 per cent of all our exports, second only to the grain industry.

FIRST IN EMPLOYMENT

In terms of employment, the aerospace industry presently ranks first in the nation. It has 1,300,000 workers, leading the motor vehicle industry by more than 400,000. Approximately 20 per cent of all United States scientists and engineers are employed by this industry.

Size is important as a measurement of this industry's place in the national economy, but the uniqueness of this particular industrial segment does not stem from its size. Rather, it stems from the nature of its market and the nature of its product. Notwithstanding the fact that this industry manufactures every commercial airliner, every private plane, every commercial or private helicopter made in this country, 85-90 per cent of its total sales are to the United States Government, principally the Department of Defense and the National Aeronautics and Space Administration. To that extent it is a one-customer industry and to that extent the size and nature of its market are determined by factors wholly extraneous to the commercial marketplace.

Its product—increasingly heterogeneous, in step with the increasingly varied and sophisticated demands of our national requirements—also sets it apart from most, if not all, other industries. In its major programs, the aerospace industry typically sells a promise—a promise to design and build

within a specified time and at a specified cost an esoteric, exotic and unprecedented piece of military or space hardware which will be at the very threshhold of our technological capability—not when the promise is made, but when the promise is fulfilled three or five or ten years hence. The strains and challenges which this places on managerial judgment and skill, on the part of both the customer and the supplier, are obvious.

UNIQUE PRODUCT

Its product is also unique in terms of standards of reliability and precision. Quality control and quality assurance have taken on totally new meaning in the construction of planes that must carry crews and soon passengers at supersonic speeds, missiles that must land on target thousands of miles away and manned spacecraft that must orbit the earth or land on the moon. The persons engaged in this quality control and reliability work alone constitute a rather sizable profession.

Tolerances of machined products in the aerospace industry have shrunk from thousandths to tens of thousandths to millionths of an inch. We are approaching the absolute. What is a millionth of an inch? If a stack of quarters three times as high as the Empire State Building were to represent an inch, a single quarter in that stack would represent a millionth of an inch. With this in mind, consider that an error in accuracy of one millionth of an inch in the bore hole of a gyroscope could cause a space vehicle to miss the moon by thousands of miles, or an error of a single degree in the guidance system of an ICBM could cause it to miss by a thousand miles. It is to eliminate the possibility of errors of this nature that the aerospace industry's requirements for extreme precision have been established.

Among the many steps taken by the aerospace industry to meet such requirements is maximum accuracy in measurement. This, in turn, requires that the many devices used to make these measurements be precise. Just to insure the accuracy of its measuring instruments, one of our companies has spent $2½ million to construct a Standards Laboratory for their calibration. Bound to rock by 4,500 yards of concrete, this laboratory is immune to vibration, it is shielded in copper against stray electricity, controlled in temperature and humidity and guarded against any error that might be induced by heat, cold or dust particles.

UNDERPINS SECURITY

Finally, our product is unique because of the degree to which it is involved with vital national issues, directly important to every U. S. citizen. People not directly involved in the automobile, or chemical or steel industry seldom regard the performance of those or other industries as vitally affecting their lives. But our industry not only underpins the national security and therefore the individual's physical security, it also consumes the largest single chunk of his tax dollar. And he knows it. If our fighters are bested by MIGS over the Yalu, if our space shots fail, if there is a "missile gap" due to industrial incapability, if we can't make an effective SST, or the like, our people know and care. National elections can center around such issues because we are dealing with our security and national prestige. Similarly, if there is any substance to charges of inefficiency, shoddy workmanship, excessive costs or profits, less than absolute integrity in the procurement process, that too will be aired—loudly and quickly. This makes big news headlines. Elections can also center around such issues.

I can't believe that at any time in our history a buyer-seller relationship has been conducted so totally in a goldfish bowl; by statute, by contract, and by avid public attention, our affairs are wholly exposed to view. The so-called military-industrial complex, as President Eisenhower said, by virtue of its size alone, may well represent such power that it should constantly be watched to see to it that that power is not abused. It is watched—watched by the press, and the Congress, and the Executive Branch, and the members of the so-called complex themselves. That is how it should be, because of the heavy involvement of the public interest in what we do.

THE MARKETPLACE

A corollary to this stems from the fact that as a one-customer industry, Washington, D. C. is our marketplace. That is where our sales forces are and that is where our sales efforts are mainly conducted. Company representatives are daily in contact with the Government both to sell and to discuss the policies and procedures by which they are governed. It sometimes gets quite confusing to both sides.

Another aspect of the aerospace industry's activity that distinguishes it from the normal commercial enterprises is the fact that this industry not only *sells* more goods and services to the Government than any other, it also *buys* more goods and services for the Government than any other. In general terms, nearly 50 per cent of every prime contract dollar is subcontracted, frequently to second, third, fourth and even fifth-tier suppliers. And the industry has the same responsibility to the taxpayer in letting these subcontracts as the Government has in letting the initial contract to the prime producer. Insuring the timeliness of deliveries, the fulfillment of per-

formance specifications, product reliability, and the meeting of cost targets are some of the many responsibilities the aerospace industry assumes in the course of purchasing billions of dollars worth of goods and services on behalf of the Government. In both its capacities—seller to and buyer for—the industry must be, as Caesar's wife, wholly above suspicion.

COMMON TASK

But the key element in an appraisal of our industry lies in its peculiar relationship to the Government. In broad terms, the Government is the biggest business in the country, or the world, and the aerospace industry, which some call a captive industry, is about the second biggest. The Government does far more business with the aerospace industry than with any other, and the aerospace industry, of course, does most of its business with the Government. In Washington, but also throughout the country, these two huge entities meet each other in thousands of interfaces which reflect their great mutual involvement. Their task is common; To get the job done as well and as quickly and as cheaply as possible. In this respect, almost like a Government agency itself, the aerospace industry is an instrument of national policy.

But it is also an independent, private enterprise industry—because that is the method our Government has chosen to support its policy goals—and, as such, the industry is subject to the disciplines of competitive private enterprise, which it must meet to survive. It is from this not-always-reconcilable nature that some of the most fundamental problems of the industry arise.

Consider the question of deciding on adequate profits for such an industry. There seems to be

sentiment in some quarters that it is immoral, if not downright unpatriotic to make any profit out of supplying the nation with the arms it needs to defend its very national security. It's sort of like joining the army to get rich. If you want to be involved in an industry that makes military aircraft and missiles—well and good—you must have your reasons, but don't expect to make money out of it too. The irony of it is that this industry is and always has been full of people who are in it because of the many appeals it has other than money. But such appeals alone will not make the system work.

The continued effective operation of any company in any industry is as dependent on adequate profit as it is on being able to meet its payroll.

DEFENSE POLICY

Secretary McNamara and his aides, of course, fully appreciate this as they so well stated in their policy statement on profit in defense industries. The major part of this statement says:

"It is the policy of the Department of Defense to utilize profit to stimulate efficient contract performance. Profit generally is the basic motive of business enterprise. The Government and defense contractors should be concerned with harnessing this motive to work for more effective and economical contract performance. Negotiation of very low profits, the use of historical averages, or the automatic application of a predetermined percentage to the total estimated cost of a product, does not provide the motivation to accomplish such performance. Furthermore, low average profit rates on defense contracts overall are detrimental to the public interest. Effective national defense in a free enterprise economy requires that the best industrial capabilities be attracted to defense contracts. These capabilities will be driven

away from the defense market if defense contracts are characterized by low profit opportunities. Consequently, negotiations aimed merely at reducing costs by reducing profits, with no realization of the function of profits, cannot be condoned. For each contract in which profit is negotiated as a separate element of the contract price, the aim of negotiation should be to employ the profit motive so as to impel effective contract performance by which overall contract costs are economically controlled."

But the other sentiment persists, and the procurement system itself has many elements, particularly down the line and out in the field, that militate against achieving an adequate—and I emphasize the word adequate—profit rate for this industry which must survive, and stay in good health, as long as the nation needs it.

JOINT PROBLEMS

It is from a dual nature—instrument of national policy on the one hand, and subjection to the disciplines of competitive free enterprise on the other—that other major problems arise. Finding a solution to these problems is a task beyond the ability of industry alone. The solutions must be arrived at jointly by Government and industry. Together they must accomplish two things: They must adequately protect the public interest; and they must make adequate provisions for a virile, progressive industry of sufficient inherent strength and flexibility to meet the changing needs of our nation's security and space programs.

Here are a few of the key problems which require joint industry-Government solution:

1. How do we handle the changeover of the nature of the industry, from one primarily involving volume production of systems hardware to one which has become primarily an R&D

effort, and preserve the best interests of all concerned?

2. What formula for and degree of Government management best preserves the benefits of the chosen instrument, private enterprise, while assuring adequate safeguards of the public interest?

3. How much profit is a unique industry of this kind entitled to, and how do you realistically and accurately measure it?

4. How do you achieve a rationale as to the proper division of Government-industry risks, particularly in wholly new and unprecedented ventures which have today become more the norm than the exception?

5. What are the most effective measures to be taken to preserve the tremendous storehouse of technological capability that has been generated within this industry should changing national requirements dictate a substantial reduction in our defense efforts or space program? Such measures, obviously, must be designed to protect the interests of all parties, both nationally and locally. An explanation of this point is necessary.

The economy of the cold war is both unprecedented and entirely distinct from that of formal national wars. There was no clear beginning to the state of semi-peace in which we have been living for more than a decade, and there is no clear ending. The industrial defense base, including a major part of the aerospace industry, exists on a more or less permanent basis as part of our total national economy, and not at the expense of unfulfilled consumer demands. This is a great testimony to the strength and scope of our national economy. It also spotlights the fact that there is no ready-made market for the absorption of man-

power engaged in the aerospace industry, should national policy, for whatever reasons, require substantial cutbacks in defense and space programs.

I am not suggesting that any such turn of events is imminent; but I am suggesting that the circumstances exist that would make such a turn of events a difficult problem, and that it is not too early to apply maximum intellectual effort toward finding ways of mitigating this problem.

There are promising aspects for exploration arising out of the peculiar nature of this industry. I am happy to say that the municipal, state, and national governments, as well as virtually all of the aerospace companies and the labor unions involved, are spending and have spent considerable time, money and intellectual sweat in pursuit of such solutions. However, it must be realized that there are no cheap or easy paths to this solution. As stated, there are no gaping, unfulfilled consumer demands in our present economy. But the fact that the problem is hard, and known best to be hard by those closest to it, does not excuse a failure to try to solve it.

SOLUTION STEPS

Having looked at the environment and the relationship and a few of the fundamental problems that must be solved, what is the path of wisdom in searching for a solution to these problems that best serves the national interest?

The first step is to identify and measure accurately the elements that add up to optimum fulfillment of that interest. Certainly one element is an industrial capability adequate for present and future national needs, and this encompasses adequate profit/risk ratios and avoidance of excessive managerial interference.

We in the aerospace industry and its Association are dedicated to maintaining the integrity of

the competitive private enterprise characteristics of this industry. It is not self-interest alone that so motivates us. Rather, we firmly and sincerely believe that only through this system can the full creativity and ingenuity of our people be mobilized to provide the superior products required to fulfill the nation's defense and space needs. All our work with the Government to improve our efficiency, to eliminate duplication, to develop more effective incentives is designed to increase the contribution of private enterprise toward satisfying our nation's requirements.

THE PUBLIC INTEREST

Another key element which must be fully recognized is that, because of the huge degree of national involvement in the industry, adequate procedures for safeguarding the public interest are not only fully justified but absolutely required. Other such elements are also readily identifiable. The problem is how to give each its proper weight in establishing a common formula.

It thus becomes an intellectual problem, not an emotional one, and an intellectual problem that can only be addressed from a base of at least general understanding of all the elements and a general recognition of the need for cooperation in its solution.

These are the major factors which affect the aerospace industry's abilities to contribute to the achievement of our national goals with maximum responsiveness. We are dedicated to cooperative efforts with our customers and the public to seek more effective means of fulfilling our assignment and providing the necessary aerospace equipment at the least possible cost. There is one thing, it seems to me, we can all agree on with some conviction—the highest order of statesmanship is called for on all sides.

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