INDUSTRY KEYNOTE ADDRESS

ALLEN E. PAULSON
CHAIRMAN, PRESIDENT AND CHIEF EXECUTIVE OFFICER
GULFSTREAM AEROSPACE CORPORATION

AT THE AERONAUTICAL SYSTEM DIVISION'S
EIGHTH ANNUAL PRICING SYMPOSIUM
DAYTON, OHIO

SEPTEMBER 12, 1984

I am extremely pleased to participate in this Eighth Annual ASD Pricing Symposium . . . and I congratulate you on your theme "War on Cost – Who's Winning". A review of cost trends in military acquisition programs over the past 20, 10 or even just the last 5 years will dramatize the magnitude of the task we all face if this cost war is to be won. It is a war which must be fought by everyone – small businesses, large industries, Department of Defense and Congress.

Both industry and government must not only cooperate but perhaps change the methods in which they do business. Government regulations, procedures, and controls cost both the government and industry a great deal of money. Conducting business with the government costs more money and has less risk for the contractor than conducting business in the commercial marketplace.

I was asked to deliver this Industry Keynote Address because Gulfstream Aerospace is a commercial manufacturer that has recently started doing business with the government. Previous keynote speakers have for the most part represented contractors with long-term business relationships with the government, and in many cases, the bulk of their business are government contracts. Perhaps visibility into some commercial practices will provide "some food for thought" or if we're fortunate, some insight into combating spiraling prices for military hardware.

Commercial manufactures have the same goal as DOD contractors, corporate growth, corporate longevity, corporate profits for the benefit of our stockholders and employees. Beyond these common goals there are some very distinct differences. Let's elaborate on those differences for potentially, therein lies the ingredients that may provide some valuable cost reduction insights.

Let's begin with Research & Development.

The commercial manufacturer finances the total cost of product development. Recovery of these costs is realized after the sale of production units some two to three years following the initiation of the program. The final price of the product includes amortization of these R & D costs over a large number of production units. It may take many years, maybe never, if the

product is overpriced or under performs, to fully amortize these R & D expenses. Similarly the commercial manufacturer's criteria for vendor selection includes evaluation points for those vendors or subcontractors who are also willing to invest in the development effort. The absorption of non-recurring cost by a supplier is a favorable factor in the determination of a subcontract. If absorption is not feasible, then it is usually desirable to have the non-recurring cost amortized into the unit price of the initial order quantity. In many cases, this will be a specific requirement of the RFP; however, the supplier is given the opportunity to propose any alternate payment plan which would make his offer more attractive.

Since both engineering design and tool fabrication are accomplished within the first year or two, the supplier is expected to propose firm, fixed, non-escalating prices for those efforts. It is not uncommon to specify that tooling charges will not be reimbursed until inspection of the first article is successfully completed, or that non-recurring engineering costs will be paid only after completion of the original design effort.

Let me remind you of those cost growth factors which have been articulated before this group in past symposiums, and which you experience in your day-to-day activities, that contribute to spiraling costs.

- Change in requirements
- Decision and funding delays
- Technical complexity and problems
- Optimistic cost estimates
- Technical advance impacts
  and
- Inflation

All of these potential cost growth factors are borne by the commercial manufacturer and his suppliers. Please recognize that the commercial manufacturer is potentially faced with financial ruin if he allows these cost factors to adversely dictate the course of his development program. The buzz words or phrases used to describe spiraling cost drivers are, for the most part, management and administration excuses on why they allowed a given program to get out of control. We all make errors. We all receive erroneous advice and we all have to use these buzz words occasionally. Nonetheless, they are still excuses.

Since R & D costs are amortized into the price of a commercial, off-the-shelf product and since the competitive market place dictates ceiling prices, R & D overruns can make an excellent high-performing product a financial loser. Conversely, lack of product performance or capability achieves the same result. If it isn't any good, people aren't going to buy it.

Whether for product improvements, vendor changes, or productivity, changes to a production aircraft are very expensive. I have heard the words battered around that DOD contractors get well on ECP's. I don't know if it is true or not, but I can tell you this: In a commercial environment where product changes are, like R & D programs, completely funded by the manufacturer and amortized in the price, the total cost impact of change most often cannot be accurately estimated. Perhaps it is optimism, perhaps there are too many variables, but change

always costs more than planned. In order to minimize cost risk, production changes should be delayed whenever practical until the change is well proven.

Commercially, product improvement programs are introduced with extreme care. Market research is performed and the sales potential is established before any commitment is made. Prototype installations are made to verify the design if the change is complex. Service experience is accumulated prior to introduction into production. When the change is eventually introduced, it is done as a block or lot change. Even when taking considerable precautions when introducing change into production, it is still expensive, very expensive. A smooth production flow is like Mother Nature, and you "Don't fool with Mother Nature".

Change, while expensive, is also necessary. It is the only method government and industry has to improve a product line or a system. It is the only method to maintain system currency with new developments and military superiority requirements. But, don't be too quick to cast aspersions on a contractor for what appears to be an inordinate high cost for ECPs. Chances are you're getting a bargain. Discipline yourselves to introduce product improvements into production after it's been proven. While it may seem cost effective to introduce a change into production as quickly as possible in order to minimize or eliminate retrofit requirements, this is usually not the case. If you don't have to change it – don't! From a cost standpoint, "better is the enemy of good".

If one single word were to serve as a basis to compare a commercial manufacturer to a DOD contractor, I believe that one word would probably be "risk". (I'm sure there are many out there who will disagree with this statement.) If a commercial manufacturer's development cost for a new product doubles or triples, or if the cost per unit increases significantly as a result of R & D amortization or as a result of increased recurring costs that places the manufacturer in a non-competitive price position in the marketplace, then the corporation would probably cease to exist. At the very least, corporate top management would be replaced. (And quite candidly, folks, I don't particularly like either one of these scenarios.)

Let me switch gears with you from R & D, product improvements, and production to Logistic Support, and more specifically, Spare Parts.

The commercial manufacturer invests heavily in spare parts and is forced to carry an enormous spare parts inventory to support the customer or user. Typically, the customer will stock Line Replacement Units to support day to day operations just prior to taking delivery of the product. The customer relies on the manufacturer to carry the inventory and to have in stock those items the operator doesn't routinely inventory. This commercial practice forces the manufacturer to provide additional services such as component exchange programs, spare rental programs, in addition to new spare part sales. To give you some idea of this commercial commitment to product support, I offer the following examples:

The Gulfstream I fleet consists of 195 in-service aircraft. The airplane has been out of production for over 20 years, yet today it is logistically supported by Gulfstream Aerospace.

The C-20 Gulfstream III Program is another example. Within 75 days following the Air Force contract award for delivery of three aircraft, a full complement of C-20 spare parts and support equipment, valued at over 5 million dollars, was delivered to Andrews AFB. That kind of manufacturer response is only achievable by a corporate commitment to carry the inventory necessary to support its customers, and most every other commercial manufacturer has the same commitment.

This commercial practice of carrying spare parts inventory saves the customer money since the manufacturer carries the inventory instead of the customer, plus the manufacturer buys or builds that inventory in cost effective quantities. We almost never build or buy one unit of anything. Control surfaces and landing gears are prime examples of manufacturer-carried inventory items not usually stocked by customers. These items are very expensive and are normally required to be carried in government inventory since they are somewhat vulnerable and the procurement lead times are quite long. Gulfstream Aerospace did not recommend and the government wisely does not plan to spare these items for the C-20 since they are available if the need arises. Disabled aircraft are given the utmost priority by the commercial manufacturer or supplier. If necessary, a new component will be pulled from a production line airplane earmarked for one customer to support another customer whose airplane is in disabled condition.

Initial government buys of spare parts and support equipment for a new product are probably heavily influenced by the manufacturer's recommendations. It takes operational experience to determine the range and depth of the spare parts pool. Therefore, the government should institute buy-back clauses for initial provisioning until operational consumption usage experience is gained. In addition, don't buy structural items if experience shows that the item is more cost effective to repair rather than to replace. Buy-back provisions will force the manufacturer to be considerably more prudent in his recommendations.

Airlines and business operators of aircraft buy used, zero-time components rather than new parts. There are some great bargains in the used part market that the government could take advantage of.

We all know the News Media, and of late, Political Candidates thrive on finding a $900 spare part purchased by DOD which they claim is available in the local hardware store for $10. They reach into a carload of perfect apples and find the only apple that has a worm in it, and then wave that wormy apple in front of the public, implying that all the rest of the apples are bad.

I have zero doubt that there is a valid and legitimate justification for 98% of these alleged misuses of public funds. DOD purchases goods and services from reputable and honest companies run and operated by reputable and honest people. There is not doubt that mistakes happen when dealing with such enormous procurements, and there is also an occasional bad apple. Is the answer to hire 400 apple inspectors and pass 3 or 4 new procurement regulations? There are more procurement rules and regulations now in existence than are needed to administer a cost effective procurement.

Perhaps the real cost abuse is sensationalizing these one or two wormy apples. The cost of the DOD reaction, or perhaps over-reaction, forced by the media to protect the taxpayer from these

alleged overpricing abuses is probably far greater than the cost savings that will be achieved. As I said before, mistakes will happen but mistakes balance out for there are, no doubt, an equal number of items underpriced which never get media and, ultimately, public attention.

Commercially we cannot afford to add more controls or more people to monitor the cost of every nut and bolt we buy. If a vendor overcharges us, mismanages our procurements, or does not support his product, we take our business elsewhere. It usually hurts to replace vendors or subcontractors over the short term. As previously discussed, all changes are somewhat painful but in the final analysis, there is no choice in matters where vendor performance is inadequate or not responsive.

Let's discuss Warranties from a commercial manufacturer's viewpoint.

Material and workmanship deficiency clauses are a standard ingredient in all commercial contracts. They usually cover periods of one year after delivery based on 1,000 flight hours per year. Gulfstream Aerospace is unique in providing a ten year structural warranty. Our customers expect our airplane to have long-lasting structural integrity and therefore we have an obligation to underwrite through warranties that longevity criteria.

As manufacturers, we provide an off-the-shelf commodity that has a proven and measurable capability. Penalties associated with below-specification performance, as well as incentives for greater-than-specification performance, are not elements that we have to normally deal with. If the airplane is better than the specification, it is more competitive. Increased sales is enough incentive for the commercial manufacturer. The exception to this is new products in the development stage where production aircraft positions are being sold to a performance guarantee.

Presently the Gulfstream IV (fourth generation of Gulfstream corporate aircraft) is in the R & D stage and we have over 75 orders with deposits for the airplane. If the Gulfstream IV fails to meet performance guarantees, what is our course of action? Simply stated, our course of action will be to please our customer. That may involve design changes or it could mean canceling a contract and returning a deposit (as a note of interest, we have never failed to meet a performance guarantee); but our customer will be satisfied.

Airplane specifications, especially government specifications, are extremely detailed covering hundreds of design elements. Commercial specifications are written by the manufacturer and FAA regulations dictate most of the design requirements. Airplane performance capabilities such as range, altitude, and speed are usually the selling features and, therefore, must be guaranteed. Contractors should provide performance warranties for key specification items, but not necessarily for every specification requirement dealing with some nebulous or unrealistic requirement. On the other hand, the government should carefully match specific specification requirements to a specific type vehicle instead of using general specification requirements to fit a variety of different vehicles. A great deal of money can be spent trying to meet a general requirement that has little or no application to a specific vehicle, or does not noticeably improve the product. Again, "better is the enemy of good".

Competition Advocacy – I understand – will be discussed at some length later in this program but let's review competition from the commercial manufacturer's viewpoint. Commercial manufacturers, like the government, procure material and services in a competitive environment. But sole source has its place especially in the area of "off-the-shelf catalog" or market-priced procurements. Justifications for sole sourcing obviously must always be provided.

The Gulfstream III is market priced and it includes, as I previously stated, R & D amortization costs. Inflation, market pressures, product improvements and on-going competition are the only influence on price.

I personally believe that the C-20 program procurement could have been completed in a two to three week period instead of the 8 or 9 months spent in proposal preparation and source selection activity. The C-20 proposal and source selection cost Gulfstream over 1.3 million dollars, and we delivered over four thousand pounds of written material and data. I'm sure the government also incurred considerable expense in concluding this procurement. Compare this to the hundreds of customers, including foreign governments, that buy our aircraft based on a 133 page detail specification and a 23 page contract!

I don't have any quick fixes for your spiraling costs. I have shared with you some of the elements on how Gulfstream, a commercial manufacturer and recently a DOD contractor does business, and frankly we do alright. Again, the competitive marketplace dictates the price of a product. No matter how good the product is, if it is overpriced, no one will buy it. Our customers know this, our vendors know this, and our employees know this. I have no doubt whatsoever that if Gulfstream Aerospace were to become a pure DOD contractor designing and building airplanes according to MIL specifications, plus implementing Government Cost Accounting Standards, the price of our product would increase significantly. So significantly, that we would no longer be commercially competitive.

The Gulfstream III airplane, which has an international reputation for reliability, quality, safety and performance second to none in its class, was designed and built without one cent of government money, control, or participation. When ASD put together the C-SAM Request for Proposal, the benefits of commercial off-the-shelf procurement were recognized. Frankly, I commend ASD for their vision in departing from convention and allowing commercial practices and FAA regulations to be the basis of the RFP.

You have heard me discuss over and over, how commercial manufacturers finance the R & D process, and how we urge our vendors through the selection process to do the same. Conversely, the government underwrites most of the development cost, and as a result, is burdened with the responsibility. You pay for R & D costs, you pay for advance procurement, you pay progress or milestone payments, you pay for facilities, and you pay for proposals. Then because you are spending taxpayers dollars, you must be assured that you are getting something in return so you provide surveillance, approving, auditing and investigative personnel. Hence we have DCAS, DCAA, AFPRO, DODIG, GAO, and probably others that I'm not aware of. (Remember I'm new to this government business.) Perhaps the DOD contractor should bear more of the financial burden and risk during development similar to the risk and the commitment made by the Northrop Corporation in the development of the F-20 airplane. I'm not necessarily advocating

this type of commitment for small businesses, but for large DOD contractors who can raise or borrow the capital. Manufacturer's funding of development programs creates corporate risk; risk forces responsibility; responsibility forces improved management; and improved management forces lower costs.

Consider giving more responsibility to the contractor; that is where it belongs. If the government continues to write the specifications, approve the designs, fund the development and approve the quality, then you have the responsibility and with the responsibility is the burden to pay when things go wrong.

While this commercial approach may sound attractive, it is a two-edged sword. The government would be faced with some difficult decisions, perhaps too difficult to come to grips with, if the financial burden for development is placed on the contractor. Contractors must borrow money to carry this financial burden and, therefore, interest will be incurred. Some interest has been expensed during development years, reducing profits, it must be considered in the price of the later recurring production units with corresponding higher profits. In addition, there will be less need for government on-site surveillance, approval and auditing personnel, as greater responsibilities will be levied on the manufacturer. In short, the requirement for government employees involved with a given program and the burden these employees impose on the contractor will be drastically reduced. If the war on cost is to be won, you must expect casualties.

I appreciate the opportunity to share my thoughts with you, and may this Eighth Annual Pricing Symposium be particularly productive. The aerospace military industrial complex – of which we are all a part – is capable of any achievement including "winning the war" on the control of cost.