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STATEMENT OF

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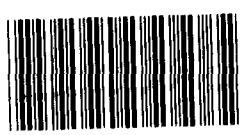

ON

PRICE MARKUPS AND INEFFICIENCY IN DEFENSE PRODUCTION

MR. CHAIRMAN AND MEMBERS OF THE COMMITTEE:

We are pleased to be here today to testify on defense production, specifically, on the adequacy of information available to the Department of Defense (DOD) about the production capabilities of the defense industrial base (DIB). The DIB consists of private firms at several contracting levels or tiers and government facilities that produce weapon systems and other items for DOD. It comprises some 25,000 to 30,000 prime contractors and some 50,000 subcontractors.

The information we will present is extracted from a draft report the General Accounting Office--GAO--prepared in response to a request from your Subcommittee on International Trade, Finance, and Security Economics, in which we were asked to examine the ability of the DIB to meet projected defense requirements. We were to explore the reasons for DIB production delays, problems of quality, and cost or price increases. Also, if necessary, we were to develop a methodology for examining these issues and DOD's mechanisms for addressing them. Other studies have suggested that most major DIB constraints exist in the lower contracting tiers of the DIB structure; however, there was insufficient information available on the DIB substructure to allow a comprehensive or detailed assessment of the ability of the DIB to meet production requirements. We concluded, therefore, that we needed to develop an improved method for assessing the overall DIB capability and for clarifying subcontracting problems. We applied the method we developed to six case studies.

Concern about the ability of the industrial base to meet defense requirements is not new. Many studies we reviewed, including records of several previous hearings before this Committee, suggest that the DIB has been experiencing serious problems in several areas:

- a lack of skilled labor,
- shortages of production and testing equipment,
- shortages of or delays in receiving components produced by subcontractors,
- long leadtimes,
- high levels of foreign dependency, and
- the fact that many processes are proprietary to the contractors.

These problems have limited DOD's flexibility to adjust to changing requirements. But concerns today are exacerbated by the prospect of defense spending totaling some $1.7 trillion over the next five years, by possible demand-supply perturbations caused by an improving economy, and by the transition from a defense policy envisaging a short-duration scenario of war to scenarios in which probable conflicts are of indefinite duration anywhere in the world.

CURRENT DOD ASSESSMENT METHODS

To fulfill the Committee's request, we first examined how DOD monitored the operation of the DIB and what data were compiled. We found that DOD bases its current methods of assessing the DIB's ability to produce what the services need for defense on either aggregate or system specific data.

Aggregate data are useful to policy makers for identifying and tracking overall trends. Generally, the aggregate data have been produced from models or studies of industrial sectors. For example, the Defense Economic Impact Modeling System (DEIMS), a multi-sectoral input-output econometric model, predicts which industrial sectors are likely to receive more defense funds and the likely effect of these funds on those sectors. DEIMS thus reports on the economy as a whole, rather than on specific weapon systems.

Industrial preparedness planners and program managers, however, not only need data that are aggregate in nature, they also need data that are specific to individual weapon systems. DOD's major means of obtaining this type of data is its Form 1519. Using this form, the services ask defense contractors and subcontractors whether they can supply certain items and request production data about those items. Completing Form 1519 is voluntary, and the contractors are not directly reimbursed for providing the information.

GAO did not fully analyze the issue of the accuracy of the DD 1519 data. However, we identified extensive criticism of the data collected through implementation of the DD 1519 Form. While some service personnel called the data satisfactory (for example, officials at the Army Armament Command believe strongly that the data on ammunition production are sufficiently accurate), elsewhere, we found near unanimity among contractors, weapon system program managers, and authors of previous studies that the data were inadequate. Three years ago, GAO testified before the

Subcommittee on Defense of the House Committee on Appropriations on DOD's industrial planninng process, as typified by information collected on the DD 1519 Form. At that time we felt, as we do today, that problems exist in the selection of the items to analyze and in the determination of total requirements for these items. Consequently, there is no assurance that the most essential items are being planned or that quantities planned for are correct. Overall, the data provided were generally problematic frequently being based on unrealistic assumptions and lacking important input from key subcontractors. This serious information gap caused the Air Force to state (in its fiscal year 1983 production base analysis) that its efforts had been hampered by the absence of reliable data for defining problems and analyzing alternative solutions.

RECENT DOD INITIATIVES

Concerned about the DIB's ability to meet national defense needs, DOD is now paying greater attention to industrial preparedness planning and, by the same token, is lessening its reliance on DD Form 1519. The Army, Navy, and Air Force have increased their funding for industrial preparedness planning and anticipate further increases. DOD has already begun several initiatives including DOD's Task Force to Improve Industrial Responsiveness, the Integrated Industrial Data Management System, a mutual effort of the Air Force and industry representatives called Blueprint for Tomorrow, and the Army System for Automation of Preparedness Planning.

We commend these efforts, of course, but find that progress has been slow. More importantly, we believe that these current DOD initiatives do not adequately address certain of the problems of identifying or removing constraints in the DIB. For example, current initiatives do not ensure verification of data provided by contractors. DOD's ways of collecting data and analyzing subcontractors' capabilities still require improvement. Further, better methods are needed for screening the very large number of weapon system components and materials of continuing national importance: this would give DOD the ability to focus rapidly on those specific items likely to cause on-going and future production problems.

GAO'S ASSESSMENT METHOD

After considering several ways of examining the overall capabilities of the DIB, we settled on a method that reflects the form of the system it is intended to probe. In the DIB, cascading levels of suppliers set up tiers of primary and subsidiary contractors. Each tier might be subject to production constraints which might curtail production. We developed a method which traces production down through the tiers of contractors and within each tier to identify competition for existing resources across contractors or within individual contractors' plants.

GAO decided on a method involving both vertical and horizontal analysis. We applied the vertical analysis to identify and follow critical items for an individual weapon

system down through the tiers of suppliers. At each level, possible production constraints were evaluated. The horizontal analysis evaluated the competition for production resources within each firm. Finally a future production analysis compared the results to DOD out-year requirement estimates. This combination of analyses, GAO believes, provides a more comprehensive view of the state and capabilities of the DIB than has been available thus far.

We define critical items as those:

- with long or growing intervals between procurement and delivery,
- high or increasing unit costs,
- few suppliers,
- foreign sources, or
- a history of production problems.

Again, to identify critical items, GAO traces subsystems, components, and raw materials of the weapon system vertically from the prime contractor through the lower tiers of subcontractors. The analysis continues until all critical items are uncovered or further downward analysis seems unwarranted. Throughout this process, each critical item can be evaluated for potential production constraints; if none is encountered, there is no immediate reason for concern.

APPLICATION OF THE GAO METHOD

To determine the feasibility and usefulness of this method, GAO applied it to six high-priority weapon systems currently in

production, looking at two cases from each of the three services. To collect information, we visited five prime contractors and 34 subcontractors, utilizing a questionnaire and conducting semi-structured interviews on strengths and weaknesses in production capability. The six weapon systems we examined and their prime contractors were

(1) AIM-54 Phoenix missile--Operational with the Navy since 1974 as the primary fleet defense long-range armament for the F-14 Tomcat (Hughes Aircraft Company);

(2) M1 Abrams tank--The Army's main battle tank for the 1980s and 1990s and its most expensive weapon system acquisition (General Dynamics Land Systems);

(3) TOW2 (tube-launched, optically tracked, wire-guided) missile--The Army's heavy assault weapon against armor and fortifications (Hughes Aircraft Company);

(4) Harpoon missile--The Navy's main anti-ship missile through the 1990s (McDonnell Douglas);

(5) F100 turbofan engine--Used by the Air Force in the F-15 Eagle and F-16 Falcon fighters (Pratt & Whitney Aircraft Group of United Technologies Corporation); and

(6) Global Positioning System--An Air Force satellite-based system designed to provide accurate and continuous positioning information world-wide in any weather and despite countermeasures; also provides information on nuclear detonations (Rockwell International).

GAO'S FINDINGS

Application of the GAO method to the six case studies provided information relevant to many of the DIB production constraints cited in previous studies. While not generalizable to the DIB in general, these findings provide evidence that the problems do exist. Our analyses showed that:

- Shortages of production machinery presented an upper limit constraint for production on four of the six weapon systems; although no late deliveries actually occurred, even slightly increased demand could have caused significant time delays and may still do so in the future given a changing economic context. In the TOW2 case study, meeting surge production levels would require additional foreign machines involving substantial production lead times.
- Shortages of special testing equipment were surprisingly widespread. Many of the contractors visited by GAO were running their testing equipment 24 hours a day to support one or two 8-hour production shifts. At the time of our review a subtier producer for the Phoenix missile found its testing equipment so limited that it had to ship its own items to another contractor for testing.
- Shortages of components and raw materials constrained production, especially on the M1 tank, where final assembly requires "slaving," an expensive practice in which new tanks are built around components borrowed from finished tanks or from stock, to avoid a total halt of production.

- Reliance on foreign sources is potentially a serious production constraint in the DIB. Many components use materials for which 50 percent or more of the national requirement must be imported. For example, a third-tier producer of components for the F100 engine, requires cobalt, graphite, and manganese. While stockpiling eases the raw material problem somewhat, there is also great dependency upon components built abroad. In particular, foreign dependency for semiconductor and microelectronic parts is estimated to be high, but no one knows exactly how high.
- Shortages of skilled labor do not appear to be a major problem at present, especially for subcontractors in areas of relatively high unemployment. There is, however, an age problem--most skilled machinists, for example, are aged 50 or over. Time required to train younger replacements may ultimately pose a problem, especially in a stronger economy where increased commercial production draws from the same skilled labor pool.
- Extensive queue time (queue time is the interval between ordering and first production) did not appear to be a significant constraint for many of the contractors GAO visited, but was used at some contractors' plants as a way of smoothing peaks and valleys in demand.

- Widespread use of proprietary processes to produce defense components limits the number of manufacturers available to produce a given item and drives up component costs. Of 39 contractors visited by GAO, 25 used processes they owned.

Combining the information from vertical and horizontal analyses with projected defense requirements, GAO assessed the overall ability of the DIB to produce the six case-study weapon systems. Our future production analysis found that:

- After early design and testing problems, a projected quadrupling of Phoenix production is scheduled to occur and this increase may cause competition between Phoenix and other Hughes-built missiles. Production quality problems noted by the Navy and the subsequent suspension of Phoenix production adds additional uncertainty. The GAO advises monitoring this situation closely.
- M1 tank production now meets current Defense requirements, and these levels can be maintained; however, there is concern about the M1's foreign-source dependence, the continued practice of parts "slaving", and the possibility that competing demands in a recovering economy could siphon away skilled labor material. GAO recommends a close watch on this system.
- TOW2 should be able to meet projected peacetime demand, although subcontractors that build components for

Hellfire missiles and commercial semiconductor markets could begin to feel the constraint of competing demands. Again, final judgment awaits resolution of production quality problems at the Hughes plant.

- Harpoon is maintaining present demand, and GAO sees no problem if demand does not increase. The situation might be affected, however, by increased foreign sales of the missile.
- F100 engine production is meeting present requirements, but the ability of the DIB to produce it in increased numbers is unpredictable now, with a second prime contractor (General Electric) scheduled to begin F100 production.
- the Global Positioning System could not be evaluated because of a lack of production data at this time.

CONCLUDING OBSERVATIONS

Our analysis provided information of two kinds: information that had been unavailable before our review, and information about problems in the DIB which were well known but about which little had been done. An example of the first is the identification of a subcontractor's total dependence on foreign sources for glass optics. When questioned the Service had been unaware of this fact. As an example of the second type, one component on the gunner's primary sight of the M1 tank, "slaved" since production of the very first tank, was still being slaved at the

time of our visit to General Dynamics. The problem had not been ameliorated over the five-year period; instead, two additional components, produced by the same contractor, have also required "slaving" to meet production needs.

These two types of problems call for different responses. Where GAO provided information that had been unavailable before the present review, it indicated the inadequacy of DOD's data and monitoring systems for supporting industrial preparedness planning and shows that these data and monitoring systems need to be improved. Where information is known, appropriate action seems reasonable, but no action is taken, there is a need for DOD to improve its response to DIB problems.

Selecting critical items

Any information produced is most useful if the "most important" systems and components are selected for data collection and analysis. As noted earlier, there is no assurance that the most essential items are selected for industrial preparedness planning. An expanded subtier analysis requires a method that focuses quickly and economically on critical components and materials. We believe that it is important to apply a consistent set of criteria for determining critical items that go beyond simply looking at long leadtimes.

Obtaining better data

Our case studies make clear that it is possible to identify critical weapon system components and materials that are produced not only by prime contractors but also at the lower tiers of the DIB. Moreover, it is possible to identify current and potential

production constraints on the ability of individual contractors to meet defense requirements, and to assess the overall ability of contractors to meet planned production levels of weapon systems.

GAO's analysis indicates that most current and potential production constraints occur not at the level of the prime contractors but at the lower tiers of the DIB. However, the general understanding of subtier production capabilities and problems would benefit from information that is now lacking. Such information includes subcontractors' physical plant capacity, numbers of employees, foreign sources of components and raw materials, scrap and rework rates, proprietary production processes, actual and potential production levels, numbers of shifts and days on which production machinery and testing facilities operate, unit costs, leadtimes, vendors of components and materials, and delivery histories. Additionally, demand data are needed on components and materials that draw productive resources away from weapon system production.

Establishing baseline data

High unit costs and long leadtimes for components and materials are indicators of current constraints. The ability to know when costs and leadtimes or other indicators are changing over a period of time, as shown by trend variables, could go a long way toward developing a capability to anticipate and prevent future constraints. It is, therefore, important to establish a data base that identifies trends in past production problems.

Improving accuracy and verification

We were impressed with how much need there is for better accuracy and greater verification of production data. We encountered instances of prime contractors' providing data on subcomponents that differed substantially from the data provided on these same subcomponents by the subtier producers themselves. In constructing our method and conducting our review, GAO found it highly useful to collect data from subcontractors at all tiers. Making site visits can increase the general knowledge about the subtier contractors among program managers and service representatives. Gathering data firsthand and asking follow-up questions helps clarify issues. Information from several tiers is extremely useful because it helps in verifying the accuracy of data from different sources.

Focusing on cooperative efforts

We believe there is a need for consistent data on many weapon systems collected from and coordinated with the Army, Navy, and Air Force, DOD's industrial preparedness planners, and the contractors and subcontractors of the DIB. Some of the recent DOD initiatives are being conducted as tri-service efforts. GAO believes this is an appropriate action and that the focus on coordination should be continued and expanded. One important aspect may be to institutionalize this coordination in a central DOD unit with responsibility for collecting, computerizing, and analyzing data on the DIB.

MATTERS FOR CONSIDERATION

Overall we are concerned with shortfalls in the information available for identifying problems in the DIB. Better information is only a minimum need. It is not, by itself, a solution to the issue of when and how to respond to problems. We are encouraged by DOD's recent initiatives in this area and believe the implementation of these initiatives should focus on:

- the extent to which information and production problems occur at the subcontractor level;
- actions that can be taken to improve the armed services' understanding of and response to problems in the defense industrial base; and
- the need for the services to improve their monitoring and verification of contractor data.

GAO's efforts have identified two other important matters that should be considered by defense industrial preparedness planners. They are:

- the usefulness of implementing a method, such as the one developed by GAO, consistently across all of the armed services in a way that ensures continuous, accurate, and generalizable information on the state of the defense industrial base; and
- the desirability of creating a central unit in the Department of Defense for collecting, computerizing, and analyzing data on the defense industrial base.

Mr. Chairman, this concludes my statement. We thank you for the opportunity to present our views here today and would be happy to explain any part of our testimony or answer any questions the Committee may have.