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**MEASURING THE TRADE BALANCE
IN ADVANCED TECHNOLOGY PRODUCTS**

by
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Abstract

Existing procedures used to construct high technology trade statistics do not provide an accurate picture of international trade in these products because of the level of aggregation used in their construction. Many low technology products are included in published trade statistics for high technology industries. In order to provide policymakers with improved information on high technology trade, the Census Bureau now publishes monthly trade statistics on advanced technology products (ATP). This paper discusses the methodology used to define the Census Bureau ATP measure, and contrasts it with the existing procedures.

Measuring the Trade Balance in Advanced Technology Products¹

1. Introduction

Because of the dramatic decline in the United States Trade Balance since the early 1970's, many economists and policy makers have become increasingly concerned about the ability of U.S. manufacturers to compete with foreign producers. Initially concern was limited to a few basic industries such as shoes, clothing, and steel; but more recently foreign producers have been effectively competing with U.S. manufacturers in automobiles, electronics, and other consumer products. It now seems that foreign producers are even challenging the dominance of America in high technology industries. The most recent publication from the International Trade Administration shows that the U.S. Trade Balance in high technology industries fell from a \$24 billion surplus in 1982, to a \$2.6 billion deficit in 1986, before rebounding to a \$591 million surplus in 1987.

As part of the efforts of the U.S. Census Bureau to provide policy makers and other interested parties with the most complete and accurate information possible, we recently completed a review of the methodology and data used to construct trade statistics in

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the area of high technology trade. Our findings suggest that the statistics presented by the International Trade Administration, although technically correct, do not provide an accurate picture of international trade in high or advanced technology products because of the level of aggregation used in their construction.

The ITA statistics are based on the Department of Commerce's DOC3 definition of high technology industries. The DOC3 definition requires that each product classified in a high tech industry be designated high tech. As a result, many products which would not individually be considered high tech are included in the statistics. After developing a disaggregate, product-based measure of international trade in Advanced Technology Products (ATP), we find that although the trade balance in these products did decline over the 1982-1987 period, the decline is much smaller (about \$5 billion) than reported by ITA (approximately \$24 billion).

This paper discusses the methodology used to define the ATP measure, contrasts it to the DOC3 measure, and provides a comparison of the resulting statistics. After discussing alternative approaches to identifying advanced technology products, Section 2 describes the advanced technologies in the classification. (Appendix A, provides definitions and examples of the products which embody these technologies. In addition, Appendix B, available on request, provides a comprehensive list of Advanced Technology Products by technology grouping.)

Having described the ATPs, Section 3 examines annual trade statistics for ATP products, in 1982, 1986, and 1987, and compares these statistics with equivalent ones based on the DOC3 measure. The differences between the two measures over the 1982-87 period stem from changes in the balance of trade of items included in the DOC3 measure but excluded by the Census ATP measure; i.e. the differences are due to changes in the trade balance of "low tech" products which are produced in "high tech" industries. This finding corroborates a principal argument for construction of the ATP measure, that the weakness of the DOC3 measure of high technology trade is the level of aggregation used in its construction. It also suggests that at the level of individual products the high technology sectors of the economy continue to enjoy a strong comparative advantage and are surprisingly healthy. Nonetheless, some areas of weakness are identified, such as low tech products in high tech industries. (Appendix C, supplements this material by providing a detailed listing of traded products included and excluded from the Advanced Technology definition for each DOC3 high tech commodity grouping. These Tables enable the reader to directly assess the Census classification.)

2. Defining Advanced Technology Trade

Current Definitions

The Census approach to defining advanced technology is very

different from the one commonly used. Most definitions of high or advanced technology are based on industry-level data and use indirect measures of the "technology incorporated in the product" to determine which industries are included. These indirect measures include the ratio of R&D expenditures to sales and the ratio of "scientific and engineering" employees to other employees.² Several problems exist in the implementation of these indirect measures of the technology embodied in a product.³

The first and most important problem is that these indirect approaches use aggregated industry-level data R&D measures to classify "high technology" products. As a result, it is assumed that all products within an industry are either high tech or low tech. Our analysis of the individual products shows that most industries produce a mixture of high and low tech products.⁴

² In addition to DOC3 which is based on R&D expenditures and described in detail in Davis (1982), BLS experimented with several measures based on employment, see R.W. Riche, E.E. Hecker and J.U. Burgan (1983).

³ The indirect measures also have conceptual difficulties. They beg the question of what is "high technology" by pushing the issue back to questions of what are R&D expenditures? or what are "scientific and engineering" employees and how should these factors be accounted for in assessing the determinants of current output?

⁴ For example, "Office and Computing Machines," Industry Group 357, is included in almost every definition of high technology. The products in this industry include scales, balances, cash registers, calculators, dictation records, adding machines, and computers. Clearly, not all of these products would be considered as embodying advanced or leading edge technologies.

Moreover, in some industries the proportion of high and low tech products traded changes dramatically over time.⁵ Thus a more disaggregated approach, such as the product by product examination used by Census, is needed to properly measure the trade flows in high technology goods.

A second problem with the indirect approach is that it does not make a distinction between the product and the process used to make the product.⁶ Research and development associated with more efficient production processes may not result in a better, or more advanced, product.⁷ For example, developments in petroleum refining have led to great reductions in the amount of "waste" or residual fuels. These new processes require sophisticated control equipment and larger numbers of engineers. As a result, the petroleum industry while not included in DOC3 has been included in

⁵ In Industry Group 357, mentioned in the previous footnote, the proportion of total imports that were high tech increased from 62 percent in 1982 to 85 percent in 1987.

⁶ The Census Bureau has begun a survey of manufacturing plants designed to ascertain the nature of the technologies used in the production process. The results of this survey will provide some less aggregated information on the use of high technology processes. Comparisons of these input-based classifications with the ATP measures are not possible at this time.

⁷ Technological advances which reduce production costs make U.S. output more competitive in world markets. Conceptually, however, the product is the same and the competitive effect is similar to finding a cheap new source of an input.

some definitions of high technology.⁸ But is gasoline a high tech product? There is no difference between gasoline obtained using the old process and gasoline obtained using the new process. It is the process, not the product, which is high tech.⁹

The inorganic chemicals industry (SIC 281) is perhaps a better illustration from the standpoint of the DOC3 definition. This industry is included in the DOC3 definition because it has a relatively high R&D to sales ratio; however, much of the research and development is focused on new production processes. As a result, low tech products such as sodium carbonate (commonly known as soda ash) are included in the DOC3 high technology trade balance--soda ash was the largest export from this industry with a total of \$232 million in exports in 1986.

To allow for the heterogeneity of individual products within an industry and to focus on the nature of the traded product rather than the production process, one must examine international trade at the product level rather than at the industry level. Unfortunately, at such a detailed level, input-based measures such as research and development expenditures are not available, nor are they likely to be available in the near future. As a result, in a

⁸ The BLS measure of high technology, which is based on the ratio of the number of scientific and engineering employees to the number of other employees, includes petroleum refining.

⁹ Some of the equipment needed in the new petroleum cracking processes is, however, considered to be high tech by Census analysts. Such equipment is classified under computer integrated manufacturing technology.

process described more fully below, a list of advanced technologies are used by Census Bureau analysts to identify individual ATP products.¹⁰

The Census Advanced Technology Products (ATP) Definition

It was decided that an examination of individual products to determine if they were high tech was the best way to overcome the problems inherent in the DOC3 definition. The first step in this process is the development of a list of technological fields commonly included under the heading of advanced or high technology products. In creating the list of high technology fields, a number of different sources were consulted. These included Fortune Magazine's "Special Report: The High Tech Race" (October 13, 1986), CorpTech's High Technology Classification System, and the 1987 report, "The Status of Emerging Technologies: An Economic/Technological Assessment to the Year 2000" prepared for former Deputy Secretary of Commerce Brown.

From these sources, ten Advanced Technology fields were chosen: Biotechnology, Life Sciences (Medical Science), Opto-Electronics, Computers and Telecommunications, Electronics, Computer Integrated Manufacturing, Materials Design, Aerospace, Weapons, and Nuclear. Within each of these fields, large numbers of products, processes, and breakthroughs can be considered to be "on the leading edge" of their field. Descriptions of these fields

¹⁰ The Bureau is also conducting a separate survey of high tech manufacturing processes.

and examples of specific applications or breakthroughs are provided in Appendix A. A complete list of the individual products which constitute the "Advanced Technology Products" within these fields is given in Appendix B.

Application of Leading Edge Technologies to Individual Products

We examined products which are traded internationally by the United States to see if significant amounts of any of the leading edge technologies were embodied in the product. If a product had significant amounts of one or more of these technologies, it was considered to be an ATP. If the product did not contain a significant amount of one of these technologies it was considered " o t h e r . "

Although one would clearly like to make this definition more "precise" by placing a value on the contribution of the advanced technologies to the product, such quantitative standards are not practical. For this reason, analysts were instructed to use their knowledge and judgment to determine whether or not a particular product contained significant amounts of these technologies.¹¹

The Census method is not perfect. Although most people would agree that advanced technology products are those which

¹¹ The analysts involved in the project work with the foreign trade data on a day-by-day basis and are very knowledgeable about the individual products, who is manufacturing them, and how they are manufactured. Thus, it is reasonable to ask them the extent to which a product embodies new technology.

embody special knowledge, training, and technology, it is very difficult to establish clear cut rules for classifying individual products as "high tech" and "other." The Census procedure relies on the judgment of individual industry analysts to evaluate and determine if a product is high tech or not. This implies that another set of analysts, working with the same data, may identify a somewhat different list of advanced technology products.

Although these problems of classification are difficult, they should not be overdrawn. Decisions similar to those made in developing the list of ATP's are regularly made in the classification of economic activity and related Census Bureau activities.¹² Without such decisions, one could only work with aggregate data or with the universe of individual establishments.¹³

Thus, it is natural to apply this expertise to defining advanced technology by directly classifying products.

N o n e t h e l e s s ,

¹² The industry definitions used by others in their definition of "high tech" trade are themselves based on Census Bureau decisions as to the assignment of individual establishments and products.

¹³ Standard Industrial Classification (SIC) system industry and product definitions are continuously reviewed and updated to reflect changes in the economy, and analysts use subjective judgments to assign individual establishments and products to particular industries. This classification system has been accepted by data users as the way of classifying economic activity in the United States. Few question the existing industry boundaries or the Census Bureau's ability to assign individual establishments and products to those industries even though the system itself represents a compromise between "several principles" of classification (See Abbott and Andrews, 1988.)

to minimize the impact of "subjective" decisions the Bureau adopted several procedures. First, the judgments of the analysts were reviewed by trade experts inside and outside the Census Bureau. The analysts were pushed to justify the inclusion or exclusion of individual products, and in some cases, changes were made. Such reviews are carried out on a regular basis so that new products can be incorporated in the list and products which become dated can be removed from the list.¹⁴ Second, detailed studies of the differences between the Census ATP measure and the DOC3 measure can be used as the basis for specific review of products. Third, data on the level of imports and exports of products included in either the Census ATP or the DOC3 definition of high technology has been made available to users. Thus, researchers can examine both measures at a detailed level and conduct sensitivity analysis to determine the effects of including or excluding specific products from either measure.

3. Comparing ATP and DOC3 Measured Trade Balance

Figure 1 contrasts the ATP and the DOC3 measures of the high technology trade balance. (The ATP measure of high technology

¹⁴ It is important to keep in mind that technologies are not static. New inventions and products continuously replace old products as the leading edge of science and industry continuously advance into new areas. Thus any list of high technology products cannot be static but needs to be continuously revised.

trade is the upper line in the figure.) One striking feature is that while both measures are very close in 1982, they quickly diverge and by 1985 the difference between the two measures is approximately \$20 billion. From 1982 to 1985 the two measures move very differently. Both show a decline from 1982 to 1983, but the DOC3 measure shows a dramatic decline, approximately \$12 billion, while the ATP measure has a decline of only \$3 billion. From 1984 to 1985, the ATP measure shows an increase in the trade balance, the DOC3 measure shows continued decline. From 1985 to 1987 both measures show similar movements, although they are at very different levels. Both decline from 1985 to 1986, and then rebound from 1986 to 1987. The underlying data for this and subsequent Figures 3 - 5 are given in Table 1.

High Technology Trade Balance

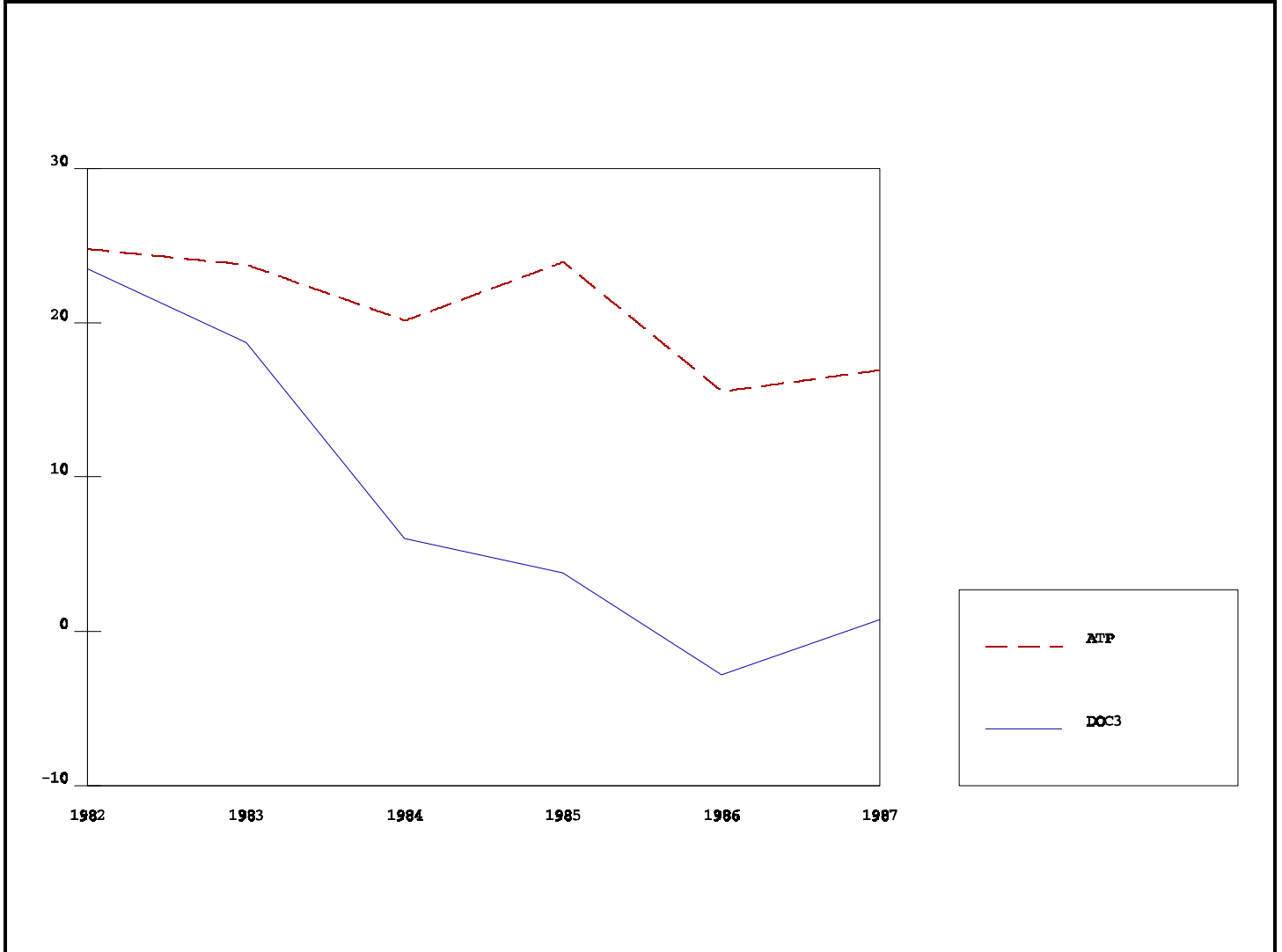


Figure 1 (Billions of Dollars)

Table 1: Comparison of Trade Data Using the ATP and DOC3 Definitions of High Tech Trade

not Both	DOC3	ATP	DOC3	Common	ATP not	D O C 3
				to		
				(Group 1)	ATP (Group 2)	(Group 3)
1982						
Imports		15170	34521	14404	766	20117
Exports		39718	58112	37150	2568	20962
Balance		24548	23591	22746	1802	845
1983						
Imports		18890	41397	18304	586	23093
Exports		42536	60158	39992	2544	20166
Balance		23646	18761	21688	1958	-2927
1984						
Imports		26648	59464	25705	943	33759
Exports		46868	65510	43723	3145	21787
Balance		20220	6046	18018	2202	-11972
1985						
Imports		27552	64778	26373	1179	38405
Exports		51497	68425	48442	3055	19983
Balance		23945	3647	22069	1876	-18422
1986						
Imports		37861	75107	36348	1513	38759
Exports		53501	72517	50309	3192	22208
Balance		15640	-2590	13961	1679	-16551
1987						
Imports		42662	83481	41274	1388	42207
Exports		62087	84071	58587	3500	25484
Balance		19425	590	17313	2112	-16723

The Census ATP measure of high tech trade consists of the sum of Groups 1 and 2. The ITA DOC3 measure of high tech trade consists of the sum of Groups 1 and 3. Group 1 is those products which both definitions label as high tech. Group 2 consists of those products identified as high tech by Census which are outside

industries labeled high tech by ITA. Group 3 consists of those products labeled high tech by ITA and low tech by Census, i.e., low tech products in high tech industries.

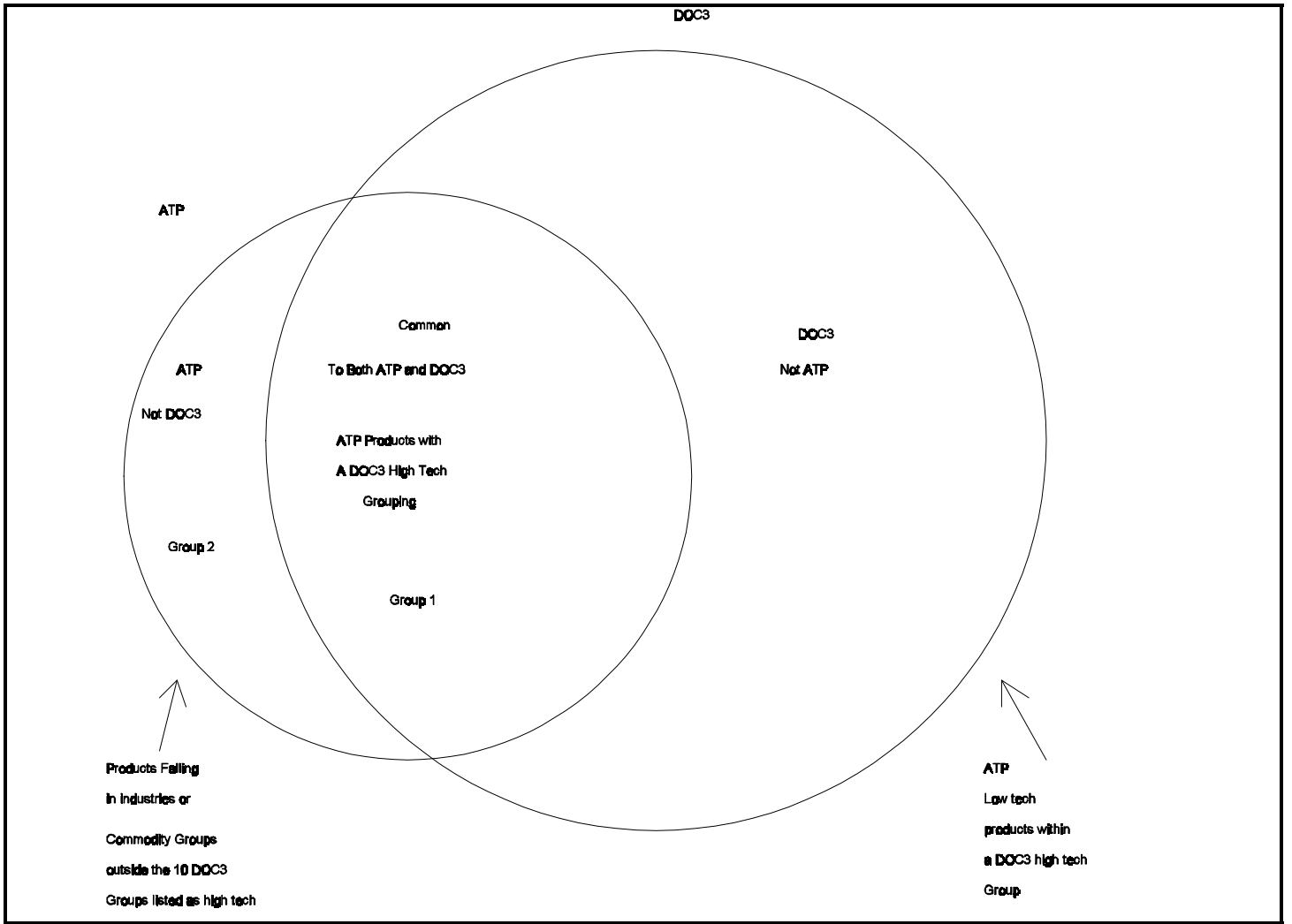


Figure 2

To examine the source of the differences between these two measures, it is useful to classify the traded products into three distinct groups. The three groups of products are 1) those products which are included in both the ATP and the DOC3 measure (the common component), 2) those products which are included in the ATP measure but excluded from the DOC3 measure, and 3) those products which are included in the DOC3 measure but excluded from the ATP measure. These groups are illustrated in Figure 2. Group 1 products include all those products which fall within one of the 10 DOC3 defined high tech industries which are also classified as ATP using the Census procedures. ATP products falling in industries outside the 10 industries defined by DOC3 comprise Group 2 products. Group 3 products represent low tech or non-ATP products which are classified in high tech industries defined by DOC3. It is this group of products which was initially cause for concern with the DOC3 measure and led to development of ATP. This group also provides most of the explanation for the difference between ATP and DOC3 trade statistics

Source of the Differences in Observed Trade Balances

Using these three groups of products, the movements over time in either ATP, DOC3 or the difference between the ATP and DOC3 measures can be examined. The time trend of each of these components is shown in Figure 3. The Group 1 products, those common to both the ATP and DOC3 measures, decline from roughly a \$23 billion surplus in 1982 to an \$18 billion surplus in 1984,

before rebounding to \$22 billion in 1985. From 1985 to 1986 there is a dramatic drop in the trade balance of these products, to a low of \$14 billion, before rising again to a \$17 billion surplus in 1987. The Group 2 products, those unique to the ATP measure, remain roughly flat at about \$2 billion surplus over the period. Thus the movement in the ATP measure is dominated by the movement of products which are common to both the ATP and the DOC3 measure. In contrast, the movement in DOC3 is dominated by the low tech Group 3 products unique to it. The trade balance of these products shows a sharp decline over the period. Starting at a \$1 billion surplus in 1982, Group 3 products fall to an \$18 billion dollar deficit in 1985 and then remain stable through 1987.

Thus, it is the Group 3 component which explains the differences (both absolute and overtime) between the ATP and DOC3 measured high tech trade balances. This means that the trade balance of "low tech" products (according to Census Bureau analysts) in "high tech" industries (according to ITA) is the primary difference in the two high technology measures. This verifies the initial concern about using industry-based measures. More importantly, the difference between the movements and levels of the Group 1 and Group 3 products provides prima-facia evidence that the distinction made by the Census Bureau analysts between high and low tech products reflects real differences in the products. If all of the products manufactured in high tech industries

ATP - DOC3 Differences

Balance of Trade

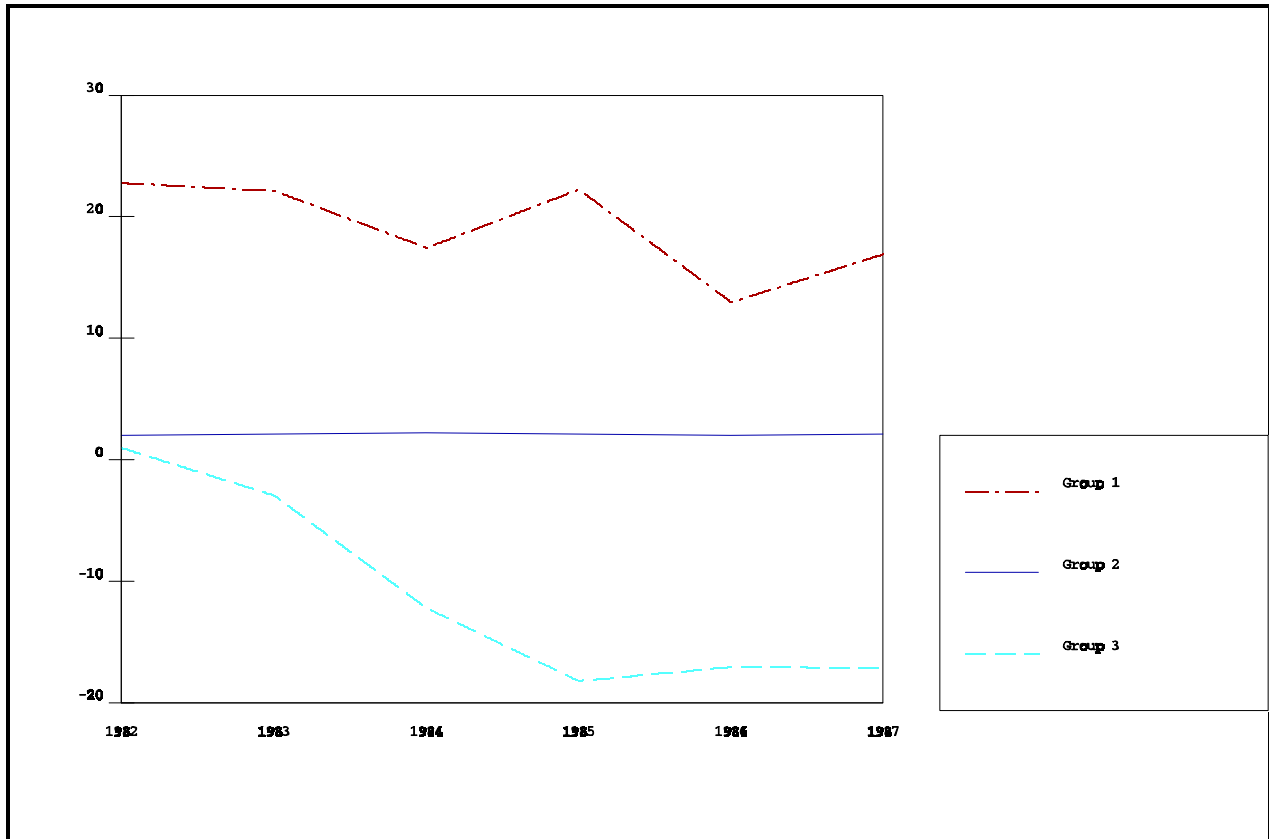


Figure 3

were in fact identical (as implicitly assumed in the DOC3 definition), then one would expect the trade patterns of Group 1 and Group 3 products to be very similar, which they are clearly not.

Differences in Imports Among the Groups

Figure 4 compares imports between the three groups. It shows that the Group 1 and Group 3 imports rise over the 1982 to 1987 period in a similar fashion. The Group 2 imports (those unique to the ATP measure) stay roughly flat at about \$1 billion dollars over the period. Thus, the dramatic increase in imports over the 1982-87 period, from \$34.5 billion to \$83.5 billion, was, roughly speaking, equally split between low tech and high tech products.

Differences in Exports Among the Groups

Figure 5 makes similar comparisons for exports. Over the 1982 to 1987 period the Group 1 exports, those common to both the ATP and DOC3 measure, rose fairly rapidly. Group 2 exports, those only included in the ATP measure, were small in magnitude and showed little change over the period. Thus, they moved very similarly to Group 2 imports. Figure 5 also shows Group 3 exports were essentially flat. Thus, exports of low tech products manufactured in high tech industries were stagnant over the 1982 - 1987 period. This contrasts with the rapid growth in such imports discussed above. This evidence is consistent with the interpretation that the United States experienced increased foreign

competition at the "low tech" end of these industries. In fact, Table 1 shows that, even though total exports rose over the period (by about \$25 billion) most of the increase (\$21 billion) was in the high tech grouping. This export stagnation in low tech products coupled with the rise in imports of these products in high tech industries is the primary explanation for the large fall in the DOC3 measure of high technology trade.

ATP - DOC3 Differences

Level of Imports

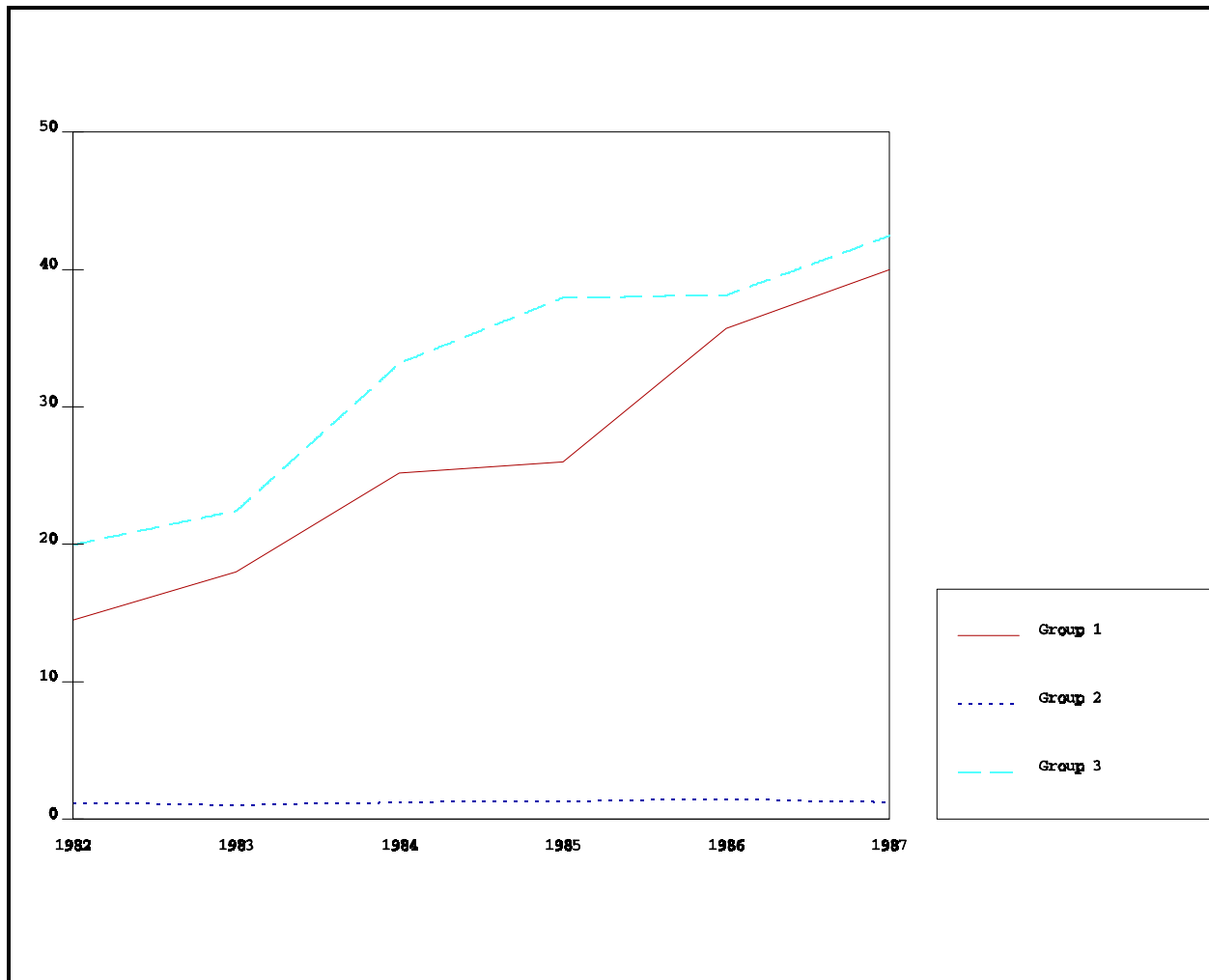


Figure 4

ATP - DOC3 Differences

Level of Exports

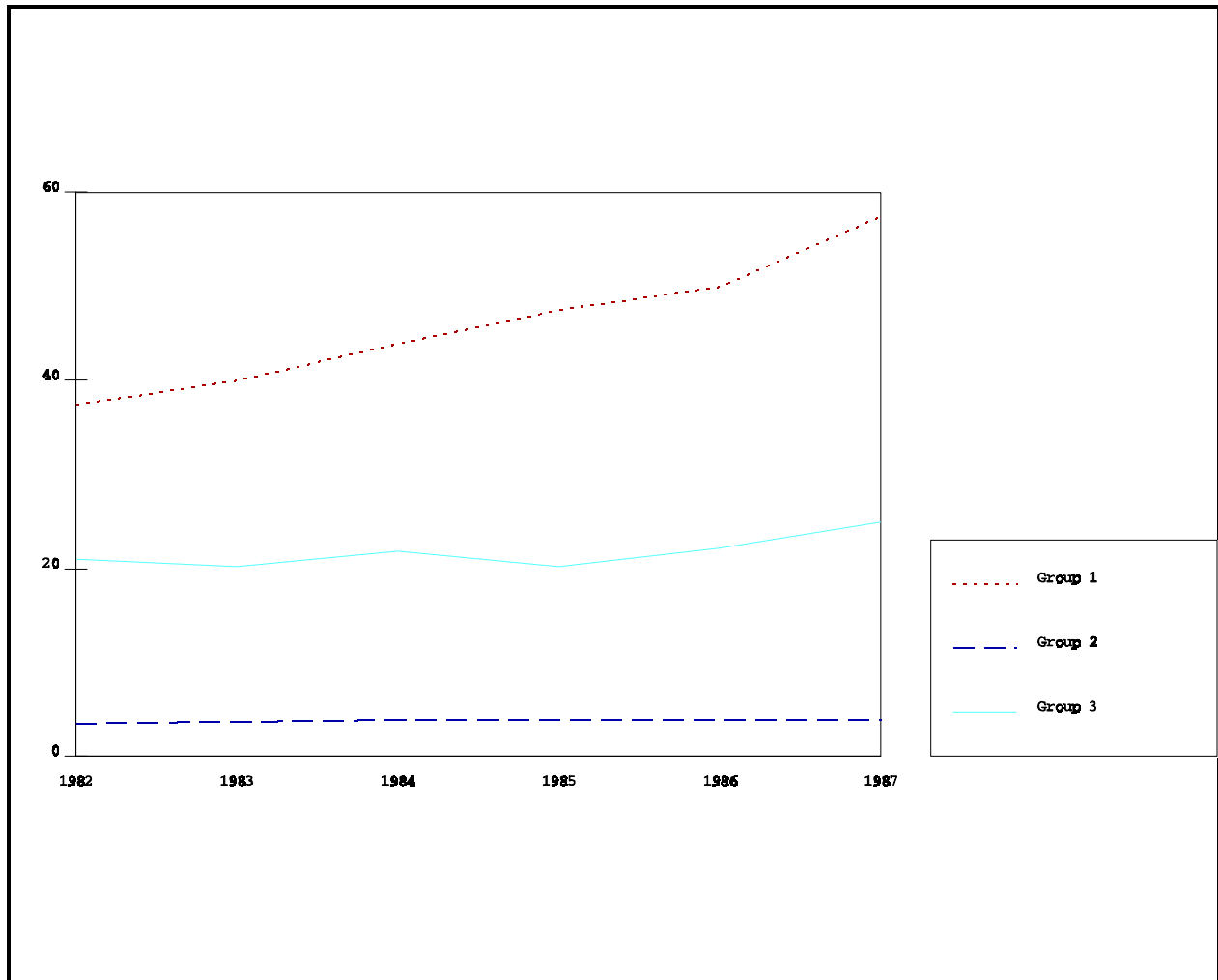


Figure 5

Distribution of ATP and DOC3 Differences by Industry

Figures 6 and 7 provide information on the distribution of the high- and low tech products across the 10 industries used to define high technology for the ITA report. The figures show the relative importance of each industry, in either exports or imports, as well as the portion of trade considered by Census Bureau analysts to be high or advanced technology products. For example, Figure 6 shows that Drugs and Medicine has approximately \$3.6 billion in Exports in 1987 composed of about \$.3 billion of high tech and \$3.3 billion of low tech products. As stressed throughout, not all products produced by an industry are the same. The ATP measure identifies only those products on the leading edge of new technologies while the DOC3 definition takes all of an industry's products as high tech.¹⁵

Figure 6 shows that a substantial proportion of the exports of Communications Equipment and Electronic Components is not considered high tech by Census Bureau analysts, and that this industry alone accounts for a difference of about \$6 billion dollars in exports as measured by ATP and DOC3. The Plastics and Resins industry accounts for another substantial difference in

¹⁵ For example, products in the Communications Equipment and Electronic Components industry which are not included in the ATP measure include, in order of importance for exports, printed circuit boards, sound recordings NSPF, television apparatus NSPF, and terminals and electrical splicers. The NSPF (Not Specifically Provided For) is a category which contains a mixture of products which could not be classified elsewhere.

measured exports because most of the products from this industry are not high tech even though the industry, as a whole, was a part of the DOC3 definition because of its high R&D to sales ratio. Other substantial differences occur in the Drugs and Medicines industry, the Industrial

Total 1987 Exports in DOC3 High Tech Industries
by ATP Low and High Tech Classification

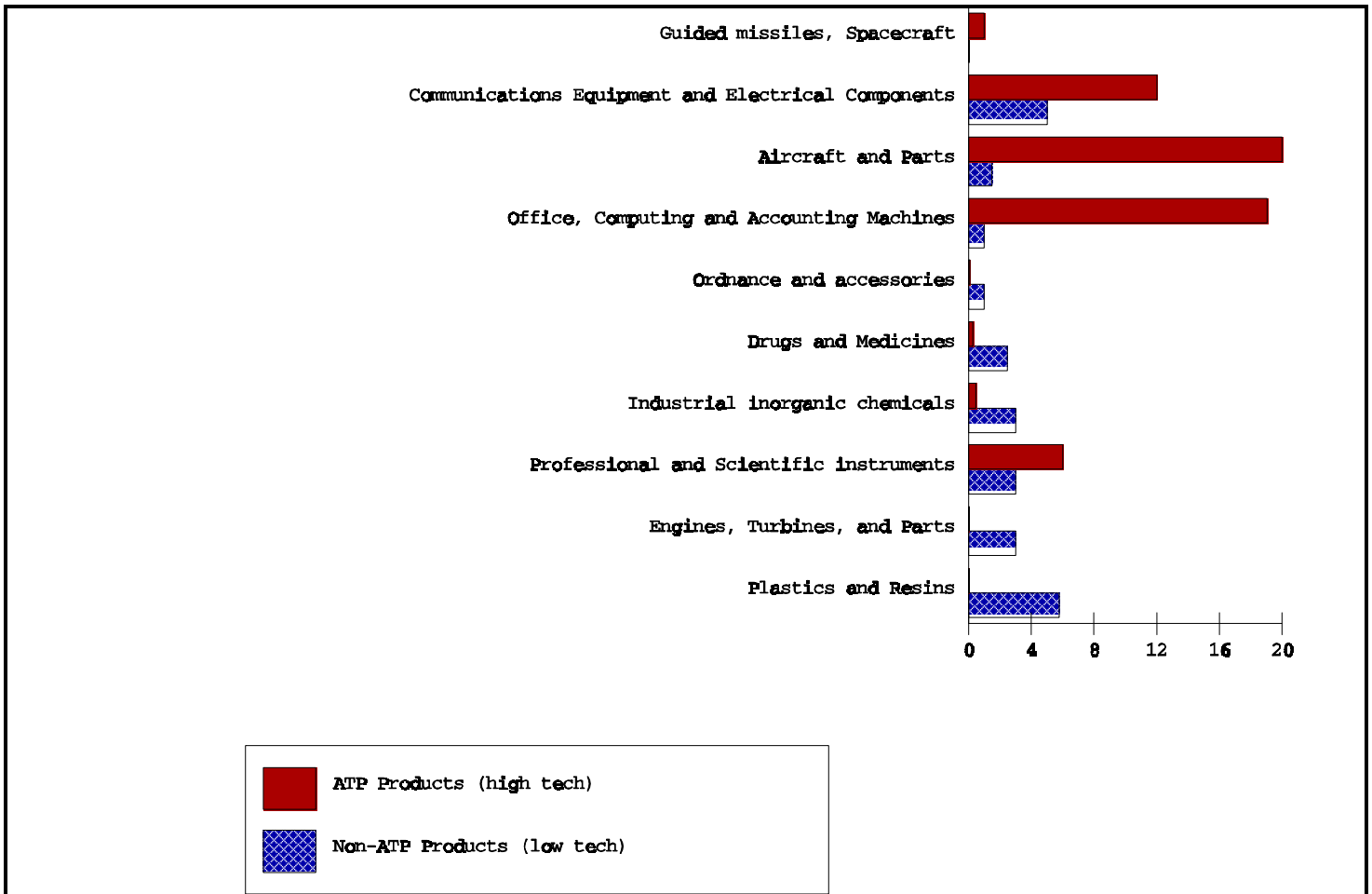


Figure 6

**Total 1987 Imports in DOC3 High Tech Industries
by ATP Low and High Tech Classification**

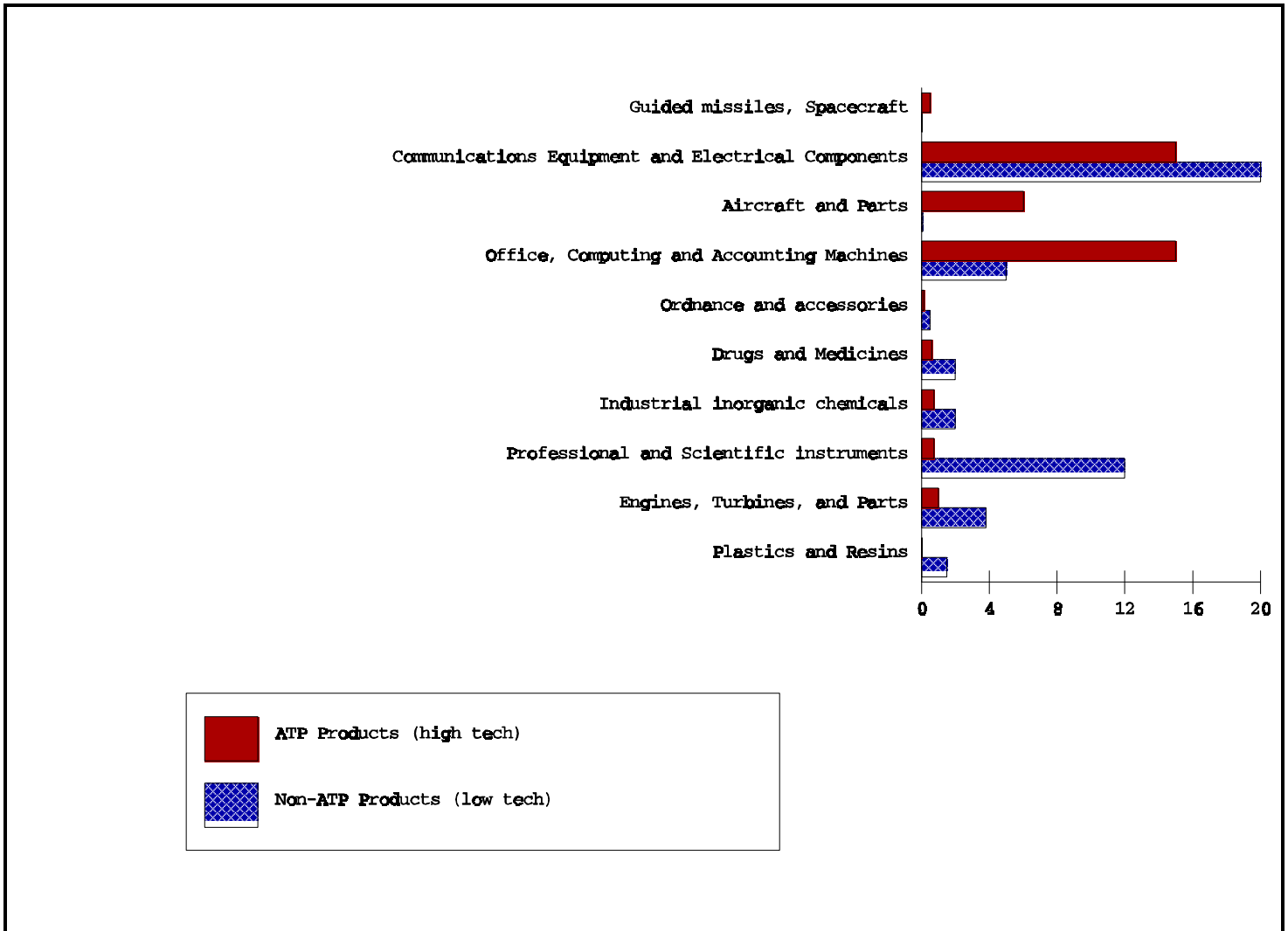


Figure 7

Inorganic Chemicals industry, the Professional and Scientific Instruments industry, and the Engines, Turbines, and Parts industry.

Turning to Figure 7 substantial differences in imports between the ATP and DOC3 definitions arise primarily in two industries, the Communications Equipment and Electronic Components industry and the Professional and Scientific Instruments industry. Both of these industries were of prime importance in the decrease in the trade surplus as measured by DOC3. The individual product data shows that there were significant increases in the importation of cheap foreign radios and tape players between 1982 and 1986 in the communications equipment and electronics components industry. These products were classified as low technology products by Census Bureau analysts but fell into the high technology grouping under the DOC3 definition. Similarly, in the Professional and Scientific Instruments industry, a major category of imports which were omitted from the ATP product list but included in DOC3, is watches. For the most part these imported watches are cheap, mass produced, electronic watches which are not on the leading edge of scientific instrumentation.

These observed differences in the classification of products across industries using the ATP and DOC3 definitions of high tech trade can be related directly to the earlier discussion regarding the weaknesses in the DOC3 approach. One major limitation with DOC3 was that it did not distinguish between

product and process development. Many industries with sophisticated process technology have high research and development expenditures and hence are included in the DOC3 measure; but because the product output is not advanced technology, they are not classified as high technology by Census Bureau analysts. Good examples of this are the Drugs and Medicines, Industrial Inorganic Chemicals, and Plastics and Resins industries. These industries are dominated by process rather than product development. They all show low proportions of total DOC3 imports and exports included in the Census ATP measure.

A second reason for differences between the industry R&D measure and the product based measure is the nature of the products produced versus the products traded. In some instances, an industry produces high tech products, and hence has high R&D expenditures, but exports few high tech products. This issue is greatest in areas of National Security interest where producers are strictly regulated in the products which they can export. The Ordnance and Accessories industry, and to some extent the Engines, Turbines, and Parts industry, have strong ties to products with military applications. In Ordnance and Accessories there were virtually no imports or exports of ATP products; and in Engines, Turbines, and Parts, ATP imports were well above exports. The DOC3 measure, being based on the R&D of the industry, fails to allow for regulations of this kind in constructing its measure of high technology trade because of the assumption that all products in the

industry have the same level of technology. In contrast the ATP measure which focuses directly on traded products enables careful consideration of the issue.

Advanced Technology Trade Balances

Having defined the advanced technology products, one can aggregate the level of trade across each of these products and obtain a measure of the aggregate imports, exports, and trade surplus in each ATP. Table 2 compares traded balances for each technology from 1982 to 1987.

For 1982, almost half of the \$24.6 billion trade surplus was due to a surplus in the trade of Aerospace products (\$11.9 billion). The United States

Table 2: Advanced Technology Trade Balances by Technology
(Millions of Dollars)

Technology	1982	1986	1987
Biotechnology	106	-54	-48
Life Sciences	2060	998	1129
Opto-Electronics	173	-515	-549
Computers and Telecommunications	6920	141	1037
Electronics	-1783	-2636	-3307
Computer Integrated Manufacturing	2114	1903	2240
Materials Design	1419	1717	2646
Aerospace	11908	12402	14914
Weapons	75	236	162
Nuclear	1554	1448	1201
	-----	-----	-----
	24547	15641	19425

also enjoyed a surplus of over \$6.9 billion in Computers and Telecommunication equipment. The only technological area where the United States was a net importer was in the area of Electronics, where there was a \$1.9 billion trade deficit.

By 1986, the trade surplus in advanced technology goods had fallen to \$15.6 billion although the Aerospace technology remained strong (\$12.4 billion). The United States suffered severely in the Computer and Telecommunications fields (where it just barely maintained a surplus) and in Electronics (where the deficit increased to \$2.6 billion). Small trade deficits were also observed in Biotechnology (\$5.4 million) and in Opto-Electronics (\$51.5 million) in 1986.

In 1987, the advanced technology trade rebounded to a surplus of \$19.4 billion. The increase in surplus was due, in part, to a resurgence in Aerospace, as well as increases in the trade surplus in Materials Design and Computer Integrated Manufacturing. The United States continued to have a significant trade surplus in the areas of Nuclear Technology, and in the Life Sciences (Medical) technologies. Small deficits remain in Biotechnology (\$48 million) and Opto-Electronics (\$54.9 million). The weakest technology was Electronics in which the deficit continued to expand (\$3.3 billion).

These results are consistent with the popular notion that the United States has been losing ground to foreign competitors in some of the high or advanced technology fields. They are not

consistent, however, with the general view that the United States is currently running a trade deficit in these areas; and moreover, there are clear signs that the United States continues to be a strong competitor in a number of important areas.

5. Conclusions

Not surprisingly, the basic conclusion of this paper is that the answer to the question of whether the United States has lost its comparative advantage in high technology goods depends on how you measure it. The paper refocuses attention on the question of what is meant by high or advanced technology goods. Do we mean goods produced in R&D intensive industries as is the basis for DOC3? Do we mean goods that embody new or leading edge technology as is done in constructing ATP? A third possibility could be goods which were produced using complicated or advanced technologies. As we have seen, these different approaches provide different measures. Most importantly, having arrived at a definition of high technology, the implementation of that definition is extremely important to the measure of trade in high technology goods. In constructing the ATP measure of international trade, the Census Bureau focuses on the technology embodied in the individual products and uses analysts familiar with the products to classify them as high tech or other. Until now policy makers have had to use aggregate industry statistics. This limited the range of policy options which could be evaluated. The Census Bureau's ATP

measure, and its underlying product level data, provide a wealth of detailed information about international competition at the product level. This level of detail should permit the development, implementation, and review of much more narrowly aimed policy actions than is possible with DOC3.

Finally our analysis of the advanced technology trade balance suggests that care should be taken before special programs to protect, promote, or stimulate high technology industries are undertaken. At the level of individual products, the high technology sectors of the economy are surprising healthy. However, we also find that for those products which are no longer on the leading edge of their technology, i.e. the low tech goods produced by the so-called high tech industries, there is significant international competition; but this is also true for many other industries as well. International competition appears to have increased in all sectors.

APPENDIX A

Advanced or High Technology Fields

The Census list of fields involving advanced or high technology is Biotechnology, Life Sciences (Medical), Opto-Electronics, Computer and Telecommunications, Electronics, Computer Integrated Manufacturing, Materials Design, Aerospace, Weapons, and Nuclear Technology. Within each of these fields, large numbers of products, processes, and breakthroughs can be considered to be "on the leading edge" of their field. Note also, that there is a great deal of overlap across these fields, as breakthroughs in one area typically have applications in other fields. More specific details including a list of products included and excluded from each technology field appear in Appendices B and C, available on request. Descriptions of each field follow.

Biotechnology:

Biotechnology covers recent developments in recombinant DNA research and genetic engineering. It is a new field, based on discoveries in the 1950's, and has only recently been applied to the production of goods. The most obvious examples of biotechnology products are drugs, enzymes, and other therapeutic items. The field has also yielded benefits in agricultural production. New genes have been developed which increase the immunity of plants to diseases and provide them resistance to various herbicides. New food products are being developed with this technology. In

addition, new applications of microorganisms for the production of drugs and other complex molecules holds promise for both new products and processes.

Life Sciences (Medical Science):

This field encompasses the application of scientific advances to medical sciences. Recent advances such as nuclear resonance imaging, echocardiographs, and total-patient monitoring systems are examples of products developed from recent technological advances in the field. Recent increase in the strength of materials and reductions in their weight have led to improved internally implemented fixation devices and prostheses. Novel chemistry coupled with new production techniques for the manufacture of drugs has lead to many new products for the control or eradication of diseases. There is considerable overlap between products containing life sciences and biotechnology technologies.

Opto-Electronics:

Opto-Electronics is generally defined as the expanded development and application of the laser. However, recent advances in the field also include photoelectric cells and diodes, photographic and other imaging equipment, and fiber-optic cables. Many of the products incorporating opto-electronics technology have military application and have trade restrictions placed on them. There is considerable overlap between products in this field and those containing advanced telecommunications and materials design technologies.

Computer and Telecommunications:

This area is intended to cover technological advances affecting both computer and telecommunications hardware products. The distinction between computer and telecommunications products is becoming more difficult to make and has resulted in these areas being combined. The primary advances in this field are on developing hardware which can more quickly process information.

The area of computer products includes new designs which expand the field of applications, the development of increased data storage capacity, and, the development of smaller, more efficient peripherals. Important breakthroughs are expected in the areas of artificial intelligence and parallel processing, and new developments in opto-electronics may lead to dramatic gains in computer processing by allowing computers to operate by using photons rather than electrons.

In the area of telecommunications, hardware has been developed which can simultaneously transmit audio and video signals. In addition, advances in digital signal processing are being incorporated in improved signals switching systems. Breakthroughs in materials design technology have made many of these new products possible.

Electronics:

The miniaturization of electronic components is the most important recent technological advance in the field of electronics. Extensive development occurring in the design of integrated

circuits has improved their performance and capacity and, at the same time, reduced the size of the circuits. Although most discussions focus on integrated circuits, the field has also made significant strides in the design of discrete semiconductors such as transistors and diodes, as well as new developments in surface mounting of electronic components such as capacitors and resistors. Again, there is considerable overlap with computer and telecommunications technology.

Computer Integrated Manufacturing:

This field includes developments in robotics and numerically-controlled (NC) machine tools. These products have had a significant impact on industrial automation. Robots and NC machine tools perform increasingly sophisticated operations through developments in sensory and visual capabilities of machines. With these breakthroughs the manufacturing processes have increased in flexibility and require less human intervention to operate and maintain production machinery. Robots and NC machine tools are also used in sterile work environments. Many of the new automation technologies are made possible because of breakthroughs in the application and development of faster and smaller computers. So again, there is some overlap in the classification of these technologies.

Materials Design:

Materials design includes the newest methods of production for products which already exist in the market as well as the

development of new products. Recent examples of the technological advancements include high temperature superconductors, advanced polymers which expand the areas of plastic use, and new ultra clear glass that allows fiber optic cable to be used for long distance communication. The materials in this category often facilitate the development and application of other advanced technologies. For example, advances in preparation and design of ultra-thin films make possible smaller and faster computer components and advanced polymers strengthened with carbon fibers are used in the latest weapons, aircraft, and products of nuclear technology.

Aerospace:

Technological developments in this field include advances which allow planes to fly further, faster, and higher, to use less fuel, and to have quieter engines. Many of the advances have been adapted to military applications, such as vertical take-off aircraft and aircraft which require shorter distances for takeoff and landings. Also covered by this area are aircraft and rocket propulsion systems developed to provide greater efficiency and power. Many of these developments are the result of breakthroughs in other fields particularly the materials design technologies.

Weapons:

This field covers all advanced methods used for the development, guidance, and control of weapons intended for national or personal protection and deterrence. Many of the developments in this area are the result of breakthroughs in computers and

telecommunication as well as aerospace technologies. Advanced detection of hostile forces and their nature are also included in the field. Products that extend the use of such weapons to unique situations, such as resistance to high temperatures, and high strength are also included. Here there is considerable overlap with materials design technology. Much of the advanced work in this field is secret and not directly known outside of the Department of Defense.

Nuclear Technology:

This field covers developments in nuclear power production and primary nuclear reactors. It includes newly designed reactor components which improve the safety and efficiency of nuclear power plants. It also includes developments in the creation and packaging of nuclear fuel, and the application of atom physics to medical and other areas of science.

APPENDIX B: ADVANCED TECHNOLOGY PRODUCTS LIST

IMPORT CODES BY TECHNOLOGY TYPE

BIOTECHNOLOGY

<u>ITEM CODE</u>	<u>SIC CODE</u>	<u>DESCRIPTION</u>
4124800	2833X	HORMONES ETC PROV IN APPEND
4125000	2833X	HORMONES SYNTH SUBS NSPF
4395095	2833X	OTHER DRUGS INCLUDING SYNTH

LIFE SCIENCES (MEDICAL) TECHNOLOGY

<u>ITEM CODE</u>	<u>SIC CODE</u>	<u>DESCRIPTION</u>
4119300	2833X	ANTI-INFECTIVE AGENTS ETC
4119400	2833X	ANTI-INFECTIVE AGENTS
4119600	2833X	ANTI-INFECTIVE AGENTS, NSPF
4120200	2833X	AUTONOMIC DRUGS IN APPENDIX
4120400	2833X	AUTONOMIC DRUGS, NSPF
4121000	2833X	CARDIOVASCULAR DRUGS, ETC
4121200	2833X	CARDIOVASCULAR DRUGS, NSPF
4395090	2833X	HORMONE SUBSTITUTES ETC
4945020	28199	COBALT-60
4945040	28199	RADIO ISOTOPES ETC NSPF
7087800	3832X	ELECTRON & PROTON MICROSCOPS
7091520	36932	ELECT-SURG THERAPEUT APPTUS
7091540	36932	ELECT-SURG APPTUS NSPF PTS
7091705	36932	PACEMAKERS
7091710	36932	DIATHERMY UNITS
7091715	36932	ULTRASONIC THERAPUT DEVICES
7091720	36932	ELEC-MED THERAP DEVICES NPSF
7091750	36932	ELECTROCARDIAGRAPHS
7091760	36932	ELECTROENCEPHALOGRAPHES
7091765	36932	ELEC-MED MONITOR SYSTEMS
7091770	36932	ELEC-MED APPARATUS, NSPF
7091790	36932	ELEC-MED APPARATUS PTS NSPF
7092700	38411	MEDICAL ETC INST A PART NSPF
7094000	38421	M-THERAPY A MASSAGE APP A PT
7095020	38424	HEARING AIDS
7095600	38421	INTERN ARTIF LIMB ET A PT OF
7096120	36931	X-RAY TUBES
7096140	36931	X-RAY TUBE PARTS
7096320	36931	MEDICAL ETC X-RAY EQIP & PT
7096340	36931	X-RAY APPARATUS NSPF & PTS

7096620	36931	MEDICAL ETC RADIO EQIP & PT
7096660	36931	RADIATION EQUIP NSPF & PTS
7103600	3829X	SEISMOGRAPH EXC FIELD A PTS
7118600	3832X	OPT INST A PTS CHEM ANAL ETC
7227220	38611	ELECTRNIC STROBOSCOPES NSPF
8516000	3829X	INSTR ETC NT MFGR USA NPROF

OPTO-ELECTRONICS

<u>ITEM CODE</u>	<u>SIC CODE</u>	<u>DESCRIPTION</u>
6765231	35799	LASER PRINTERS, PTS OF ADP MACH
6765431	35799	LASER PRINTERS, PTS OF ADP M
6850470	3662X	FLAT PANEL TELEVISION RECEIV
6853852	36514	AUDIO LASER DISC PLAYERS
6857020	36790	INDICATOR PANELS, LCD
6857320	36790	INDICATOR PANELS, LCD
6876621	36713	LIGHT-SENSING ELCTRNC TUBES
6877205	36749	SOLAR CELLS
6877210	36749	PHOTO DIODES & RECTIFIERS,EXC SOLAR
6877215	36749	PHOTO DIODES, NSPF
6878705	36790	SOLAR CELL PHOTOCELLS
6878710	36790	OTHER PHOTOCELLS
7080500	3832X	OPTICAL PRISMS NOT MOUNTED
7080700	3832X	OPTICAL MIRRORS NOT MOUNTED
7082340	3832X	OPTICAL LENSES NSPF MOUNTED
7082500	3832X	OPTICAL PRISMS MOUNTED
7083000	3832X	OPTICAL ELMNTS NSPF MOUNTED
7083200	3832X	OPTICAL ELM MTD CIV ACFT
7100400	38113	PHOTOGRAMMETRIC INSTR A PTS
7100800	3829X	OPTICAL INST A PTS NSPF
7244010	36520	LASER DISC SOUND RECRDINGS N

COMPUTER AND TELECOMMUNICATIONS TECHNOLOGY

<u>ITEM CODE</u>	<u>SIC CODE</u>	<u>DESCRIPTION</u>
6761500	35796	ACCOUNT,COMPUT,&OTHER DP MACH
6761510	35796	DATA PROCESS MACH W CRT, COL
6761520	35796	DATA PROC MACH W CRT EXC COL
6761530	35796	DATA PROC MACH WITHOUT CRT
6761600	35796	DATA PROCESS MACHS FOR A/C
6763030	35796	DATA PROCESSING MACHINES
6763041	35796	DISPLAY UNIT,ADP MCH,W/MONO
6763043	35796	DISPLAY UN, ADP MCH,W/COLOR
6763046	35796	DISPLAY UNIT, ADP MACH, OTHE
6763049	35796	KEYBOARD UNIT, ADP MACHINE
6763052	35796	FLOPPY DISC DRIVES, ADP MACH
6763055	35796	HARD DISC DRIVE, ADP MACHINE
6763058	35796	OTHER DISC DRIVES, ADP MACHI
6763060	35796	OTHER STORAGE UNITS, ADP MAC

6763062	35796	DAISY WHEEL PRINTERS, ADP MA
6763065	35796	DOT MATRIX PRINTER, ADP MACH
6763069	35796	LASER PRINTERS, ADP MACHINE
6763073	35796	OTHER PRINTERS, ADP MACHINE
6763077	35796	ADP MACHINES, NSPF
6763100	35796	OFFICE MACHS NSPF FOR A/C
6765215	35799	DISPLAY UNITS,PTS OF ADP MACH
6765217	35799	KEYBOARD UNITS,PTS OF ADP MACH
6765219	35799	FLOPPY DISC DR, PTS OF ADP MACH
6765221	35799	HARD DISC DR, PTS OF ADP MACH
6765223	35799	OTHER DOSC DR, PTS OF ADP MACH
6765225	35799	OTHER STORAGE UNTS,PTS OF ADP MACH
6765227	35799	DAISY WHEEL PRINT,PTS OF ADP MACH
6765229	35799	DOT MATRIX PRINT,PTS OF ADP MACH
6765230	35799	PARTS OF ADP MACHINES
6765233	35799	OTHER PRINTERS,PTS OF ADP MACH
6765235	35799	PTS,NSPF,OF ADP MACHINES
6765405	35799	DISPLAY UNITS, PTS OF ADP MA
6765417	35799	KEYBOARD UNITS, PTS OF ADP M
6765419	35799	FLOPPY DISC DR, PTS OF ADP M
6765421	35799	HARD DISC DR, PTS OF ADP MAC
6765423	35799	OTHER DISC DR, PTS OF ADP MA
6765425	35799	OTHER STORAGE, PTS OF ADP MA
6765427	35799	DAISY WHEEL PRINT, PTS OF AD
6765429	35799	DOT MATRIX PRINT, PTS OF ADP
6765433	35799	OTHER PRINTERS, PTS OF ADP M
6765435	35799	PARTS,NSPF,OF ADP MACHINES
6765455	35799	PTS OF ADP MACHINES, NSPF
6765675	35799	DISPLAY UNITS, PTS OF ADP MA
6845710	3661X	KEY SYSTEM SWITCHING APPARAT
6845720	3661X	OTHER TELEPHONIC SWITCHING E
6845730	3661X	TELEPHONIC SWITCHING EQP PAR
6845835	36628	OTHER TERMINAL EQUIPMENT
6845845	36628	OTHER TEL TERMINAL EQUIP PAR
6845940	3661X	TELEPHONIC APPAR & PTS NSPF
6846210	3661X	TELE SWITCH EQUIPMENT & PARTS
6846240	3661X	OTHER TELEPHONIC APPP & PARTS,NSPF
6846635	3661X	FACSIMILE MACHINES
6848000	37612	COMMUNICATIONS SATELLITES &
6849015	3662X	TV CAMERAS, COLOR, \$2000 & U
6849025	3662X	TV CAMERAS, COLOR, OVER \$2,0
6849040	3662X	TV CAMERAS EXCEPT COLOR
6849060	3662X	PARTS NSPF, FOR TV CAMERAS
6850830	36514	VIDOE PLAYERS,NSPF
6851020	3662X	TELEVISION CAMERAS,COLOR
6851040	3662X	TELEVISION CAMERAS,EXCEPT COLOR
6851060	3662X	PARTS,NSPF FOR TELEVISION CAMERAS
6851674	3662X	RAD REC EX RAD PAG 30MHZ-400
6851676	3662X	RAD REC EX RAD PAG 400-1,000

6851685	3662X	RAD REC,NSPF,OVER 1000 MHZ
6851930	36514	VIDEO PLAYERS,EXC. MAG TAPE PLAYERS
6852440	3662X	TRANS OTH THAN CB,HAND HELD
6852441	3662X	MARINE VHF-FM RADIO TRANSC
6852443	3662X	TRANSCEIVERS NSPF
6852475	3662X	RADIO REC,NSPF,FREQ. 30< MHZ <400
6852480	3662X	RADIO REC,NSPF,FREQ. 400< MHZ <1000
6852485	3662X	RADIO REC,NSPF,FREQ. >1000 MHZ
6852500	36612	CORDLESS HANDSET TELEPHONES
6852810	3662X	PORT RADIO TELEPHONES FOR PC
6852820	3662X	TRANS APARATUS INC REC APA,N
6852940	3662X	TRANSCEIVERS,OTHER THAN CB,HAND-HLD
6852941	3662X	MARINE VHF-FM RADIO TRANSCEIVERS
6852943	3662X	TRANSCEIVERS,EXC.CB, EXC.HAND-HLD
6852966	3662X	CORDLESS HANDSET TELEPHONES
6852970	3662X	RADIO TRANSMITTERS
6852976	3662X	RADIO APPARATUS AND PARTS, NSPF
6853000	3662X	TRANSMITTERS, RADIO
6853100	3662X	RADIO APPAR,NSPF,FOR CIVIL AIRCRAFT
6853400	36612	RADIO APPAR NSPF, CIVIL A/C
6854052	36514	TAPE RCRDRS,VID,CLR EX AUD
6854055	36514	TAPE RCRDRS VIDEO COL NSPF
6854058	36622	TPE RCDRS VID EX CLR OR AUD
6854100	36621	RECORDERS FOR CIVIL AIRCRFT
6856021	3662X	RADAR APPARAT,SHIPS EXC PTS
6856025	3662X	RADAR APPARATUS,NSPF
6856035	3662X	PARTS,NSPF FOR RADAR APPAR
6856041	3662X	RADIO NAV AIDS, RECEPT ONLY
6856050	3662X	RADIO NAV AIDS, NSPF EX PTS
6856055	3662X	PTS OF RADIO NAV AID APPAR
6856060	3662X	RADIO REMOTE CONT APPAR
6856100	3662X	NAV AIDS & PT CIVIL A/C
7223200	38613	MOTION PICT CAMERA PTS NSPF

ELECTRONICS TECHNOLOGY

<u>ITEM CODE</u>	<u>SIC CODE</u>	<u>DESCRIPTION</u>
6859056	36790	PCB, PLSTC GLSS, 3 LYRS AND
6876619	36713	MCRWV TBS EX KLYSTN A MGTRN
6877025	36742	TRANSISTOR-LESS THAN 1 WATT
6877027	36742	TRANSISTORS-1 WATT OR OVER
6877220	36749	ZENER DIODES
6877230	36749	DIODES AND RECTIFRS MICROWV
6877240	36749	THYRISTORS
6877250	36749	DIODES + RECT-.5 AMP + LESS
6877255	36749	DIODES AND RECTIFIERS, OTHR
6877410	36741	MONOLITHIC INT CIR, LINEAR
6877415	36741	BIPOLAR MEMORIES
6877420	36741	TTL BIPOLAR IC'S

6877425	36741	ECL BIPOLAR IC'S
6877430	36741	BIPOLAR IC'S, NES
6877435	36741	MOS RAMS NOT OVER 9,000 BITS
6877437	36741	MOS RAMS OV 9000 N/O 20000 B
6877439	36741	MOS RAMS OV 20000 N/O 40000
6877440	36741	MOS RAM, <9000 BITS
6877441	36741	MOS RAMS OV 40000 N/O 80000
6877443	36741	MOS RAMS OV 80000 N/O 300000
6877444	36741	MOS RAMS, OVER 300,000 BITS
6877445	36741	MOS MEMORIES, NES
6877450	36741	MOS MICROPROCESSOR
6877455	36741	MOS IC'S, NSPF
6877460	36741	MONOLTH IC'S, NES
6877700	36741	INTEGRATED CIRCUITS, EXCL MONOLITHIC
6877790	36741	INT CIR, OTHER THAN MONOLTC
6877900	36790	MOUNTED PIEZO-ELECT CRYSTAL
6878100	36749	SEMICONDUCTRS, NES
6878520	36749	PTS OF SEMICONDUCTORS OTHER
6878700	36790	SPF, OF ELECTR. CRYSTAL COMPON, NSPFR
6878780	36790	OTHER ELECTRONIC CRYSTAL COMP, N
6878900	36749	ANY ARTICLE IN

687.58, APTA

COMPUTER INTEGRATED MANUFACTURING TECHNOLOGY

<u>ITEM CODE</u>	<u>SIC CODE</u>	<u>DESCRIPTION</u>
6641005	35318	INDUST ROBOTS, LIFT & HANDLING
6743204	35418	MACHINING CTR, VERT, Y-AXIS, <=26 IN
6743206	35418	MACHINING CTR, VERT, Y-AXIS OV 26 IN
6743209	35418	MACH CTR, HORIZ, W/AUTO TOOL CHGR
6743211	35418	MACH CTR W/INDEX TURRETS
6743212	35411	SGL & MULTI STATN TRANSFER MACH
6743217	35411	COMB BOR, DRILL, MILL MACH, W/NC, HORIZ
6743218	35411	COMB BOR, DRILL, MILL MACH, NC, EX TABL
6743219	35411	COMB BOR, DRILL, MACH, VERT, NC, NEW, NSP
6743228	35412	DRILL MACH, METAL, NEW, NC, \$2500 & OVER
6743264	35416	MILL MACH, NEW, NC, \$2500 & OVER
6743276	35411	VERT BOR MACH & TURRET LATH, NC, >\$2500
6743281	35411	BOR MACH, VERT TUR LATH, NC, NEW, >2500
6743328	35412	DRILLING MACH, N/C
6743404	35418	MACH CTR, VERT, Y-AXIS NOT OV 26 IN.
6743406	35418	MACH CTR, VERT, Y-AXIS OV 26 IN.
6743409	35418	MACH CTR, HORIZ, WITH AUTO TOOL CHNGR
6743411	35418	MACH CTR WITH INDEX TURRETS
6743412	35411	SINGLE & MULTI STA TRANSFER MACH
6743413	35411	WAY-TYPE BOR, DRILL & MILL MACH
6743417	35411	COMB BOR, DRILL, MILL MACH, N/C
6743418	35411	COMB BOR, DRILL MCH, N/C, HORIZ
6743419	35411	COMB. BORE, DRILL, MILL, MACH. NC, NSPF

6743464	35416	MILLING MACH,N/C
6743476	35411	VERT BOR MCH & TURRET LATHES, N/C
6743481	35411	BOR MCH EXC VERT, N/C
6743504	35415	MULTI-SPINDLE LATHES, HORIZ, N/C
6743505	35415	MULTI-SPINDLE LATHES, HORIZ,NSPF NC
6743506	35415	HOR LATHE,SINGLE SPIN,UN 25 HP,N/C
6743507	35415	HOR LATH,METAL-CUT,NC,<25HP,>\$2500
6743508	35415	HOR LATHE,SGL SPIN,25-50 HP,N/C
6743509	35415	HOR LATH,METAL-CUT,NC,25-50HP,>2500
6743510	35415	HOR LATHE,SGL SPIN,OV 50 HP,N/C
6743511	35415	HOR LATH,METAL,NC,OVER 50HP,>\$2500
6743519	35415	LATHE,EXC HORIZONTAL, N/C
6743521	35415	VERT LATH,METAL-CUT,NC,NEW,>\$2500
6743528	35414	SHARPEN MCH,TOOL & CUTTER GRIND,N/C
6743539	35414	GRIND MCH,FLAT SUR,AXIS .01MM, N/C
6743541	35414	RECIP TABLE TYPE FLAT SURF GRIND
6743543	35414	GRIND MACH(FLAT) .01 MM
6743546	35418	GRIND MACH,AXIS .01MM, N/C
6743554	35414	GRIND MACH,EXTERNAL,CYLINDRICAL
6743556	35414	GRIND MACH,INTERNAL,CYLINDRICAL
6743558	35418	GRIND MACH(AXIS .01MM) NSPF
6743562	35418	TRAVELING WIRE MACH
6743564	35418	EDM'S, EXCEPT TRAVELING WIRE TYPE
6743567	35418	MACH TOOL,CHIPLESS, N/C
6743571	35418	MACH TOOL, CHIPLESS,NSPF
6743576	35418	METAL CUT MACH TOOL,NSPF, N/C
6743584	35421	PUNCHING & SHEARING MACH, N/C
6743588	35421	BENDING & FORMING MACH, N/C
6743593	35423	METAL FORM MACH TOOL,NSPF, N/C
6745310	35419	NUMERICAL CONTROLS FOR MACH. TOOLS
6785086	35699	INDUSTRIAL ROBOTS, NSPF
6785087	35699	PARTS FOR INDUST ROBOTS,NSPF
6839005	36233	INDUSTRIAL ROBOTS, WELDING

MATERIALS DESIGN TECHNOLOGY

<u>ITEM CODE</u>	<u>SIC CODE</u>	<u>DESCRIPTION</u>
4225220	28199	URANIUM FLUORIDES
4225240	28199	URANIUM COMPOUNDS, NSPF
6877022	36742	CHIPS,DICE & WAFERS FOR TRN
6877202	36749	CHIP, DICE, WFR, FOR DIO & R
6877405	36790	CHIPS, DICE & WFRS FR MON IC
6877705	36741	CHIPS, DICE & WFR FOR IC, NS
6878505	36749	WAFERS W/O CIRCUITS OR DEVIC
6878510	36790	CHIPS,DICE,WAFERS, FOR SEMICONDUCTR
7079010	3832X	OPTICAL FIBER, COMM TRANS,CA
7079020	2832X	OPTICAL FIBER,COMMU TRANS OT

7079050	3832X	OPTICAL FIBER OTHER
7080300	3832X	OPTICAL LENSES NSPF UNMNTD
7081000	3832X	OPTICAL ELMNTS NSPF UNMNTD

AEROSPACE TECHNOLOGY

<u>ITEM CODE</u>	<u>SIC CODE</u>	<u>DESCRIPTION</u>
6605920	37241	A/C TUB-JT A GAS TRB ENG NEW
6605940	37241	A/C NT-PISTON TYPE ENG NSPF
6606100	37241	NON-PST ENG CERT F CIV A/C
6607160	35199	PTS O NON-PSTN AIRCRAFT ENG
6607300	35199	PTS OF NON-PIST CIV A/C ENG
6784800	35699	FLIGHT SIMULATING MACH
6944125	37214	HELICOPTER, NON-MILITARY, NEW
6944143	37212	AIRPL N-MIL NEW UN 10000 LB
6944146	37212	AIRPLANE, NON-MIL MULTI ENG
6944148	37212	AIRPLANE, NON-MIL MULTI ENG
6944150	37212	TURBO JET&FAN A/C N/M MUL-EN
6944155	37212	AIRPLANES, NON-MIL, MULTI, 10-33000LBS
6944160	37212	AIRPLANES, NONMILITARY, MULT, N
6944165	37212	AIRPLANES, NON-MILIT, NSPF
6945000	37612	SPACECRAFT
6946100	37281	AIRCRAFT PTS NONMIL, NSPF
6946200	37281	PTS FOR USE IN CIVIL A/C
6946600	37221	AIRPLANES, MILITARY
6946700	37281	AIRCRAFT PTS MILITARY NSPF
7081200	3832X	OPTICAL ELM UNMTD CIV ACFT
7096640	36931	RAD CONTROL ETC EQUIP & PTS
7103000	36625	AUTOMATIC PILOTS AND PARTS
7103100	36625	AUTO PILOTS/PTS CVL AIRCRFT
7104600	3829X	NAVIGATIONAL INSTR A PARTS
7104700	3829X	NAV. INSTR/PTS CVL AIRCRAFT
7124910	38113	ELEC SURVEY ETC INST & PTS
8370000	37612	MATL TO BE LAUNCH INTO SPACE

WEAPONS TECHNOLOGY

<u>ITEM CODE</u>	<u>SIC CODE</u>	<u>DESCRIPTION</u>
7082700	3832X	OPTICAL MIRRORS MOUNTED
7082900	3832X	OPTICAL ELEMENTS, NSPF MOUNTED
7086100	3832X	TELESCOPES FOR INFRARED LGHT
7308500	34841	RIFLES MISSILE EJECT A PTS
7308600	34841	PISTOLS ETC MISSILE A PTS
7309300	34831	MUNITIONS, AMMUNITION NSPF, & PARTS
7309900	34831	MUNITIONS & PTS, AMMO NSPF

NUCLEAR TECHNOLOGY

<u>ITEM CODE</u>	<u>SIC CODE</u>	<u>DESCRIPTION</u>
8541000	36931	APP USING RADIOACTIVE SUBS.

ADVANCED TECHNOLOGY EXPORTS BY TECHNOLOGY TYPE

BIOTECHNOLOGY

<u>ITEM CODE</u>	<u>SIC CODE</u>	<u>DESCRIPTION</u>
4381070	28311	BLOOD, DERIVATIVES HUMAN USE
4381090	28350	BLOOD, DERIVS VETERINARY USE
4382100	28314	ALLERGENIC PREPARATIONS BULK
4382500	28312	VACCINES, TOXOIDS, ANTIGENS
4382900	28314	BIOLOGICAL PRODUCTS, NSPF
4383100	28315	VACCINES, TOXOIDS VETERINARY
4383900	28315	BIOLOGICAL PRODUCTS, NSPF
4923520	283XX	POLYSACCHARIDES, NSPF

LIFE SCIENCES (MEDICAL) TECHNOLOGY

<u>ITEM CODE</u>	<u>SIC CODE</u>	<u>DESCRIPTION</u>
4382300	28313	BLOOD DERIVS FOR PASSIVE IMM
4421900	28348	ANTIBIO-SULFONAMID COMP NSPF
4422200	28341	ANTINEOPLAS IMMUNOSUPPR PREP
4925600	28341	DRUGS, NSPF, CONT RAD ISO ET
4925840	28199	NON-RDIOACTV ISOTOPS A CMPDS
7087400	3832X	COMPOUND OPTICAL MICROSCOPES
7087800	3832X	ELECTRON & SIM MICRO&DIFF AP
7088100	3832X	FRAMES, MTGS, & PTS OF MICRO
7090200	38411	OPTICAL INST ETC, MED, & PTS
7090600	38411	MED ANESTHETC INST ETC & PTS
7091605	36932	PACEMAKERS
7091610	36932	DIATHERMY UNITS
7091615	36932	ULTRASONIC THERAPEUTIC DEVCE
7091620	36932	ELEC-MED THERAPTC DEVCE NSPF
7091655	36932	ELECTROCARDIOGRAPHS
7091660	36932	ELECTROENCEPHALOGRAPHS
7091665	36932	PATIENT MONITORING SYSTEMS
7091670	36932	ELECTRO-MEDICAL APPARAT NSPF
7091690	36932	PTS NSPF ELEC-MED & THER APP
7094540	38421	ARTIFICIAL RESPIRATION, NSPF
7095700	38421	ORTHOPEDIC APPLNCES ETC NSPF
7096120	36931	X-RAY TUBES
7096140	36931	PARTS FOR X-RAY TUBES
7096320	36931	MED/DEN X-RAY EQP & PTS NSPF
7096340	36931	X-RAY EQP & PTS EXC MED/DEN

7096620	36931	RADIATN APPARA & PTS MED/DEN
7096640	36931	RADIATN MEASMNT EQ ETC & PTS
7101820	3662X	METEORLGCL & HYDRO INST ELEC
7101840	3662X	METEORLGCL & HYDRO INST NELEC
7102820	3662X	GEOPHYSICAL INST & PTS, ELEC
7118710	3832X	CHEM ANALYSIS EQ ELEC & PTS
7118724	3832X	SPECTROPHOTOMETERS, NONELECT
7118728	3832X	SPECTROMTRC INST N/ELEC NSPF
7118729	3832X	PTS NSPF NELEC SPECTRMT INST
7118732	3832X	GAS CHROMATOGRAPHS, NONELECT
7118734	3832X	LIQUID CHROMATOGRAPHS NELEC
7118736	3832X	CHROMATGRPHC NELEC INST NSPF
7118738	3832X	PTS NSPF CHRMTGRP NELEC INST
7118741	3832X	ELECTROCHEMICAL INSTRUMENTS
7118743	3832X	THERMAL ANALYSIS INST NELECT
7118745	3832X	NUCLEAR MAGNT RESONANCE INST
7118746	3832X	MASS SPECTROSCOPES, NONELECT
7118747	3832X	CHEM ANALYS EQUIP NELEC NSPF
7118749	3832X	PTS NSPF CHEM ANAL EQUIP
7118750	38292	PHYSICAL ANAL EQ ELEC & PTS
7118760	38292	PHYSICAL ANAL EQ NELEC & PTS
7119232	38293	STROBOSCOPES, ELECTRICAL
7119237	38293	STROBOSCOPES, NONELECTRICAL

OPTO-ELECTRONICS TECHNOLOGY

<u>ITEM CODE</u>	<u>SIC CODE</u>	<u>DESCRIPTION</u>
6876021	36713	LIGHT-SENSING ELECTRNIC TUBE
6876054	36749	SOLAR CELL MODULES OR PANELS
6876055	36749	SOLAR CELLS
6876056	36749	SOLAR CELLS
6876057	36749	PHOTOSENSITIVE DIODES, NSPF
7089400	3832X	OPTICAL APPL INST ETC & PTS
7108900	3832X	OPTICAL MEAS CHECK INST NSPF
7244575	38290	COMPUTER DISCS, UNRECORDED

COMPUTER AND TELECOMMUNICATIONS TECHNOLOGY

<u>ITEM CODE</u>	<u>SIC CODE</u>	<u>DESCRIPTION</u>
6762600	35731	ANALOG ELECTRONIC COMPT ETC
6762700	35731	DIGITAL ELECTRONIC COMPT ETC
6762820	35731	DIGITAL CENTRAL PROCESS ETC
6762825	35732	RANDOM ACESS AUX STOR UNITS
6762830	35732	SERIAL ACESS AUX STOR UNITS
6762835	35743	TERMINALS, P.O.S. UNITS
6762840	35732	TERMINALS, NSPF, ADP
6762845	35732	CARD KEY & MAGN MED ENT ETC
6762850	35732	OPTICAL SCANNERS ETC, FOR ADP
6762855	35732	PRINTERS FOR A.D.P.

6762860	35732	COMB INPUT/OUTPUT UNITS FOR ADP MAC
6762862	35732	DIGITIZERS
6762864	35732	INPUT OUTPUT & COMBIN ETC
6762870	35732	COMMUN & PERIPHERAL EQ ETC
6765560	35734	PARTS OF ADP MACHINES A UNIT
6846210	36611	TELEPHN SWICHBD EQ & PT NSPF
6846240	36612	TELEPHONE APPARAT/PARTS NSPF
6846442	36612	MODEMS
6851050	3662X	TELEVISION CAMERAS
6851060	36622	PRTS NSPF TELEVISION CAMERAS
6852605	3662X	RADIO RECEIVER FOR CIVIL A/C
6852642	3662X	RADIO RECEIVERS 30-400 MHZ
6852650	3662X	RADIO RCVR NSPF 401-1000 MHZ
6852660	3662X	RADIO RCVRS NSPF OV 1000 MHZ
6852701	3662X	RADIO APPRTS NSPF F CIVIL AC
6852710	3662X	RADIO TRNSCVRS NSPF HANDHELD
6852720	3662X	RAD TRNSCVRS NSPF 31-400 MHZ
6852725	3662X	RAD TRNSCVRS NSPF OV 400 MHZ
6852735	3662X	RADIO ANTENNA SATELLITE COMM
6852750	3662X	RADIO TRANSMITTRS 31-400 MHZ
6852755	3662X	RADIO TRNSMTTRS 401-1000 MHZ
6852760	3662X	RADIO TRANSMTTRS OV 1000 MHZ
6852765	3662X	RADIO EQUIP NSPF & PTS NSPF
6854050	36514	TAPE RECORDERS, VIDEO, COLOR
6854058	3662X	TAPE RECORDERS, VIDEO, NSPF
6856015	3662X	RADAR DESIGNED FOR CIVIL A/C
6856021	3662X	RADAR APPARAT, SHIPS EXC PTS
6856026	3662X	RADAR EX BOAT, SHIP, CIVIL A/C
6856035	3662X	PARTS, NSPF, RADAR APPARATUS
6856043	3662X	RADIO NAV AIDS FOR CIVIL A/C
6856045	3662X	RADIO NAV AIDS, RECEPTION
6856052	3662X	RADIO NAVIGATION AIDS, NSPF
6856055	3662X	PARTS NSPF RAD NAV AID APPAR
6856060	3662X	RAD REMOTE CONTRL APPAR & PT
7102840	3662X	GEOPHYSICL INST & PTS, NELEC

ELECTRONICS TECHNOLOGY

<u>ITEM CODE</u>	<u>SIC CODE</u>	<u>DESCRIPTION</u>
6876019	36713	ELECTRNC MICROWVE TUBES NSPF
6876025	36742	SIGNAL TRANSISTORS
6876027	36742	POWER TRANSISTORS
6876031	36741	IC'S MONOLTHC LINEAR(ANALOG)
6876033	36741	MEMORY INTIGRATE CRTS, MONO
6876035	36741	IC'S MONOLITHIC BIPOLAR TTL
6876038	36741	IC'S MONLTHC BIPOLAR CML-ECL
6876040	36741	IC'S MONLTHC BIPOLAR NSPF
6876041	36741	RAM IC'S MONLTC MOS UN 9000B
6876042	36741	RAM IC'S MONLT MOS OV 9000 B

6876044	36741	MEMORY IC'S MONO MOS X RAM'S
6876045	36741	MICROPROCESSOR IC'S MONO MOS
6876047	36741	IC'S, MONLTHC, MOS, NSPF
6876048	36741	IC'S MONO, EXC BIPOLAR & MOS
6876053	36741	INTEGRATED CIRCUITS, HYBRID
6876059	36743	ZENER DIODES
6876061	36743	DIODES & RECTIFRS, MICROWAVE
6876062	36749	THYRISTORS
6876066	36743	SIGNAL DIODES, GENRL PURPOSE
6876067	36743	POWER DIODES/RECT GENRL PURP
6876068	36790	MTD PIEZOELECTRIC CRYSTALS
6876070	36749	SEMICONDUCTOR DEVICES, NSPF
6876089	36749	PTS OF ELECTRON CRYSTAL COMP
6884010	38252	SIGNAL GENERATORS
6884020	3662X	PROTON & ELECT ACCEL & PTS
7118001	38111	CONTROL INST & APPARATUS ETC
7118002	38220	CONTRL INST HEAT SY ETC &

COMPUTER INTEGRATED MANUFACTURING TECHNOLOGY

<u>ITEM CODE</u>	<u>SIC CODE</u>	<u>DESCRIPTION</u>
6743204	35418	MACH CTR,VERT,Y-AXIS NOT OV 26 IN
6743206	35418	MACH CTR,VERT,Y-AXIS OV 26 IN.
6743209	35418	MACH CTR,HORZ,W/O INDEX TURRET
6743211	35418	MACH CTR,HORZ,WITH INDEX TURRET
6743216	35418	SINGLE & MULTI STA TRANSFER MACH
6743225	35418	WAY TYPE MACHINES
6743245	35411	BOR,DRILL,MILL MCH,N/C,HORZ,TABLE
6743246	35411	BOR,DRILL,MILL MCH,N/C,HORZ,NSPF
6743247	35411	BORE,DRILL,MILL MACH,N/C,VERT
6743254	35412	DRILLING MACH,N/C
6743264	35416	MILLING MACH,N/C
6743276	35411	VERT BOR MACH & TURRET LATHES,N/C
6743281	35411	BORING MACHINES, N/C
6743503	35415	HORZ LATHES,MULTI SPINDLE,N/C
6743504	35415	HORIZ LATH,METAL,NEW,W/NC,<25HP
6743505	35415	HORZ LATHES,SINGLE SPIN,UN 25HP,N/C
6743506	35415	HORIZ LATH,METAL,NEW,NC,25-50HP
6743507	35415	HORZ LATHES,SINGLE SPIN,25-50HP,N/C
6743508	35415	HORIZ LATH,METAL,NEW,W/NC,>50HP
6743509	35415	HORZ LATHES,SINGLE SPIN,OV 50HP,N/C
6743519	35415	VERT LATH,NC,NEW,METAL,>\$2500
6743521	35415	VERT LATHES,MULTI SPINDLE, N/C
6743523	35415	VERT LATHES,SINGLE SPINDLE, N/C
6743528	35414	DEBURRING,GRINDING ETC., N/C
6743533	35414	FLAT SURF PRECISION GRIND MCH,TABLE
6743538	35414	FLAT SURF PRECISION GRIND MCH,NSPF
6743541	35414	PRECISION GRIND,EXTERNAL,CYLINDRICAL

6743542	35414	PRECISION GRIND MCH, INTERNAL, CYLND
6743544	35414	PRECISION GRIND MACH, NSPF
6743547	35418	TRAVELING WIRE MACH
6743549	35418	ELECTRIC DISCHARGE MACH, NSPF
6743551	35418	SPARK EROSION MACH, N/C
6743553	35418	CHIPLESS SPARK EROSION MACH
6743559	35418	METAL REMOVING MACH, NSPF, N/C
6743571	35421	SHEARING & PUNCHING MACH, N/C
6743578	35421	BENDING & FORMING MACH, N/C
6785065	35699	SEMICONDUCTOR PRODUCTION MACH
7118006	38230	TEMP INSTMT INDUST PROC ELEC
7118010	38293	TEMP INSTMT EX IND PROC ELEC
7118014	38230	TEMP INSTMT INDUS PROC NELEC
7118018	38293	TEMP INSTM EX IND PROC NELEC
7118022	38230	VAC ETC INSTMT IND PROC ELEC
7118026	38293	VAC ETC INSTMTS, ELEC, NSPF
7118030	38230	DIAL PRESS GAGS INDUS PR ETC
7118034	38230	VAC INST IND PROC NELEC NSPF
7118046	38230	LIQUID CNTRL INST ELC IND PR
7118050	38293	LIQ CNTRL INST ELC EX IND PR
7118054	38230	LIQD CNTRL INST NELEC IND PR
7118058	38293	LIQ CTL INST NELEC EX IND PR
7118066	38230	DISPLY INST ETC, PNEUMTC SIG
7118070	38230	GAS VAR INST, ELEC, IND PROC
7118075	38230	GAS VAR INST, NELEC IND PROC
7118080	38293	GAS VAR INST ELEC EX IND PRC
7118090	38293	GAS VAR INST NELEC EX IND PR
7119220	38243	REV & PROD COUNTRS ETC ELECT
7119240	38293	PARTS NSPF, REV COUNTERS ETC
7125005	38252	ELEC TEST EQ INTNL COMBUS EN
7125020	38252	VOLT CURRENT RESIST TEST EQP
7125025	38252	FREQ TEST APPARATUS & PARTS
7125032	38252	OSCILLSCPES OSCILLGRPH & PTS
7125035	38252	WAVE FORM MEAS EQ & PTS NSPF
7125040	38252	COMBNTN ELEC CHARC MEAS EQP
7125045	38252	EQUIP NSPF TEST ELEC CIRCUIT

MATERIALS DESIGN TECHNOLOGY

<u>ITEM CODE</u>	<u>SIC CODE</u>	<u>DESCRIPTION</u>
6876087	36749	CHPS, DICE, WAF, SEMICON PTS
7112420	38292	ARTCLE STRNGTH TEST EQP ELEC
7112440	38293	ARTCLE STRNGTH TEST EQ NELEC
7244585	36790	MAGN MEDIA NSPF, UNRECORDED

AEROSPACE TECHNOLOGY

<u>ITEM CODE</u>	<u>SIC CODE</u>	<u>DESCRIPTION</u>
6604922	37242	A/C JET & GAS TURB MIL NEW
6604925	92000	JET & GAS TURBINES, MILITARY
6604930	37242	A/C JET & GAS TUR NONMIL NEW
6604935	92000	JET & GAS TURBINES, NONMILITARY
6604970	37645	NON-DIS ENG & TURB MIS & RKT
6605452	37244	PTS OF A/C ENG FOR CIVIL A/C
6605454	37244	PTS OF AIRCRAFT ENGINES
6605480	37648	PTS OF ROCKET & MISSILE ENG
6785007	3662X	FLIGHT SIMULATORS AND PARTS
6944009	37214	MILITARY AIRPLANES USED/RBLT
6944011	37211	ROTARY WING AIRCRFT MIL, NEW
6944013	37211	MILITARY AIRCRAFT, BOMBERS
6944015	37211	FIGHTERS, NEW, MILITARY
6944017	37211	CARGO TRANSPORTS NEW MILITRY
6944019	37211	AIR & SPACE CRFT MIL NW NSPF
6944032	37213	ROTRY WG A/C NMIL UN 2200 LB
6944034	37213	ROTARY WG A/C NMIL 2200 & OV
6944043	37212	AIRPLANE NMIL SINGLE ENG NEW
6944046	37212	ARPLNES MULT ENG UN 4400 LBS
6944048	37213	ARPLNES MULT ENG 4400-9999
6944050	37213	ARPLNES MULT ENG 10000-33000
6944062	37213	ARPLNES PASS TRNSPT OV 33000
6944065	37213	ARPLNES CRGO TRNSPT OV 33000
6944068	37213	AIRPLANES NSPF OV 33000 LBS
6945120	37211	AIRCRAFT & SPCECRFT NSPF, MIL
6945140	37212	AIRCRAFT & SPCECRFT NSPF NMIL
6946503	37285	PROPELLERS & PTS, CIVIL A/C
6946505	37281	LANDING GEAR FOR CIVIL A/C
6946507	37281	PARTS NSPF FOR CIVIL AIRCRFT
6946513	37285	PROPELLERS & PTS A/C CIVIL
6946515	37281	LANDING GEAR, AIRCRFT, NSPF
6946517	37281	PARTS NSPF, AIRCRFT EX CIVIL
7085450	3832X	TELESCOPES NSPF & PTS NSPF
7101010	38111	OPTICAL INST, CVL AIRCFT ETC
7101012	38111	AUTO PILOTS, CVL AIRCFT ETC
7101014	38111	GYROSCOPIC COMPASSES, ETC
7101050	38111	NAVIGATIONAL INST ELEC, NSPF
7118062	38230	DISPLAY INST ETC, ELECT SIGL
7118722	3832X	SPECTROSCOPES, NONELECTRIC
7118726	3832X	PHOTOMETERS, NONELECTRIC
7308250	34892	MISSILE ETC LAUNCHERS
7308260	34892	MISSILE ETC LAUNCHER PARTS
7309510	37611	GUIDED MISSILES
7309530	37692	GUIDED MISSILE PARTS

WEAPONS TECHNOLOGY

<u>ITEM CODE</u>	<u>SIC CODE</u>	<u>DESCRIPTION</u>
7085440	3832X	TELESCPS NSPF, USE W/INER LT
7089200	3832X	FREARM/FRE CONT EQ & PT NSPF
7101020	3662X	DEPTH SOUNDING APPARAT & PTS

NUCLEAR TECHNOLOGY

<u>ITEM CODE</u>	<u>SIC CODE</u>	<u>DESCRIPTION</u>
4225000	28199	URANIUM OXIDE
4225500	28199	URANIUM COMP NSPF A THORIUM
4925960	28189	NUCLEAR REACTOR FUEL, NSPF
6601006	34994	FUEL ROD ASSEMBLIES
6601008	3443X	NUCLEAR REACTORS AND PARTS
7096660	36931	RADIATION APPARA & PTS NSPF
7121520	38294	RADIATION MEAS/DETECT INSTMT

APPENDIX C: HIGH AND LOW TECH PRODUCTS BY ITA CLASSIFICATION

HIGH TECH EXPORTS

**	1			
	7309530	8	456108360	GUIDED MISSILE PARTS
	7309510	8	353153634	GUIDED MISSILES
	6604970	8	20831686	NON-DIS ENG & TURB MIS & RKT
	6605480	8	17829638	PTS OF ROCKET & MISSILE ENG
**	Subtotal	**		
		32	847923318	
**	2			
	6876087	7	3500214132	CHPS, DICE, WAF, SEMICON PTS
	6852765	4	1245475262	RADIO EQUIP NSPF & PTS NSPF
	6876089	5	872014744	PTS OF ELECTRON CRYSTAL COMP
	6856035	4	627214438	PARTS, NSPF, RADAR APPARATUS
	6876047	5	448738826	IC'S, MONLTHC, MOS, NSPF
	6846210	4	443620449	TELEPHN SWICHBD EQ & PT NSPF
	6876045	5	375748395	MICROPROCESSOR IC'S MONO MOS
	7244575	3	371363414	COMPUTER DISCS, UNRECORDED
	6876031	5	365329566	IC'S MONOLTHC LINEAR(ANALOG)
	6846240	4	348217969	TELEPHONE APPARAT/PARTS NSPF
	7102820	2	233567306	GEOPHYSICAL INST & PTS, ELEC
	6876035	5	219458854	IC'S MONOLITHIC BIPOLAR TTL
	6876048	5	209916179	IC'S MONO, EXC BIPOLAR & MOS
	6876040	5	188662882	IC'S MONLTHC BIPOLAR NSPF
	6876053	5	176325590	INTEGRATED CIRCUITS, HYBRID
	6876042	5	162067094	RAM IC'S MONLT MOS OV 9000 B
	6876044	5	148635095	MEMORY IC'S MONO MOS X RAM'S
	7244585	7	144425517	MAGN MEDIA NSPF, UNRECORDED
	6856026	4	117481207	RADAR EX BOAT,SHIP,CIVIL A/C
	6854050	4	114516546	TAPE RECORDERS, VIDEO, COLOR
	6785007	8	109940986	FLIGHT SIMULATORS AND PARTS
	6876033	5	109198575	MEMORY INTIGRATE CRTS, MONO
	6852720	4	93624726	RAD TRNSCVRS NSPF 31-400 MHZ
	6856055	4	89967687	PARTS NSPF RAD NAV AID APPAR
	6876027	5	89394969	POWER TRANSISTORS
	7101020	9	79798271	DEPTH SOUNDING APPARAT & PTS
	6856043	4	76737832	RADIO NAV AIDS FOR CIVIL A/C
	6852725	4	72236366	RAD TRNSCVRS NSPF OV 400 MHZ
	6876025	5	62895860	SIGNAL TRANSISTORS
	6876019	5	55318541	ELECTRNC MICROWVE TUBES NSPF
	6876067	5	49260920	POWER DIODES/RECT GENRL PURP
	6856021	4	47108731	RADAR APPARAT, SHIPS EXC PTS
	6876070	5	45650452	SEMICONDUCTOR DEVICES, NSPF
	6851050	4	42865061	TELEVISION CAMERAS
	6876057	3	39215149	PHOTOSENSITIVE DIODES, NSPF
	6856015	4	39074845	RADAR DESIGNED FOR CIVIL A/C
	6884020	5	37869047	PROTON & ELECT ACCEL & PTS
	6876038	5	35559102	IC'S MONLTHC BIPOLAR CML-ECL
	6856060	4	35423840	RAD REMOTE CONTRL APPAR & PT

6846442	4	33879633	MODEMS
6876041	5	32271919	RAM IC'S MONLTC MOS UN 9000B
6852701	4	31656801	RADIO APPRTS NSPF F CIVIL AC

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7102840	4	31627822	GEOPHYSICL INST & PTS, NELEC
6876068	5	31372643	MTD PIEZOELECTRIC CRYSTALS
6851060	4	30562792	PRTS NSPF TELEVISION CAMERAS
6876061	5	29777943	DIODES & RECTIFRS, MICROWAVE
6852735	4	27017865	RADIO ANTENNA SATELLITE COMM
6856052	4	26728416	RADIO NAVIGATION AIDS, NSPF
6852710	4	26221157	RADIO TRNSCVRS NSPF HANDHELD
6876021	3	25453194	LIGHT-SENSING ELECTRNIC TUBE
6876059	5	25155204	ZENER DIODES
6852642	4	22929862	RADIO RECEIVERS 30-400 MHZ
7101820	2	21794114	METEORLGCL & HYDRO INST ELEC
6876062	5	18312096	THYRISTORS
6876066	5	16777182	SIGNAL DIODES, GENRL PURPOSE
6852660	4	16742616	RADIO RCVRS NSPF OV 1000 MHZ
6852760	4	15930984	RADIO TRANSMTTRS OV 1000 MHZ
6856045	4	14264970	RADIO NAV AIDS,RECEPTION
6852750	4	13651491	RADIO TRANSMITTRS 31-400 MHZ
6854058	4	9728399	TAPE RECORDERS, VIDEO, NSPF
6876054	3	9476074	SOLAR CELL MODULES OR PANELS
6876056	3	6069804	SOLAR CELLS
6852605	4	5110424	RADIO RECEIVER FOR CIVIL A/C
6852755	4	4948461	RADIO TRNSMTTRS 401-1000 MHZ
7101840	2	4878277	METORLGCL & HYDRO INST NELEC
6852650	4	3267902	RADIO RCVR NSPF 401-1000 MHZ

** Subtotal **
** 12059742470

** 3

6944062	8	5634733343	ARPLNES PASS TRNSPT OV 33000
6946507	8	4143259686	PARTS NSPF FOR CIVIL AIRCRFT
6946517	8	2452848501	PARTS NSPF, AIRCRFT EX CIVIL
6605452	8	2222723770	PTS OF A/C ENG FOR CIVIL A/C
6944015	8	1985761197	FIGHTERS, NEW, MILITARY
6604930	8	654060522	A/C JET & GAS TUR NONMIL NEW
6605454	8	572393960	PTS OF AIRCRAFT ENGINES
6944068	8	533734673	AIRPLANES NSPF OV 33000 LBS
6944017	8	362909005	CARGO TRANSPORTS NEW MILITRY
6944048	8	219193223	ARPLNES MULT ENG 4400-9999
6944065	8	208325780	ARPLNES CRGO TRNSPT OV 33000
6944034	8	205722380	ROTARY WG A/C NMIL 2200 & OV
6945140	8	143173476	AIRCRAFT & SPCECRFT NSPF NMIL
6944019	8	134792183	AIR & SPACE CRFT MIL NW NSPF
6946505	8	127374241	LANDING GEAR FOR CIVIL A/C
6604922	8	124998436	A/C JET & GAS TURB MIL NEW
6944011	8	80726513	ROTARY WING AIRCRFT MIL, NEW
6944050	8	72132903	ARPLNES MULT ENG 10000-33000
6945120	8	59393972	AIRCRAFT & SPCECRFT NSPF, MIL
6946503	8	43871427	PROPELLERS & PTS, CIVIL A/C

6944032	8	33371078	ROTRY WG A/C NMIL UN 2200 LB
6944043	8	27664553	AIRPLANE NMIL SINGLE ENG NEW
6944046	8	8263705	ARPLNES MULT ENG UN 4400 LBS

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6946515	8	6353629	LANDING GEAR, AIRCRFT, NSPF
6944009	8	5790760	MILITARY AIRPLANES USED/RBLT
6946513	8	5343047	PROPELLERS & PTS A/C CIVIL
6944013	8	200000	MILITARY AIRCRAFT, BOMBERS
** Subtotal	**		
	**	20069115963	

**	4		
6765560	4	9301387313	PARTS OF ADP MACHINES A UNIT
6762700	4	2176724963	DIGITAL ELECTRONIC COMPT ETC
6762820	4	1879573491	DIGITAL CENTRAL PROCESS ETC
6762825	4	1347273876	RANDOM ACESS AUX STOR UNITS
6762870	4	1100019115	COMMUN & PERIPHERAL EQ ETC
6762840	4	1047227050	TERMINALS, NSPF, ADP
6762855	4	593080356	PRINTERS FOR A.D.P.
6762864	4	350197206	INPUT OUTPUT & COMBIN ETC
6762830	4	327634745	SERIAL ACESS AUX STOR UNITS
6762600	4	174541345	ANALOG ELECTRONIC COMPT ETC
6762850	4	111420896	OPTICAL SCANNERS ETC, FOR ADP
6762835	4	94190493	TERMINALS, P.O.S. UNITS
6762845	4	66983986	CARD KEY & MAGN MED ENT ETC
6762862	4	35219636	DIGITIZERS
** Subtotal	**		
	56	18605474471	

**	5		
7308260	8	49239683	MISSILE ETC LAUNCHER PARTS
7308250	8	13874667	MISSILE ETC LAUNCHERS
** Subtotal	**		
	16	63114350	

**	6		
4382500	1	53819346	VACCINES, TOXOIDS, ANTIGENS
4381090	1	53454414	BLOOD, DERIVS VETERINARY USE
4381070	1	47608978	BLOOD, DERIVATIVES HUMAN USE
4383100	1	39885334	VACCINES, TOXOIDS VETERINARY
4925600	2	32283903	DRUGS, NSPF, CONT RAD ISO ET
4382900	1	31109997	BIOLOGICAL PRODUCTS, NSPF
4422200	2	20691932	ANTINEOPLAS IMMUNOSUPPR PREP
4383900	1	16010988	BIOLOGICAL PRODUCTS, NSPF
4382300	2	11234221	BLOOD DERIVS FOR PASSIVE IMM
4421900	2	11161917	ANTIBIO-SULFONAMID COMP NSPF
4923520	1	9387318	POLYSACCHARIDES, NSPF
4382100	1	2279035	ALLERGENIC PREPARATIONS BULK
** Subtotal	**		
	16	328927383	

**	7		
4225500	10	670532332	URANIUM COMP NSPF A THORIUM

4225000	10	217530519	URANIUM OXIDE
4925960	10	18969071	NUCLEAR REACTOR FUEL, NSPF

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4925840 2 2844636 NON-RDIOACTV ISOTOPS A CMPDS
** Subtotal **
32 909876558

** 8

7125040	6	641170612	COMBNTN ELEC CHARC MEAS EQP
7118710	2	494891037	CHEM ANALYSIS EQ ELEC & PTS
7118750	2	481415379	PHYSICAL ANAL EQ ELEC & PTS
7101050	8	413691394	NAVIGATIONAL INST ELEC, NSPF
7125035	6	285224808	WAVE FORM MEAS EQ & PTS NSPF
7125045	6	237074408	EQUIP NSPF TEST ELEC CIRCUIT
7118002	5	227275771	CONTRL INST HEAT SY ETC & PT
7125020	6	188492726	VOLT CURRENT RESIST TEST EQP
7118070	6	184070375	GAS VAR INST, ELEC, IND PROC
7125032	6	147821830	OSCILLSCPES OSCILLGRPH & PTS
7112420	7	147485532	ARTCLE STRNGTH TEST EQP ELEC
7089200	9	145882174	FREARM/FRE CONT EQ & PT NSPF
7118062	8	145245401	DISPLAY INST ETC, ELECT SIGL
7094540	2	142943086	ARTIFICIAL RESPIRATION, NSPF
7121520	10	116916229	RADIATION MEAS/DETECT INSTMT
6884010	5	109370453	SIGNAL GENERATORS
7118022	6	95860299	VAC ETC INSTMT IND PROC ELEC
7118046	6	94952624	LIQUID CNTRL INST ELC IND PR
7108900	3	85715928	OPTICAL MEAS CHECK INST NSPF
7125025	6	83621022	FREQ TEST APPARATUS & PARTS
7125005	6	81163437	ELEC TEST EQ INTNL COMBUS EN
7118010	6	68616550	TEMP INSTMT EX IND PROC ELEC
7118001	5	64917212	CONTROL INST & APPARATUS ETC
7090200	2	62340711	OPTICAL INST ETC, MED, & PTS
7118080	6	58154736	GAS VAR INST ELEC EX IND PRC
7095700	2	57352188	ORTHOPEDIC APPLNCES ETC NSPF
7118006	6	56300073	TEMP INSTMT INDUST PROC ELEC
7085440	9	53059395	TELESCPS NSPF, USE W/INER LT
7101012	8	51769719	AUTO PILOTS, CVL AIRCRFT ETC
7118760	2	45647217	PHYSICAL ANAL EQ NELEC & PTS
7089400	3	44317272	OPTICAL APPL INST ETC & PTS
7118050	6	44009348	LIQ CNTRL INST ELC EX IND PR
7118054	6	42368637	LIQD CNTRL INST NELEC IND PR
7101010	8	41556664	OPTICAL INST, CVL AIRCFT ETC
7118026	6	28587904	VAC ETC INSTMTS, ELEC, NSPF
7118738	2	28326221	PTS NSPF CHRMTGRP NELEC INST
7118034	6	28047189	VAC INST IND PROC NELEC NSPF
7118741	2	26701259	ELECTROCHEMICAL INSTRUMENTS
7118066	6	23811875	DISPLY INST ETC, PNEUMTC SIG
7118018	6	23598688	TEMP INSTM EX IND PROC NELEC
7118090	6	20070204	GAS VAR INST NELEC EX IND PR
7101014	8	18964575	GYROSCOPIC COMPASSES, ETC
7118058	6	18544835	LIQ CTL INST NELEC EX IND PR
7118734	2	18481602	LIQUID CHROMATOGRAPHS NELEC

7118747	2	18214846	CHEM ANALYS EQUIP NELEC NSPF
7090600	2	18058253	MED ANESTHETC INST ETC & PTS

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7119232	2	16554218	STROBOSCOPES, ELECTRICAL
7112440	7	15940551	ARTCLE STRNGTH TEST EQ NELEC
7119240	6	15346033	PARTS NSPF, REV COUNTERS ETC
7118749	2	15332033	PTS NSPF CHEM ANAL EQUIP
7118030	6	13846628	DIAL PRESS GAGS INDUS PR ETC
7088100	2	11833613	FRAMES, MTGS, & PTS OF MICRO
7087400	2	11039771	COMPOUND OPTICAL MICROSCOPES
7118075	6	10672183	GAS VAR INST, NELEC IND PROC
7118732	2	10583669	GAS CHROMATOGRAPHS, NONELECT
7118724	2	9959587	SPECTROPHOTOMETERS, NONELECT
7118728	2	9456449	SPECTROMTRC INST N/ELEC NSPF
7087800	2	7935372	ELECTRON & SIM MICRO&DIFF AP
7118729	2	6496376	PTS NSPF NELEC SPECTRMT INST
7118014	6	6382821	TEMP INSTMT INDUS PROC NELEC
7118743	2	6222738	THERMAL ANALYSIS INST NELECT
7119220	6	5514443	REV & PROD COUNTRS ETC ELECT
7085450	8	5451659	TELESCOPES NSPF & PTS NSPF
7118736	2	4332990	CHROMATGRPHC NELEC INST NSPF
7118726	8	2785383	PHOTOMETERS, NONELECTRIC
7118722	8	1968937	SPECTROSCOPES, NONELECTRIC
7118745	2	1631476	NUCLEAR MAGNT RESONANCE INST
7119237	2	1232643	STROBOSCOPES, NONELECTRICAL
7118746	2	332246	MASS SPECTROSCOPES, NONELECT
** Subtotal **			
		**	5702953517
*** Total ***			
		**	58587128030

LOW TECH EXPORTS

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6859055	605757360	
7244440	403568002	
6852085	356892323	
6859068	203844936	
6852017	203484447	
6859038	188254016	
6852610	163121813	
7244535	146010520	
6826064	140160415	
6846444	130859379	
7244565	108632699	
6826050	107489851	
6846220	106313062	
6854075	101632573	
6847020	98776879	
6852075	89000311	
6852001	85970959	
6858016	73154386	
6859052	72468173	
6861060	71383481	
6884030	67037976	
7244505	65877443	
6859034	64116302	
6857077	61637574	
6859026	61256156	
6876082	58600317	
7242620	57998103	
6859053	56081150	
6847030	54371906	
6876007	53963451	
6854010	52539998	
5351241	51178410	
6852740	51149125	
6855385	50667198	
6847050	49241512	
6859051	47674925	
6861035	44692619	
6847040	42743117	
6852620	39353614	
6861050	37133946	
6859048	35878336	
6858040	35089999	
6876013	34134324	
6853970	33956651	
6852715	32510686	
6858035	31239403	
6853950	31230811	
6857072	30729151	
6861057	29820718	
6873530	27691430	

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6858017	27488649
7242640	26320490
6857065	26264426
6826052	25916745
6820520	25859163
6876084	25332310
7241220	25167561
6853910	24921847
6857050	23156937
6873560	23110410
6846420	22467379
6847010	21954879
6859036	21741731
6852007	21492402
6859066	21469594
7241260	21414806
6861030	21339121
6857095	20887122
6853210	20444529
6858008	20405006
6852071	19389611
6876023	18288871
7244420	17886871
6858006	17656747
6858032	17070204
6857074	16310952
6858007	16088315
6857040	15458099
6855390	14680395
6852052	13076080
6852745	12683352
6873010	12007903
6861053	11941070
6857060	11920718
6858002	11709036
6858001	10970536
6876015	10822039
6884013	10185874
6858013	9978388
6861047	9367154
6876011	9010773
6857045	7728737
6876017	7473718
6853270	7160125
6852705	6740887
6852061	6412875
6876006	6354854
6858004	6290537
6876010	5954667
6855310	5508937

7242045

5256908

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6859032	4839873
6852630	3802562
6873030	3478568
6858018	3478490
6859028	3022486
6874000	2895375
6858033	2708700
6858012	1917684
6852730	1816797
6858011	1401300
6858026	1258975
6858020	1133950
6858029	1128952
6858031	262555
6858024	252628
6858027	93786

** Subtotal **
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6944020	562516138
6605252	233716722
6605254	69441812
6604826	15962634
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6604822	3595377

** Subtotal **
898706345

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6765540	159396625
6765590	158773974
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6765570	66423780
6763040	49663073
6682015	34668158
6763034	30947595
6762520	29741898
6623440	22901840
6623410	21000850
6685040	20706963
6761600	17534803
6623420	17046078
6682020	16649508
6762200	13385027
6762019	11175469

7155520	9589377
6761200	9132269
6761000	7789079
6762011	7298984

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6760570	6624187
6762510	6424806
6762017	5312949
6854005	3785017
6760520	3086206
6762015	2878600
6513300	1500653
6682005	980124
6762310	527763
6682010	196353
6762350	125800
** Subtotal **	
	980670322

** 5	
7308225	100344621
7309520	70872088
7309540	68910323
7309610	65272171
7308210	42898042
7309660	41012414
7301400	31009146
7308240	25901163
7302220	18113816
7309620	12376969
7309640	12160584
7302240	10787333
7304700	10410553
7308230	9825310
7309605	9351271
7308440	7772799
7307820	7634544
7309630	7364707
7309650	4933475
7309670	4785079
7309655	4779449
7309680	4291766
7309690	3933004
7307840	3525458
7301000	3419938
7308235	2659637
7308420	2394248
7302260	1780987
7308340	1602869
7308320	339409
7306000	303020
** Subtotal **	
	590766193

** 6
4352400 594679311

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4357700	273786690
4386000	249808721
4381030	150213164
4428500	122341084
4381050	112778222
4357300	103229791
4419000	90746353
4420900	76766585
4422500	71371601
4351100	70480293
4353300	57291112
4353500	55369714
4358500	45939272
4353100	45341075
4331079	44972484
4359500	43388802
4427900	42207598
4358100	41587367
4351530	39070822
4352100	36019217
4353700	32500833
4427100	32325604
4425500	27926175
4420600	27095709
4429900	22376401
4426700	20502149
4352200	20362649
4356200	20036860
4424100	19890509
4351510	16021617
4358700	14727735
4351520	14512146
4426100	13387656
4356340	12814448
4384900	11192464
4357100	10707152
4427600	9864068
4420200	9794331
4423200	9731342
4424900	9421546
4343050	9144779
4346050	9039147
4426500	8842972
4423000	8742341
4411000	8056386
4429200	7982766
4423900	7898797

4421300	7851051
4429000	7850334
4357900	7328476
4423400	7208391

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4356100	6640941
4385500	6628602
4427400	6052858
4358000	5957692
4425200	5388964
4358900	5300551
4424300	5100275
4353900	4824452
4425000	4817226
4426900	4676767
4420400	4387670
4357500	4320175
4421700	4248091
4424400	4172071
4424500	4147060
4356700	3640343
4426200	3127548
4350500	3052124
4427200	2935370
4412000	2753287
4421500	2686352
4421100	2484573
4354200	2446454
4350100	2388117
4350300	2025507
4354500	1783310
4357800	1725338
4354100	1494904
4354300	1449938
4355300	1101585
4424700	1054275
4346010	974616
4381010	882300
4356320	773914
4352900	568232
4355900	374403
4421200	195833
4343010	142169

** Subtotal **

2929249999

** 7

4216200	261587463
4208400	247718689
4331035	246241105
4171240	197358701
4331056	194641474

4231090	193484699
4725000	181877278
4210830	137338223
4925750	82239553

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4182900	53505074
4152900	51813430
4171900	40788624
4161000	34179640
4210200	32916302
4726500	32593579
4722000	31777367
4203700	31692797
4153500	30802719
4152400	30663950
4223009	28740160
4182200	28050651
4212300	26834353
4165500	26199587
4922400	25177971
4188040	22737415
4231030	18741046
4210600	17759272
4331033	17184352
4191620	16750889
4212400	14432055
4210850	13079290
4193500	12335373
4209800	12066644
4171220	11918682
4183300	11278562
4196000	11145882
4191400	11032905
4227700	10800343
4187500	10146684
4215400	9924683
4152000	9752050
4177100	9738703
4214200	9705139
4197600	9693468
4723500	9537542
4224000	9173542
4231020	8411312
4222500	7998943
4190300	7817476
4201800	7723380
4191640	7062077
4727500	6882931
4194400	6776520
4181700	6657299
4207200	6623508
4725700	6439822

4198000	6048656
4226009	5913391
4163500	5905513
4213400	5825976

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4152200	5778048
4203100	5449339
4726000	5251652
4188060	4794662
4175500	4593885
4925710	4459764
4723000	4165715
4228000	3953782
4186300	3851531
4194100	3711130
4198500	3611220
4198300	3521999
4727000	3387176
4151500	3330740
4186100	3268022
4231010	2902118
4175000	2779587
4152600	2719782
4206000	2567523
4161500	2504289
4925720	2396501
4231040	2205175
5219100	2185000
4201200	2176922
4200100	2134358
4228200	1943466
6307500	1886658
4217100	1848713
4226300	1818988
4224200	1738378
4214500	1684007
4171600	1538543
4208800	1271817
4181400	1068483
4176100	850041
4227200	793024
4229000	757541
4181200	665692
4725500	530727
4922700	529094
4182400	500660
4925820	385929
4227600	314983
4724000	201786
4720600	67219
4721400	53718
4200800	9311

** Subtotal **
2731403412

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** 8

7093000	366418041
7231590	272639462
7090900	264156154
6765580	247651078
7233009	240907983
7231550	148349246
7095600	141545554
7223640	137799019
7231507	136002210
7229540	124584789
4871000	110409647
7125055	105518144
7231537	101680974
7230700	96207046
4961000	95639733
6763032	94957633
7125052	94707589
7092540	94134156
6763028	90945831
7080600	89324223
7103820	72571801
7108550	66725797
7220660	65027379
7270140	62817995
7091320	58233180
4960700	57687012
7233080	55548925
7230600	47572092
7091200	45710729
7231525	45561362
7121560	45343071
7095000	36581646
7221990	36551914
7229520	36488292
7232700	32714538
7231533	32022781
7092520	31462447
6617015	31317978
7229600	30755240
7094000	27390842
7221920	26022755
7113340	25547827
7231509	25292295
7229800	24174490
7221940	24054769
7130160	22282138

4961500	20135383
7130150	19468274
7101070	19066753
6763022	18796812

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7223620	17849981
7130140	16808467
7233005	15979199
7095400	14956096
7082260	14935457
7130130	14821162
7085420	14467605
7233340	14333657
7095500	14288905
7113320	14071154
7221970	13529570
7224140	13446307
7224160	12916794
7091340	12801737
7225060	12740231
7110100	12481524
7270120	12287732
7092400	12221953
7059100	12112249
7085430	11400070
7082240	11331195
7130110	11239382
7225040	9738347
7224120	9065400
4331038	8643923
7233040	8355670
7231521	7993013
7082220	7782935
6763026	6989410
7225740	6925636
7225020	6883083
7103840	6800184
7231580	6486968
7227000	6029615
7118042	5500699
7118038	5135113
7108510	4720712
7094520	4438009
7224360	4403565
7222000	4316994
7119228	3879620
7225720	3441661
7227200	3235234
7220640	3227844
7085410	3169153
7233320	3165134
7224340	2946608

4960500	2752947
7119225	2154170
7228400	846497
4962000	740378

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7227500	638750
7220620	617873
7224320	324114
** Subtotal **	
	4648874715

** 9	
6605410	471789160
6605445	380258990
6605460	350054818
6604110	340279779
6605440	186548632
6605220	172557807
6603040	148392865
6604965	114969009
6604872	94870918
6604840	79947288
6604131	70951647
6604135	61610989
6604139	61244144
6605270	61229070
6604133	60923191
6604125	50841230
6604860	43722875
6605420	39160593
6604123	25275113
6604876	24971052
6604127	24652875
6605260	21622444
6604880	21412697
6604874	17931883
6604890	15683825
6604121	14141541
6606840	13587054
6604129	12707992
6609200	7762388
6604137	7753114
6603024	6534600
6603600	5829843
6604878	5764064
6603028	2623163
6604865	2411321
6606820	2169324
6603026	1391404
** Subtotal **	
	3023578702

** 10

4441700	597076166
4441620	333442166
4442525	282219107

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3093270	280404232
4461561	268253935
4441606	220036319
4441400	165079360
4441608	142393143
4445410	132817885
4442310	123514881
4440520	120400300
4446600	117648379
4461521	116217259
4442010	112766329
4442530	112313736
4442510	103110328
4441210	99736264
4461541	92163583
3094242	90262458
3100027	88899275
4442050	80110428
4441500	78076468
3094247	77489040
4440510	76888243
4461526	72740788
4442330	69903837
4461547	69317527
4461516	67060585
4442040	65420692
4442320	54409254
3100007	53162679
4440610	48927880
4461536	48176306
3094245	47606441
4445420	46694811
4442110	42305691
4441604	42241973
3100044	40577527
4442120	37191080
4446000	36207757
3090170	35572569
4446200	35312619
4440620	33829904
4461596	33772338
4441000	32741803
3100032	31664001
4447530	31452257
3100014	29555532
3100010	29239664
4461571	28765781

4445820	26677755
3097630	25488619
3094240	24873291
3100029	23716754

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3094222	23404332
3090140	22617179
4447520	22407768
4461511	21961158
4442030	21709373
4440630	20364336
4445810	20154311
4441300	18679550
3093240	18254711
4442020	17912598
3094246	17841706
3093255	16328922
3090120	16316282
4463000	15776887
3092220	13863761
3093220	12861498
3097660	12793764
4440900	12113210
4445210	11959960
4441220	11773236
4445230	11572273
3100005	11237025
4461531	10709339
4441800	10272464
4441900	9412628
4461576	8478585
4461000	8015948
3100026	7836933
4461200	7774390
3097620	6065942
4447510	5593331
4445000	5519977
3092270	5462246
4445220	4640604
3093250	3149054
3097640	3070770
3100034	2538872
3094219	2489599
3100004	1387657
3100040	1087052
3097400	938589
4440800	666218
3090110	539258
3092210	95519
** Subtotal **	
	5653575814
*** Total ***	

27155230459

HIGH TECH IMPORTS

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**	1			
	8370000	8	35655882	MATL TO BE LAUNCH INTO SPACE
	6848000	4	12313230	COMMUNICATIONS SATELLITES &
**	Subtotal	**		
		12	47969112	
**	2			
	6854052	4	2965409469	TAPE RCRDRS,VID,CLR EX AUD
	6877455	5	1292031471	MOS IC'S,NSPF
	6877420	5	790259051	TTL BIPOLAR IC'S
	6877410	5	658371558	MONOLITHIC INT CIR, LINEAR
	6877445	5	639806471	MOS MEMORIES, NES
	6877450	5	639158836	MOS MICROPROCESSOR
	6878520	5	532806059	PTS OF SEMICONDUCTORS OTHER
	6846635	4	503964741	FACSIMILE MACHINES
	6877443	5	459319834	MOS RAMS OV 80000 N/O 300000
	6853852	3	453608937	AUDIO LASER DISC PLAYERS
	6877790	5	451162914	INT CIR, OTHER THAN MONOLTC
	6852500	4	362980517	CORDLESS HANDSET TELEPHONES
	6845730	4	304116539	TELEPHONIC SWITCHING EQP PAR
	6845940	4	275431959	TELEPHONIC APPAR & PTS NSPF
	6852443	4	249533718	TRANSCIVERS NSPF
	6877415	5	232393228	BIPOLAR MEMORIES
	6852810	4	219416033	PORT RADIO TELEPHONES FOR PC
	6877441	5	203928435	MOS RAMS OV 40000 N/O 80000
	6877027	5	194786068	TRANSISTORS-1 WATT OR OVER
	6877460	5	178165528	MONOLTH IC'S,NES
	6877405	7	161054609	CHIPS, DICE & WFRS FR MON IC
	6877444	5	158093864	MOS RAMS, OVER 300,000 BITS
	6877255	5	154987118	DIODES AND RECTIFIERS, OTHR
	6856060	4	149883731	RADIO REMOTE CONT APPAR
	7244010	3	149124777	LASER DISC SOUND RECRDINGS N
	6856035	4	143365306	PARTS,NSPF FOR RADAR APPAR
	6878505	7	134686918	WAFERS W/O CIRCUITS OR DEVIC
	6877025	5	129080044	TRANSISTOR-LESS THAN 1 WATT
	6854058	4	119804728	TPE RCDRS VID EX CLR OR AUD
	6877437	5	119796362	MOS RAMS OV 9000 N/O 20000 B
	6845845	4	114577030	OTHER TEL TERMINAL EQUIP PAR
	6877425	5	112871821	ECL BIPOLAR IC'S
	6845835	4	112636124	OTHER TERMINAL EQUIPMENT
	6877900	5	103255387	MOUNTED PIEZO-ELECT CRYSTAL
	6845710	4	82048183	KEY SYSTEM SWITCHING APPARAT
	6849015	4	81398610	TV CAMERAS, COLOR, \$2000 & U
	6849040	4	80096332	TV CAMERAS EXCEPT COLOR
	6857320	3	75845313	INDICATOR PANELS, LCD
	6877430	5	71999829	BIPOLAR IC'S, NES
	6878100	5	71601376	SEMICONDUCTRS,NES
	6849060	4	68801992	PARTS NSPF, FOR TV CAMERAS

6877435	5	66033886	MOS RAMS NOT OVER 9,000 BITS
6849025	4	61300434	TV CAMERAS, COLOR, OVER \$2,0
6859056	5	55172531	PCB, PLSTC GLSS, 3 LYRS AND

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6877250	5	51674597	DIODES + RECT-.5 AMP + LESS
6852820	4	48286083	TRANS APARATUS INC REC APA,N
6877240	5	47906343	THYRISTORS
6857020	3	45658119	INDICATOR PANELS, LCD
6845720	4	43240442	OTHER TELEPHONIC SWITCHING E
6877215	3	42429322	PHOTO DIODES, NSPF
6850830	4	40831425	VIDOE PLAYERS,NSPF
6877220	5	39359227	ZENER DIODES
6877705	7	37193896	CHIPS, DICE & WFR FOR IC, NS
6854055	4	31729978	TAPE RCRDRS VIDEO COL NSPF
6853000	4	31480045	TRANSMITTERS, RADIO
6856021	4	30789337	RADAR APPARAT,SHIPS EXC PTS
6852440	4	30727137	TRANS OTH THAN CB,HAND HELD
6852441	4	27944430	MARINE VHF-FM RADIO TRANSC
6856055	4	27452582	PTS OF RADIO NAV AID APPAR
6856050	4	27182869	RADIO NAV AIDS, NSPF EX PTS
6878780	5	26840261	OTHER ELECTRONIC CRYSTAL COMP,N
6851676	4	20223393	RAD REC EX RAD PAG 400-1,000
6877202	7	20146424	CHIP, DICE, WFR, FOR DIO & R
6856025	4	20055712	RADAR APPARATUS,NSPF
6877022	7	19563280	CHIPS,DICE & WAFERS FOR TRN
6856041	4	18199293	RADIO NAV AIDS, RECEIPT ONLY
6851674	4	17806792	RAD REC EX RAD PAG 30MHZ-400
6876619	5	14467620	MCRWV TBS EX KLYSTN A MGTRN
6876621	3	14452322	LIGHT-SENSING ELCTRNC TUBES
6856100	4	13164876	NAV AIDS & PT CIVIL A/C
6877439	5	10029451	MOS RAMS OV 20000 N/O 40000
6877230	5	8450609	DIODES AND RECTIFRS MICROWV
6878710	3	6828242	OTHER PHOTOCELLS
6853400	4	6749865	RADIO APPAR NSPF, CIVIL A/C
6850470	3	4295787	FLAT PANEL TELEVISION RECEIV
7103000	8	2358395	AUTOMATIC PILOTS AND PARTS
6854100	4	2312891	RECORDERS FOR CIVIL AIRCRFT
6851685	4	1632047	RAD REC,NSPF,OVER 1000 MHZ
6878705	3	916905	SOLAR CELL PHOTOCELLS
7103100	8	157875	AUTO PILOTS/PTS CVL AIRCRFT
** Subtotal	**		
	**	15016705543	

** 3

6946200	8	1515043066	PTS FOR USE IN CIVIL A/C
6606100	8	1141080209	NON-PST ENG CERT F CIV A/C
6946700	8	706120815	AIRCRAFT PTS MILITARY NSPF
6944150	8	677956725	TURBO JET&FAN A/C N/M MUL-EN
6944165	8	551484070	AIRPLANES,NON-MILIT,NSPF
6944160	8	451028018	AIRPLANES,NONMILITARY,MULT,N
6944148	8	207802926	AIRPLANE,NON-MIL MULTI ENG
6946100	8	175041655	AIRCRAFT PTS NONMIL, NSPF

6605940	8	129517376	A/C NT-PISTON TYPE ENG NSPF
6605920	8	80331361	A/C TUB-JT A GAS TRB ENG NEW
6944125	8	79874895	HELICOPTER, NON-MILITARY, NEW

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6946600	8	30086614	AIRPLANES, MILITARY
6944143	8	3178743	AIRPL N-MIL NEW UN 10000 LB
6944146	8	265000	AIRPLANE, NON-MIL MULTI ENG
** Subtotal	**		
	**	5748811473	

**	4		
6765455	4	3678650399	PTS OF ADP MACHINES, NSPF
6765421	4	1832897845	HARD DISC DR, PTS OF ADP MAC
6761530	4	1738432038	DATA PROC MACH WITHOUT CRT
6763065	4	989849215	DOT MATRIX PRINTER, ADP MACH
6763043	4	977585197	DISPLAY UN, ADP MCH, W/COLOR
6765419	4	704815805	FLOPPY DISC DR, PTS OF ADP M
6763069	4	695728104	LASER PRINTERS, ADP MACHINE
6763041	4	569647454	DISPLAY UNIT, ADP MCH, W/MONO
6763055	4	485660650	HARD DISC DRIVE, ADP MACHINE
6765423	4	413228961	OTHER DISC DR, PTS OF ADP MA
6761520	4	387675023	DATA PROC MACH W CRT EXC COL
6763073	4	303015468	OTHER PRINTERS, ADP MACHINE
6763077	4	272197913	ADP MACHINES, NSPF
6763052	4	246646442	FLOPPY DISC DRIVES, ADP MACH
6765675	4	243222165	DISPLAY UNITS, PTS OF ADP MA
6765425	4	229910318	OTHER STORAGE, PTS OF ADP MA
6765431	3	218082755	LASER PRINTERS, PTS OF ADP M
6765433	4	182036572	OTHER PRINTERS, PTS OF ADP M
6763060	4	166252549	OTHER STORAGE UNITS, ADP MAC
6765417	4	165330889	KEYBOARD UNITS, PTS OF ADP M
6761510	4	150582345	DATA PROCESS MACH W CRT, COL
6765429	4	127017384	DOT MATRIX PRINT, PTS OF ADP
6763046	4	88217836	DISPLAY UNIT, ADP MACH, OTHE
6763049	4	79239456	KEYBOARD UNIT, ADP MACHINE
6763058	4	66401741	OTHER DISC DRIVES, ADP MACHI
6763062	4	62821610	DAISY WHEEL PRINTERS, ADP MA
6765405	4	36797551	DISPLAY UNITS, PTS OF ADP MA
6765427	4	24381011	DAISY WHEEL PRINT, PTS OF AD
6761600	4	3224854	DATA PROCESS MACHS FOR A/C
6763100	4	2332067	OFFICE MACHS NSPF FOR A/C
** Subtotal	**		
	**	15141881617	

**	5		
7309900	9	103334031	MUNITIONS & PTS, AMMO NSPF
7308600	9	5673856	PISTOLS ETC MISSILE A PTS
7308500	9	5125889	RIFLES MISSILE EJECT A PTS
** Subtotal	**		
	27	114133776	

** 6

4395095	1	290383290	OTHER DRUGS INCLUDING SYNTH
4121200	2	224646855	CARDIOVASCULAR DRUGS, NSPF
4120400	2	137753152	AUTONOMIC DRUGS, NSPF

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4120200	2	34709132	AUTONOMIC DRUGS IN APPENDIX
4119600	2	14952451	ANTI-INFECTIVE AGENTS, NSPF
4125000	1	10835626	HORMONES SYNTH SUBS NSPF
4119300	2	10573165	ANTI-INFECTIVE AGENTS ETC
4121000	2	1844049	CARDIOVASCULAR DRUGS, ETC
4395090	2	1292097	HORMONE SUBSTITUTES ETC
4124800	1	215427	HORMONES ETC PROV IN APPEND
** Subtotal **			
	17	727205244	
** 7			
4225220	7	701443175	URANIUM FLUORIDES
4945040	2	36997181	RADIO ISOTOPES ETC NSPF
4225240	7	17727416	URANIUM COMPOUNDS, NSPF
4945020	2	2026847	COBALT-60
** Subtotal **			
	18	758194619	
** 8			
7092700	2	290033024	MEDICAL ETC INST A PART NSPF
7082340	3	64224098	OPTICAL LENSES NSPF MOUNTED
7124910	8	61834166	ELEC SURVEY ETC INST & PTS
7104600	8	50826347	NAVIGATIONAL INSTR A PARTS
7087800	2	48017369	ELECTRON & PROTON MICROSCPS
7080300	7	47563401	OPTICAL LENSES NSPF UNMNTD
7094000	2	44069952	M-THERAPY A MASSAGE APP A PT
8516000	2	36777123	INSTR ETC NT MFGR USA NPROF
7095600	2	29347803	INTERN ARTIF LIMB ET A PT OF
7100800	3	25577183	OPTICAL INST A PTS NSPF
7095020	2	22219941	HEARING AIDS
7104700	8	16098570	NAV. INSTR/PTS CVL AIRCRAFT
7079010	7	15058474	OPTICAL FIBER, COMM TRANS, CA
7118600	2	8826333	OPT INST A PTS CHEM ANAL ETC
7083000	3	8321620	OPTICAL ELMNTS NSPF MOUNTED
7100400	3	7976900	PHOTOGRAMMETRIC INSTR A PTS
7227220	2	7516270	ELECTRNIC STROBOSCOPES NSPF
7081000	7	6327780	OPTICAL ELMNTS NSPF UNMNTD
7223200	4	5987269	MOTION PICT CAMERA PTS NSPF
7080500	3	5779537	OPTICAL PRISMS NOT MOUNTED
7082500	3	4708849	OPTICAL PRISMS MOUNTED
7080700	3	2465644	OPTICAL MIRRORS NOT MOUNTED
7079020	7	1615158	OPTICAL FIBER, COMMU TRANS OT
7082700	9	1386035	OPTICAL MIRRORS MOUNTED
7086100	9	1349665	TELESCOPES FOR INFRARED LGHT
7081200	8	865678	OPTICAL ELM UNMTD CIV ACFT
7103600	2	218410	SEISMOGRAPH EXC FIELD A PTS
7083200	3	115364	OPTICAL ELM MTD CIV ACFT
** Subtotal **			

** 815107963

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```
**      9
6607300  8    1065274745 PTS OF NON-PIST CIV A/C ENG
6607160  8     373070758 PTS O NON-PSTN AIRCRAFT ENG
** Subtotal **
          16    1438345503
*** Total ***
          **    39808354850
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LOW TECH IMPORTS

** 2

6785012	1560179855
6884280	1096653878
6854974	1026197066
6785075	688898342
6850804	641284005
6849252	552710357
6826051	478559662
6845815	450702254
6859038	449064935
7244540	446879408
6849258	435568928
6849864	404925532
6850860	380212414
6847030	321295154
6826053	313155561
6859059	312349664
6854070	298304954
6851215	293676721
7244560	282497964
6859054	279374098
6853277	274805557
6853300	273713746
6845825	253649093
6854934	247489248
6851430	245847346
6785059	240190988
6850000	234752830
6847023	230708348
7244570	212433278
6846645	196649622
7244510	188323656
6859058	185221639
6826055	185098291
6847025	179079230
6851457	175016795
6854990	169104044
6859034	155048203
6861035	150667552
6849263	148806072
6845830	144267017
6847040	137736512
6875408	136358459
7244530	130748775
6850806	128181395
6849866	126019701
6826057	125615846
6846700	124918530
6850200	122445992
6850479	121454757

6854026

116156899

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6850820	115431004
6857380	113228034
6851411	113139554
6785001	111377358
6847027	109368002
6785061	109277691
6849230	106231487
6857080	103412105
6847050	103378159
6854029	103078683
6845810	99928550
6850477	97960279
6854918	96429239
6849275	92882820
6849248	88057545
6859036	85577678
6820520	81864047
6858016	78473952
6854013	73412583
6853848	71859829
7244565	71503573
6854065	70969564
7244050	67763139
6858001	67705409
6859026	65273484
6849236	65226810
6854908	65082890
6850802	63857233
6849262	59526999
6859024	58026539
6785005	56430749
6873520	50061685
6873010	49901559
6785055	49808330
6845805	48936333
6847010	46990378
6875405	46076647
7244020	45706505
6850803	44920102
6854936	44456875
6859051	43511310
6852025	40222459
6858008	39597085
6853162	36727483
6857304	36327917
6858017	36010100
6849660	35969970

6853854	35593912
6857004	35498449
6858035	35445031
6861084	35379612

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6785066	34519908
6853262	34422605
6854924	32717591
6854962	32683047
6857002	32133929
6857310	31476812
6857010	30865797
6858018	30700778
6851673	30696748
6858012	30502805
6785007	30226629
6876623	29699388
6859053	28110656
6851686	27898144
6851461	27898030
6851210	27654569
6854028	27496932
6857302	27238816
6849658	26962728
6849246	26928976
6852200	26272615
6858002	25890701
6849663	25358691
6854027	25321751
6884220	25295852
6854048	24507938
6861080	23686412
6849253	22963599
6858013	20929544
6853860	20892832
6854931	20577918
6859048	19933246
6846500	19733633
6854034	19357009
6876611	19001037
6859022	18754004
7095040	18723084
6884100	18271466
6853655	18185694
6874310	17937604
6861086	17763282
6851440	17507237
6850600	17003680
6851812	16592116
6850801	16535268
7242520	15562206
6861082	15150038

6849238	14976057
6854950	14192891
6858040	14143383
7242540	14080413

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6858031	13682477
6845920	13403966
6851225	13357657
6849655	13079793
6846620	13020201
6859049	12322103
6878300	12228387
6858032	12224154
6858029	12065714
6873513	11804119
6853700	11585494
6854909	11016201
6849270	10943196
6854038	10771212
6858007	10500222
6785065	9811559
6859052	9618729
6785003	9590912
6861070	9509671
6851250	9471605
6849245	9400853
6884250	9343947
6853835	8757010
6861030	8748234
6785067	8707864
6861068	8685173
7244030	8641413
6851450	8602022
7244550	8349080
6858033	8065406
6861078	8057961
6849250	8047883
6858006	7710542
6853825	7254104
6861072	7206818
6858100	6913438
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6861076	6193346
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6852035	5791062
6873518	5754421
6876617	5691446
6854972	5651084
6858004	5422948
6861064	5400478

6861066	5350962
6857315	5264966
6849265	4834691
6857015	4733288

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6857200	3892389
6853847	3833987
6854969	3686444
6853160	3662004
6857100	3633632
6858020	3587522
6876613	3578831
6855540	3467669
6876615	3223209
6857500	3165912
6849255	3086961
6853620	3029170
6856600	2790284
6861062	2743099
6847200	2692737
6851446	2623060
6853260	2610148
6873514	2246286
6852002	2183314
6849234	2130170
6849256	1926205
6851405	1853959
7244520	1801938
6785009	1721141
6851436	1636003
6854929	1528661
6859028	1510665
6874390	1443426
6857400	1425054
6854963	1412550
6849400	1376952
6861074	1084554
6854800	1077910
6851000	1069567
9458758	1056546
6858025	1054725
6873512	1013412
6851425	995225
6849232	775969
6874200	738812
6884700	735343
6856700	712594
6854965	665918
6854033	623158
6785072	465559
6873516	458911
6851671	440240

6851810	395365
7243000	270330
6849656	248660
6858024	231211

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6854966	185250
6854200	162693
6849240	130056
6858027	128598
6852015	128067
6859032	103678
9458662	82063
6851415	64202
6855520	33262
6873600	32121
6854928	25577
7243500	13560
6861100	6871
6874400	1842

** Subtotal **
21323527538

** 3

6944120	61148890
6605800	7107628
6605610	2865348
6946500	1455420
6946400	1320274
6941600	969170
6942100	593582
6946300	233143
6943100	209631

** Subtotal **
75903086

** 4

6765645	488741047
6763090	264899929
6853905	246108734
6762017	212543285
6760700	169886349
6765695	168455079
6765030	159640261
6762011	150532205
6762500	132449227
6762200	103285525
6760510	72901289
6765630	72661941
6763019	54409348
6760540	54332032
6622610	53988267
6682315	47722464

6853910	34492875
6762015	26403579
6854006	25514210
6765020	24664159

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6765440	24350795
6623030	22150710
6623020	20989354
6623010	19652155
9458420	15070549
6765450	12288560
6760530	11993850
6762019	10960629
6513300	9862958
6685040	9519824
9458430	8217087
6622620	7496597
9458330	7161610
6761200	5552570
6682305	4615889
6765010	4469349
6762310	4280444
6853915	3246213
6682320	2888699
6765620	1973365
6765615	1817570
6760560	1527285
6682310	1117852
6761000	537516
6622500	248638
6762350	146050
9458920	75441
9458930	39922
9458410	25681

** Subtotal **
2775908967

** 5

7301900	54328100
7309400	21552188
7303180	18369263
7307500	18095693
7304530	14809785
7307400	14760553
7303120	13963549
7303140	11693938
7301020	10918723
7304525	10146173
7306100	7614536
7304520	7231290
7300500	7224888
7303190	6005679

7301040	5429670
7308100	5240736
7308800	4904515
7309540	4557034

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7304300	4194990
7309525	4149123
7306700	3928072
7309685	3672253
7309670	2426712
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