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POTENTIAL IMPEDIMENT OF FOUNDRY CAPACITY RELATIVE TO NATIONAL D--ETC(U)
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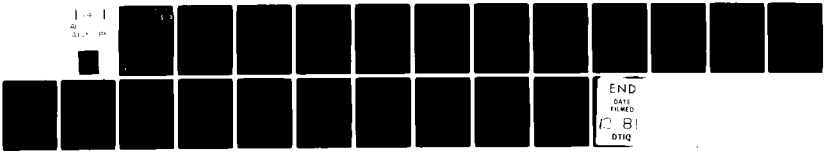

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UNITED STATES GENERAL ACCOUNTING OFFICE
WASHINGTON, D.C. 20548

ENERGY AND MINERALS
DIVISION

GAO/EMD-81-134

B-204416

SEPTEMBER 15, 1981

The Honorable Caspar W. Weinberger
The Secretary of Defense

The Honorable Malcolm Baldrige
The Secretary of Commerce

Subject: Potential Impediment of Foundry Capacity Relative to National Defense Needs (EMD-81-134)

We are writing this letter based on our concern over the realization of defense policy objectives. The cause for this concern is the potential impediment of foundry capacity relative to national defense needs, a possible problem heightened by contemplated increases in defense expenditures.

The number of domestic foundries has been steadily declining for two decades. Since 1957, at least 1,479 have closed, most of them of a relatively small size. Though it appears this historical trend has not had a significant impact on total foundry capacity, recent closures of large automotive foundries could have different, adverse repercussions. Auto foundry closures reduced domestic casting capacity by over 1 million tons in just one year, 1980. This 1-year tonnage loss equates to about 5 percent of foundry shipping capacity of all metals, and most of this recently closed capacity is slated for disposal or dismantling. Some of these closed foundries have been used in the past for defense production purposes, and if similar foundry closures continue, we believe the Nation's production capacity for defense or emergency mobilization may be impaired.

Serious data deficiencies prevent an in-depth analysis at this time. Our review work identified and analyzed Federal Government and private data banks on the foundries. No permanent foundry data files were found in the Department of Commerce's Office of Basic Industries which has responsibility for monitoring and analyzing the foundry industry. Because Federal data was found to be very poor, overly aggregated, and in a number of important cases either wrong or missing, we developed a data base using a combination of Federal and private industry data.

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The lack of overall foundry data limited our review. However, initial findings presented in the attached enclosure show a potential problem in foundry production capacity and the related effect on defense industrial capacity, which we feel deserve attention. Though the Department of Defense has industrial preparedness programs, the foundries sector has not been given adequate attention. Thus no one is in a position to judge whether foundry closure trends would be an impediment to increased defense spending objectives or emergency mobilization requirements which would require industrial surge capacity.

RECOMMENDATIONS

We recommend that the Departments of Defense and Commerce promptly initiate a joint study to identify further data requirements, then determine whether there is an imminent foundry capacity problem relative to increased defense spending, to surge, or to emergency mobilization needs. We also recommend that concerned congressional commmittees, specifically including the Senate Select Committee on Small Business, the House and Senate Committees on Armed Services, the House Committee on Appropriations, Subcommittee on Defense, and the House Committee on Banking, Finance, and Urban Affairs, Subcommittee on Economic Stabilization, be kept advised of study plans and expected availability of study findings. Copies of this letter and enclosure are being sent to those Committees.

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As you know, section 236 of the Legislative Reorganization Act of 1970 requires the head of the Federal agency to submit a written statement on actions taken on our recommendations to the Senate Committee on Governmental Affairs and the House Committee on Government Operations not later than 60 days after the date of the report and to the House and Senate Committees on Appropriations with the agency's first request for appropriations made more than 60 days after the date of the report.

We discussed matters presented in this report with appropriate Defense and Commerce officials. We appreciate the courtesy and cooperation extended to our staff during the review and would appreciate being informed of any actions taken as a result of our observations and suggestions.

Sincerely,

J. Dexter Peach
Director

Enclosure

BACKGROUND INFORMATION ON FOUNDRY INDUSTRY

Foundries, which produce castings by pouring molten metal into a mold, are one of the Nation's most basic industries. As the fifth largest manufacturing industry, it produces 15 to 20 million tons of castings annually at a value of more than $21 billion. These castings provide critical components in aircraft, automotive, construction, energy, military equipment, and railroad industries and are found in 90 percent of U.S. manufactured items. Foundries, 97 percent of which are small businesses employing less than 250 people, employ more than 420,000 people and are located in all 50 States. Despite this key position, the number of foundries has declined by 1,479 since 1957 at a fairly steady rate, leaving the United States with 4,279 foundries in September 1980. Most of these were relatively small sized foundries; however, within the past year a significant number of larger automotive and other foundries have closed. The effect of closures on domestic capacity and specifically surge capacity is a significant area of concern.

On pages 16 through 20, we give illustrations of the inadequacy of Government data. Because of limitations we developed a composite picture of the foundry industry using mainly private data banks. From this we developed the following section.

GAO ANALYSIS OF THE NUMBER OF FOUNDRY CLOSURES

As indicated in figure 1, small foundries are closing and to some extent are growing into a larger size category. The net effect is clearly changing the structure of the industry, as the number of foundries with less than 20 employees has declined 40.2 percent since 1955. These foundries account for a small percentage of U.S. production but are important to the supply of short run job shop castings critical to other industries.

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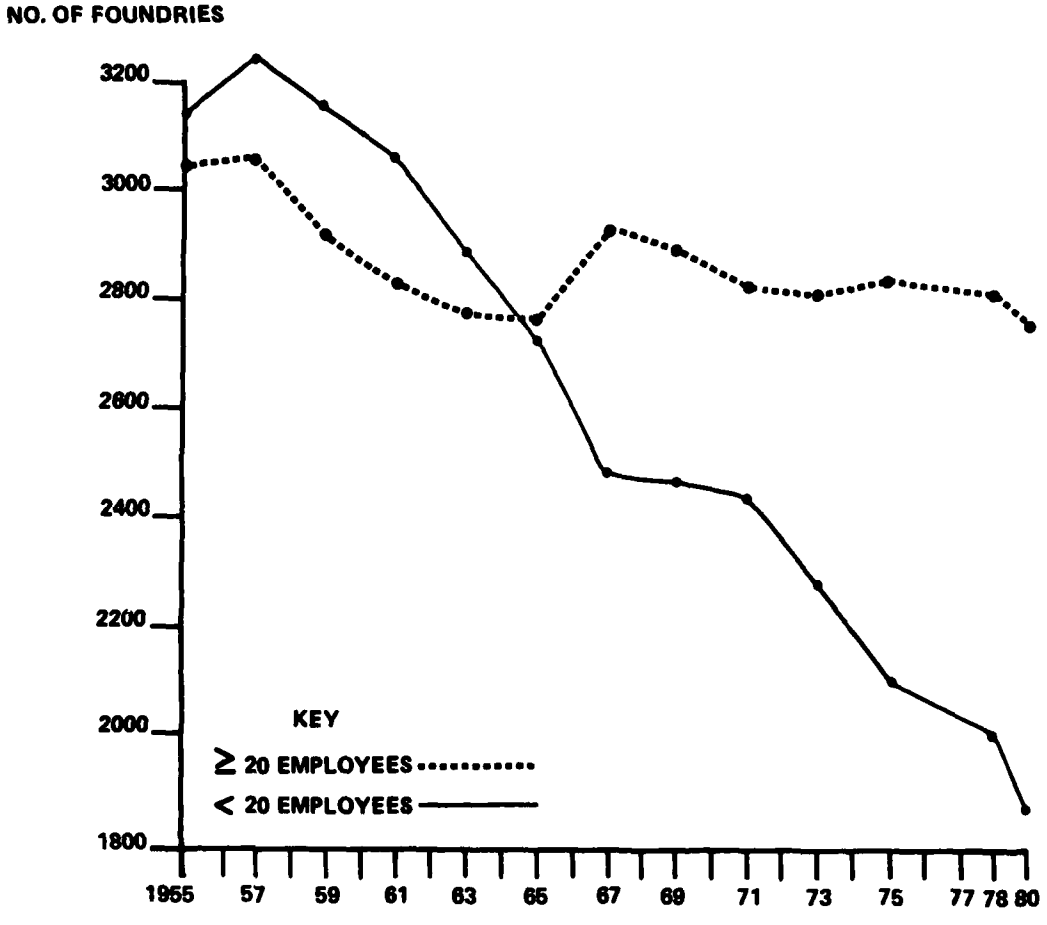
FIGURE 1

TRENDS IN THE NUMBER AND SIZE OF FOUNDRIES



Source: Penton/IPC, Metal Casting Industry Census Guides, 1955 through years listed to 1979; 1980 Penton/IPC census tapes sold to the Department of Transportation, September 1980, analyzed by GAO.

ENCLOSURE I

Table 1 indicates some of the regional differences in the number of foundries. About half of the U.S. foundries are located in six States, with another quarter located in the next nine States. The number of apparent closures, while varying from 5 to 48 percent for 14 of the top 15 States (one increased by 10 percent), is much higher for these States than for the rest of the United States.

Table 1

Net Closures of Foundries by State
(1957 to 1980)

State	Number of foundries	Net percent closed (opened)
	1980	
Ohio	443	23.2
California	413	26.5
Pennsylvania	362	33.3
Michigan	334	26.6
Illinois	301	37.9
New York	252	41.8
Wisconsin	191	21.4
Indiana	185	26.0
Texas	185	(10.1)
Massachusetts	135	43.0
New Jersey	122	47.9
Missouri	111	14.6
Connecticut	95	40.6
Alabama	93	5.1
Minnesota	86	12.2
Total of these 15 States	3,308	29.2
Total of other 35 States	971	10.5
Total U.S.	4,279	25.7

Source: Penton/IPC, 1958 Census Guide; 1980 Penton/IPC-DOT census tape.

ENCLOSURE I

As indicated below, there are significant differences by primary metal cast in the rate of closures with steel up and gray iron down. A more detailed analysis of the number of foundries reporting that they cast a particular metal indicates that the decline in gray and ductile iron is in large part due to decline in gray iron.

Table 2

Foundry Closures By Primary Metal Cast

	Foundries classifed by primary metal as a percent of all foundries (note a)		Percent decrease (increase) in the number of foundries between 1965 and 1980
	1965	1980	
Ferrous total	40.6	40.7	14.8
Gray and ductile iron	32.3	29.1	24
Malleable iron	1.5	1.1	37
Steel	6.7	10.5	(32)
Nonferrous total	59.4	59.3	15.4
Total	100.0	100.0	

a/Apparent closure trends with respect to the number of foundries primarily pouring a metal can reflect shifts in the mix of metals poured in addition to representing actual "closures" of foundries. For example, a foundry that poured 60 percent malleable iron and 40 percent steel in 1979 and then reversed the mix in 1980 would appear as a 1980 malleable iron foundry "closure" and a "new" steel foundry.

Source: Penton/IPC, 1966 Census Guide; 1980 Penton/IPC-DOT census tape.

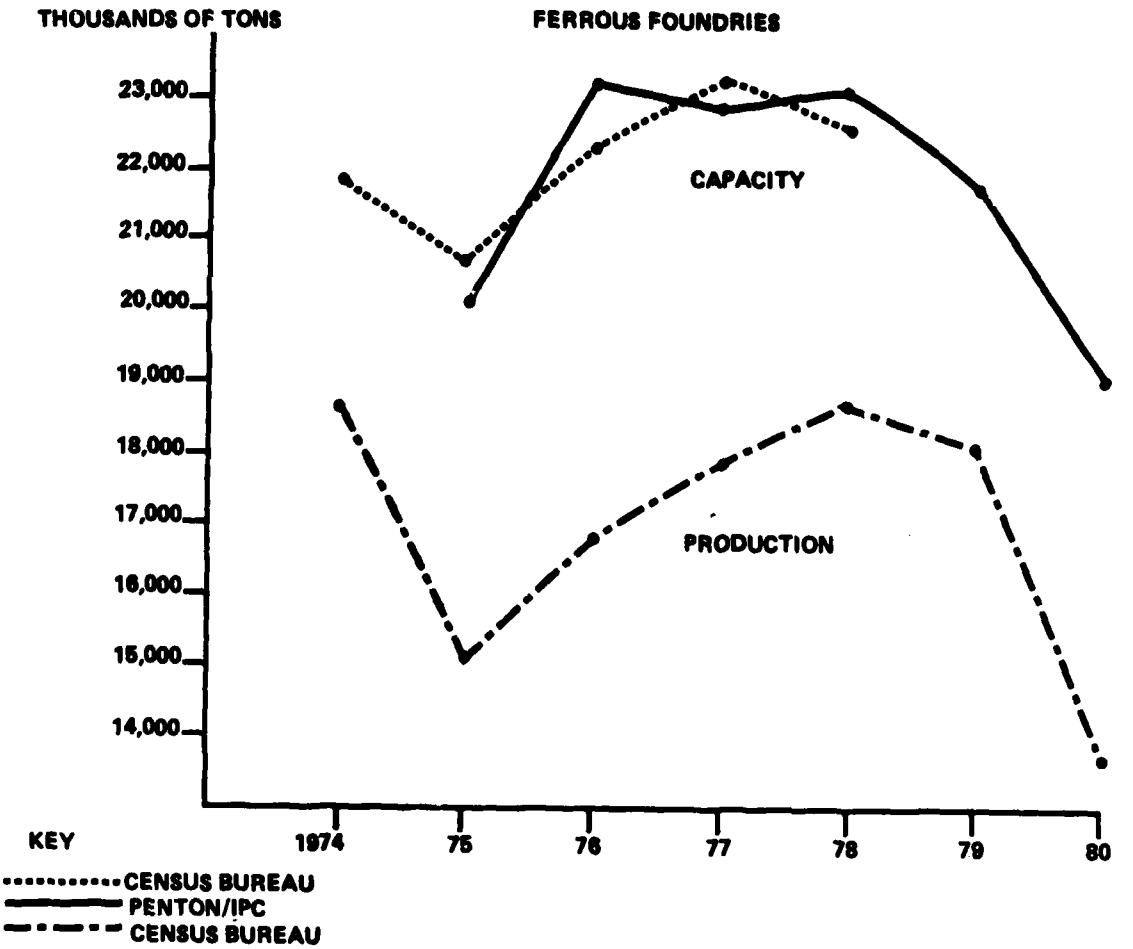
Has capacity been affected by the closures?

The effect of closures on domestic foundry capacity is perhaps the most significant area of concern. We first attempted to estimate the trends in capacity using capacity utilization figures published by the Bureau of the Census and by Penton/IPC, along with production figures published by the Census Bureau. This is the only approach possible using Government sources, but as indicated in figure 2 for ferrous foundries, it is seriously inadequate. The resulting capacity estimates almost mirror changes in the production figures, most likely due to errors in the estimates of capacity utilization. Similar results were obtained for nonferrous foundries and for all foundries combined.

Thus, the only credible measure of trends in capacity was provided to us by Arthur D. Little, Inc. (ADL) from corrected Penton/IPC censuses for 1976 and 1980. Using the number and size of the furnaces, the number of employees, the molding method used, and the metals being cast, ADL estimated the melting capacity of each U.S. foundry and totaled them by primary metal cast and by size. We concluded that ADL's estimates are reasonable. As indicated in table 3, in total, 265 or 5.8 percent of the foundries closed with a 5.1-percent reduction in total melting capacity, almost entirely due to reductions in the total capacity of gray iron foundries. Table 4 indicated how the remaining capacity is distributed between small, medium, and large foundries. The large number of small foundries is clearly shown. For example, 71 percent of the gray iron foundries have only 12 percent of the melting capacity. Gray iron accounts for 64 percent of total foundry capacity.

ENCLOSURE I

FIGURE 2
FOUNDRY CAPACITY AND PRODUCTION (1974-1980)
ACCORDING TO THE CENSUS BUREAU AND PENTON



Source: Bureau of the Census, Current Industrial Reports, 1974-1980; Survey of Plant Capacity 1978. Penton/IPC Business Outlook Surveys 1975-1980.

Table 3

Melting Capacity
(million tons per year)

Primary metal cast	Year 1976	1980
Ferrous:	41.83	39.04
Gray iron	29.69	26.84
Ductile iron	5.18	5.49
Malleable iron	2.48	2.18
Steel	4.48	4.53
Nonferrous:	4.08	4.51
Aluminum	2.20	2.35
Copper base	.80	.97
Zinc	1.02	1.10
Magnesium	.024	.064
Other	.037	.027
Total	45.91	43.55

Note: Shipping capacity is about 1/2 melting capacity.

Source: Arthur D. Little, Inc.

Table 4

Relative Shares of 1980 Melting Capacity (percent of capacity for primary metal)

Primary metal	Size of foundry (note a) (percentage) Small number	Small capacity	Medium number	Medium capacity	Large number	Large capacity	Total no. foundries for metal	Total capacity for metal million tons/year
Ferrous								
Gray Iron	71.4	12.1	21.1	20.6	7.5	67.3	1094	26.84
Ductile Iron	67.3	3.8	19.4	10.2	13.3	86.0	98	5.49
Malleable Iron	55.3	4.7	27.7	16.1	17.0	79.2	47	2.18
Steel	90.2	21.4	6.9	19.0	2.9	59.6	447	4.53
Nonferrous								
Aluminum	83.9	6.3	9.3	4.3	6.8	89.4	1348	2.35
Copper Base	81.7	8.2	12.7	17.5	5.6	74.3	732	.97
Zinc	74.8	5.8	14.8	16.1	10.4	78.1	318	1.10
Magnesium	-	11.0	-	5.9	-	83.1	19	.064
Other	92.2	18.2	4.8	15.9	3.0	65.9	166	.027
Total							b/4269	43.55

a/Foundry size in tons per year is as follows:

	Small	Medium	Large
Ferrous	0-8000	8000-40,000	40,000 +
Aluminum	0-600	600-2000	2,000 +
Copper and other	0-800	800-2500	2,500 +
Magnesium	0-500	500-2000	2,000 +
Zinc	0-1600	1600-5000	5,000 +

b/Number of foundries as determined by Arthur D. Little, Inc.

Source: Arthur D. Little, Inc.

ENCLOSURE I

The final measure of the effect of closures is the current shipping capacity of the foundry industry, which is basically equivalent to the maximum production under "normal" conditions. While the relationship between shipping and melting capacity depends on the complexity of the casting, the method and metal used, and the defect rate--on an industry-wide basis, shipping capacity is about half melting capacity. To develop these estimates we used the 494 anonymous responses to Penton/IPC's 1980 Business Outlook Survey (collected November 1980). The data has been thoroughly checked for "reasonableness" by Penton/IPC and us with no bias being found. As a further check on our approach to estimating capacity, we have estimated the annual production of the foundry industry. While not exactly agreeing with Census Bureau figures, at least in total the estimates appear to be consistent. The capacity estimate does depend on the estimates of capacity utilization derived from the survey. As previously indicated, this type of capacity utilization figure can lead to erroneous estimates. Thus it is the relative sizes of various sectors and trends which can be observed in the future, which should be emphasized, not the overall level itself. Even though we feel that these estimates are somewhat uncertain, they are the best currently available estimates for shipping capacities, and they are presented in tables 5 and 6.

Table 5

Shipping Capacity Estimates
(1980)

Employee	Average monthly capacity (tons)	Number of foundries	Annual shipping capacity (tons)	Percent of shipping capacity
Over 1000	8,125	49	4,777,600	22.3
250-999	2,114	282	7,155,681	33.4
100-249	706	563	4,766,842	22.3
50-99	301	656	2,367,866	11.1
20-49	149	993	1,772,344	8.3
less than 20	27	1,736	553,923	2.6
Total		4,279	21,394,255	100.0

Note: Shipping capacity is about one-half melting capacity.

Source: Derived from Penton/IPC 1980 Business Outlook Survey.

Table 6

Production Estimates
(1980)

Employee	Average monthly production (tons)	Number of foundries	Annual shipping capacity (tons)	Percent of production
Over 1000	5,963	49	3,506,244	22.7
250-999	1,530	282	5,177,520	33.5
100-249	499	563	3,371,244	21.8
50-99	223	656	1,755,456	11.4
20-49	105	993	1,251,180	8.0
less than 20	19	1,736	400,531	2.6
Total		4,279	15,462,175	100.0

Source: Derived from Penton/IPC 1980 Business Outlook Survey

Loss of auto foundry capacity

As much as 30 percent of foundry industry capacity serves the domestic automotive industry. The auto industry is the largest consumer of iron and aluminum castings, three-fourths of which are supplied from its captive foundries. The entire industrial network between the auto industry and its suppliers is being hard hit economically, and the implications for iron foundries are especially severe. Most automotive suppliers are affected by the doubling of market share for imported automobiles from 15 to 30 percent during 1979-80 and by continuing auto downsizing. Foundries are additionally affected by the substitution of aluminum for iron castings to reduce weight and a projected tripling in the market share of foreign component parts. Recently announced commitments by domestic automakers to purchase foreign-made components for use in domestic vehicles include over 5 million engine blocks, several hundred thousand drive train components, and an unspecified number of cast cylinder heads. All of these components are derived from castings.

According to an Arthur D. Little, Inc., study 1/, these trends will reduce demand for iron castings, and lead to closures and much reduced operating levels of both the older and less efficient foundries and the more efficient plants. "Domino effects" will spill over to noncaptive and nonautomotive foundries. Table 7 identifies some iron foundry closures in 1980. Most of this capacity is scheduled for dismantling or disposal according to industry officials. Only a portion of this capacity would be available for reopening. These recent closures represent the loss of over one million tons of iron casting capacity or 5 percent of the industry's shipping capacity. Other large foundries have threatened to close or are also closing which could further diminish U.S. casting capacity. The following section will relate these recent closures to defense considerations.

1/"Potential Impact on Iron Foundry from Substituting Aluminum Castings for Iron Castings in the Automotive Industry," Aug. 1980, Case 84735.

Table 7

Iron Foundry Closings, 1980

Company	Tons/yr.	City	State
Chrysler Corp.	290,000	Detroit	MI
Chrysler Corp.	100,000	Fostoria	OH
Ford Motor Co.	150,000	Dearborn	MI
Ford Motor Co.	120,000	Windsor	ONT
General Motors Co.	192,000	Flint	MI
Dayton Malleable	50,000	Columbus	OH
General Electric	24,000	Louisville	KY
General Electric	12,000	Elmira	NY
International Harvester	25,000	Memphis	TN
Ausco 1/	20,000	Benton Harbor	MI
Dana Corp.	20,000	Havana	IL
Frank Foundries	9,600	Davenport	IA
Stedman Padry and Machine	6,000	Aurora	IN
Kopper Co.	5,000	York	PA
Ingersoll-Rand 2/	4,800	Kutztown	PA
Lewisburg Casting Co.	3,600	Lewisburg	IN
Crompton & Knowles	3,500	Worcester	MA
Autocrat Corp.	2,500	New Athens	IL
LFE Corp.	1,250	Columbus	OH
Total	1,039,250		

1/An update by GAO indicates that the plant has been closed due to an employee strike.

2/Company officials have informed GAO that the plant is currently producing steel castings to the rail market.

Source: Department of Transportation.

Closures and implications for defense "surge" capacity

The recent closures of foundries accounting for a large chunk of industrial casting capacity--over 1 million tons or 5 percent of its base--creates disturbing concerns about defense industrial preparedness that we could not resolve due to a lack of relevant information.

Foundries produce products utilized in defense weapon and logistic systems. Approximately 8 percent of the industry's output is used for national defense application annually. Specific applications of castings in defense systems are for engine and engine components, powertrain components, structural components and some armament components. Examples of Army products reliant on castings are tanks, trucks, and artillery. The Navy utilizes castings, for example, in submarines for critical hull and machinery applications, such as diving, propulsion and weapon handling systems. Navy surface ships also require castings in their hull, power, and armament systems. Aircraft in all services use castings in the fuselage as well as in engine accessories. Castings are also used in missles, bombs, artillery, and small arm components. Besides their front-line role, castings are essential components of defense production equipment and logistics systems.

The proposed fiscal year 1982 defense budget includes substantial increases in hardware procurement, much of which contains cast components. For instance, the Navy budget includes the procurement or conversion of 33 ships in fiscal year 1982 compared to 19 in 1981. Defense combat vehicle procurement in fiscal year 1982 will be 35 percent greater than the 1981 level. Tactical and support vehicle purchases are planned to increase by 75 percent.

Our followup to several of the recently closed foundries disclosed that most had no current production devoted to defense systems. However, some of these foundries played significant roles in supplying defense needs during past emergencies.

While a rapid military buildup uses the same facilities as civilian production, there are significant production differences due to the different products utilized. One indication of such differences is the enormous increase of magnesium castings during World War II.

Table 8

Increased Production as Compared to 1942 (percent)

	Year				
	1943	1944	1945	1946	1947
Gray iron	2.4	8.8	6.4	14.1	41.7
Malleable iron	13.2	17.7	6.0	.8	20.5
Steel	14.9	45.0	15.7	-14.7	- 2.8
Aluminum	42.1	58.7	21.9	19.9	44.4
Magnesium	221.7	352.3	88.0	-81.0	-81.6
Copper Base	11.6	5.9	26.2	-22.0	-22.3
Total	6.2	15.4	6.2	8.9	32.5

Source: Penton Census Guide, 1955-56, p. 53.

Because of differences such as these, we did not attempt to estimate surge capacity 1/ for the foundry industry. We reviewed the 1977 Commerce study 2/ of steel castings capacity under the Defense Production Act. This study also emphasized the necessity for estimating the capacity for each "size" of casting as independently as possible.

This study does not, however, analyze whether the Nation has sufficient steel casting capacity and capability to provide the types of grades of steel castings that the Nation might require for an emergency mobilization. Although making such determinations is difficult for any industry--but particularly for the foundry industry--some initial analyses by Commerce might at least have helped resolve whether it would be potentially worthwhile or practical to consider in more detail the capacity issue relative to anticipated requirements. We know, for example, that the aggregate

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1/Surge capacity refers to the maximum production attainable from this industry.

2/The Steel Castings Industry, Department of Commerce, February 1977.

tonnage of steel castings shipped in 1944 at the height of World War II surged about 45 to 75 percent larger than shipments either 2 years earlier or 2 years later, and that a similar steel casting production surge reoccurred during the Korean conflict.

Concern about the health of the Nation's defense industrial base is illustrated by a December 1980 House Armed Services Committee report. 1/ Lagging industrial productivity, dependence on foreign materials sources, manpower shortages, and escalating costs are key factors causing the concern. It appears that these problems apply to at least some segments of the foundry industry.

Several industry owners, representatives, and responsible Government officials have also indicated concern about the capability and the capacity of the foundry industry for potential peacetime or emergency mobilization requirements. However, Defense officials felt there was no convincing evidence of a capacity problem. The Defense Department annually checks with prime contractors about perceived potential supply problems and have not received any indications of general foundry capacity problems from them. A possible explanation for this is that some of the defense contractors utilize foreign foundries, and they may not be sensitive to domestic foundry changes. Further, Defense officials acknowledged that no formal independent assessment has been done to determine the industry's capacity to meet Defense's projected peacetime and emergency mobilization requirements.

GOVERNMENT FOUNDRY DATA IS INADEQUATE

Classification problems

This section discusses the limitations of available Federal foundry data and our initial analyses of the industry using Federal and private data banks. Much of the foundry data gathered by the Government is questionable due to classification or other problems. Though the Census Bureau treats larger captive foundries and those operating at different locations as separate plants, Census officials acknowledged that some highly integrated foundries could be missed. This exclusion affects data on employment, value of shipments, numbers of plants, and other data portrayed in the Census of Manufacturers (COM) and Annual Survey of Manufacturers (ASM). Noncomparability of Current Industrial Reports (CIR) and COM data is evidenced by the 1977 reported quantity of shipment figures for miscellaneous gray iron castings--8.5 million tons in the CIR and 7.3 million tons in the COM. A comparison between Census Bureau

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1/U.S. House of Representatives, 96th Congress, The Ailing Defense Industrial Base: Unready for Crisis. Report to the Defense Industrial Base Panel, December 1980.

data and Penton/IPC data is shown in table 9 and figure 3. Besides the current differences in the number of foundries, more significant is that the reported trends are different. Between 1972 and 1977, the COM reports an increase of 116 foundries, while Penton reports a decrease of 425 foundries between 1971 and 1978. Foundry data users further indicated a greater lag time in publication of COM/ASM data and preferred to rely on private sources or CIR data over COM/ASM data.

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TABLE 9

Comparison of Penton/IPC and Census Bureau data (note a)

Type of foundry	Number of employees	Number of foundries 1977 COM	Number of foundries 1978 Penton/IPC (note b)
Gray and Ductile	≤ 20	301	248
	≥ 20	683	1010
Total		984	1258
Malleable	≤ 20	13	2
	≥ 20	53	49
Total		66	51
Steel	≤ 20	118	92
	≥ 20	297	360
Total		415	452
Nonferrous	≤ 20	1087	1507
	≥ 20	805	1174
Total		1892	2681
All foundries	≤ 20	1519	1849
	≥ 20	1838	2593
Total		3357	4442

a/This is a comparison of 1977 COM with 1978 Penton/IPC data. The differences would be greater had 1977 Penton data been available, since Penton/IPC trends indicate more foundries in 1977 than in 1978.

b/The 1978 Penton/IPC data, which included Canadian foundries, was adjusted by eliminating the 1980 percentage of Canadian foundries in each metal and employment category to arrive at total U.S. foundries.

Source: Bureau of the Census, 1977 Census of Manufactures; Penton/IPC, Industry Census Guide, 1979 Edition.

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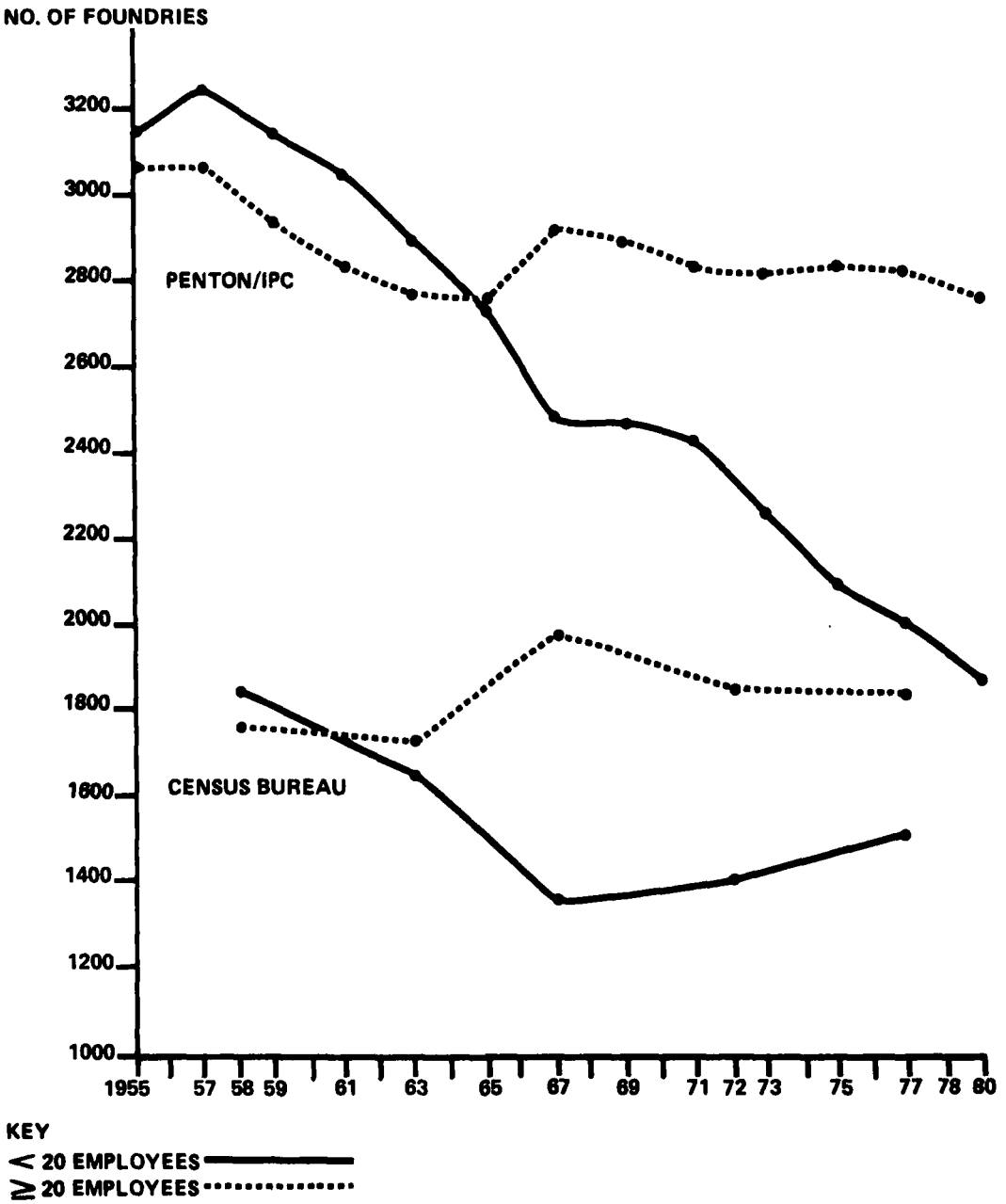
FIGURE 3
TRENDS IN THE NUMBER AND SIZE OF FOUNDRIES ACCORDING TO PENTON/IPC AND THE CENSUS BUREAU



Source: Bureau of the Census, 1972 and 1977 *Census of Manufactures*; Penton/IPC Industry Census Guides 1955-1979, and Penton/IPC-DOT census tape.

Import statistics on castings are another classification problem. In fact, the level of casting imports cannot be ascertained. As the Tariff Schedules of the U.S. Annotated (TSUSA) numbers assigned by Customs Service agents are designed to assess a duty rate for those articles and not to describe the type of articles, many castings are missed. Rough or unfinished castings have the best chance of being identified by TSUSA classifications; while finished castings or castings which have been incorporated into subassemblies usually lose their identity as foundry products. In fact, the Standard Industrial Classification-based import publications 1/ state that:

> "Since imports were originally compiled in terms of an unrelated commodity classification, (the TSUSA) a complete and precise presentation of imports in terms of the output commodity classification based on the SIC is not possible."

Data accuracy is questionable

The Census Bureau estimates data for foundries employing less than 10 to 20 people, using administrative records from the Social Security Administration and the Internal Revenue Service. As stated in the COM, the amount of small foundry data in the COM is limited to 3 percent of the industry's value of shipments; however, the number of foundries employing fewer than 20 people is not as reliable a statistic. Since 40.5 percent of the foundry industry employs fewer than 20 people, according to Penton/IPC, the disparity in the number of foundries indicated in table 5 is significant. Small foundries produce many different products critical to the diverse needs of their customers. Also, closures due to regulatory impact, market trends, and imports among others cannot be accurately followed without an accurate count of foundries. As indicated in figure 3, the trends shown for COM and Penton/IPC are contradictory (industry sources indicate the Penton/IPC trend data is likely far more correct).

The differences between Penton/IPC and Census indicated in table 9 cannot be fully explained. Besides the exclusion of captive operations, some plants employing fewer than 20 people may not be counted. Accuracy of the Government data must be questioned, however, when the disparity is so great.

1/Bureau of the Census, Imports of Commodities Based on the Standard Industrial Classification. (FT 210) Explanation of Statistics.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