

June 1990

AGRICULTURE ADP  
PROCUREMENT

Contracting and  
Market Share  
Information



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Information Management and  
Technology Division

B-239535

June 27, 1990

The Honorable John Conyers, Jr.  
Chairman, Committee on Government  
Operations  
House of Representatives

The Honorable Frank Horton  
Ranking Minority Member, Committee  
on Government Operations  
House of Representatives

This report responds to your February 1989 requests for a comprehensive review of federal agencies' compatible computer procurements.<sup>1</sup> In your initial requests and in subsequent discussions with your offices, we were asked to answer several specific questions about agencies' procurements of mainframe computers and mainframe peripheral equipment. Your questions focused on identifying the extent to which agencies' procurements of mainframe computers and mainframe peripherals required compatibility with International Business Machines (IBM) or any other computer manufacturer. You were also interested in knowing details such as the identification of manufacturers whose equipment was acquired by each agency and the procurement methods used to obtain equipment.

In addition to this report on the Department of Agriculture, we previously reported similar information on the Navy (including the Marine Corps), Army, Air Force, National Aeronautics and Space Administration, and Department of Defense (including the Defense Logistics Agency).<sup>2</sup> Information on the remaining 27 agencies we included in our work will be reported after we have fully analyzed procurement data we collected from them.

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<sup>1</sup>A compatible procurement requires hardware or software that functions like specified or existing hardware or software, with little or no modification. Competition in such procurements may occur between manufacturers and marketers—such as system developers and system integrators—to supply equipment that meets the compatible requirements. Since there is the potential for competition between manufacturers and marketers, a compatible procurement does not necessarily result in the award of a sole source contract.

<sup>2</sup>Navy ADP Procurement: Contracting and Market Share Information (GAO/IMTEC-89-66FS, Sept. 15, 1989); Army ADP Procurement: Contracting and Market Share Information (GAO/IMTEC-90-28FS, Mar. 1, 1990); Air Force ADP Procurement: Contracting and Market Share Information (GAO/IMTEC-90-35FS, Apr. 9, 1990); NASA ADP Procurement: Contracting and Market Share Information (GAO/IMTEC-90-39FS, Apr. 20, 1990); and Defense ADP Procurement: Contracting and Market Share Information (GAO/IMTEC-90-60FS, June 8, 1990).

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The information we obtained from Agriculture shows that during the 3-1/2 fiscal years ending in March 1989, Agriculture had a total of 208 procurements for mainframes and mainframe peripherals and that 97 percent of these (201) required some type of compatibility. Agriculture required IBM compatibility 90 percent of the time (181 of its 201 compatible procurements). Of the 20 remaining compatible procurements, Agriculture required that 12 have Honeywell Bull compatibility and 8 have Unisys compatibility.<sup>3</sup> When Agriculture's procurements required IBM compatibility, IBM equipment was supplied 85 percent of the time (153 of the 181 IBM-compatible procurements).

Agriculture obligated \$64.6 million for the 208 mainframe and mainframe peripheral procurements. When we used dollars for comparison—as opposed to the number of procurements—we found that overall Agriculture obligated more dollars for IBM equipment than for any other manufacturer's equipment (\$53.2 million for IBM versus \$11.4 million for all others), including both compatible and other procurements where no compatibility was required. For the 201 compatible procurements, with total obligations of \$62 million, we found that Agriculture obligated \$56.1 million to IBM-compatible procurements. Agriculture obligated \$50.9 million for the 153 IBM-compatible procurements that involved IBM equipment.

As requested in discussions with your offices, we also obtained information from Agriculture on the procurement methods it used, including Agriculture's use of contractors that participate in the Small Business Administration's program for small disadvantaged businesses—known as 8(a) contractors. The detailed questions you asked and our answers are summarized in appendix I. Appendix II contains tables with detailed statistics that are the basis for our answers to your questions.

We are reporting information for the 3-1/2 fiscal years from October 1, 1985 through March 31, 1989. All the information is based on Agriculture's response to a questionnaire we devised and distributed to 35 agencies. We did not independently validate the information, which Agriculture supplied in June 1989, nor did we evaluate any documentation related to individual Agriculture procurements. However, we

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<sup>3</sup>Since several companies manufacture and market IBM-compatible equipment, competition in IBM-compatible procurements may occur among a variety of manufacturers and marketers. However, there are few if any companies that manufacture equipment compatible with Honeywell Bull or Unisys. As a result, competition in procurements requiring Honeywell Bull or Unisys compatibility generally occurs only between the manufacturer of the required equipment and companies marketing that manufacturer's equipment.

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checked Agriculture's information for consistency with the instructions for our questionnaire and made appropriate revisions. At your request, we did not solicit or obtain comments from Agriculture on this report. Appendix III contains additional details on the objective, scope, and methodology of our work.

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As arranged with your offices, unless you publicly announce this report's contents earlier, we plan no further distribution of it until 30 days after the date of this letter. We will then send copies to Agriculture and will also make copies available to others upon request.

This information was compiled under the direction of Jack L. Brock, Jr., Director, Government Information and Financial Management, who can be contacted at (202) 275-3195, should you require additional information. Other major contributors to this report are listed in appendix IV.



Ralph V. Carlone  
Assistant Comptroller General

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**Abbreviations**

ADP	automated data processing
GAO	General Accounting Office
GSA	General Services Administration
IBM	International Business Machines
IMTEC	Information Management and Technology Division

# Questions and Answers About Agriculture Procurements

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**What are the numbers and dollar amounts of Agriculture's mainframe and mainframe peripheral procurements requiring compatibility and is there any trend toward the increased use of compatible procurements?**

Agriculture had a total of 208 procurements and obligated a total of \$64.6 million for mainframe computers and mainframe peripherals during the 3-1/2 fiscal years ending in March 1989. According to Agriculture statistics, compatible procurements comprised 201 of Agriculture's 208 total procurements and represented \$62 million of the \$64.6 million obligated. In each of the 3-1/2 fiscal years —using Agriculture's number of procurements as a measure—the percentage of compatible procurements versus other procurements was 95 percent or higher. During the same period, the percentage of dollars obligated to compatible procurements versus other procurements was 93 percent or higher in each year. Because Agriculture's statistics indicate a consistently high percentage of compatible procurements, there was no trend toward increased compatible procurements.

Appendix I  
 Questions and Answers About  
 Agriculture Procurements

Figure I.1: Number of Agriculture Mainframe and Mainframe Peripheral Procurements

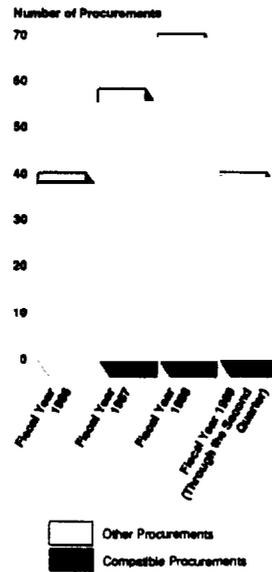


Figure I.2: Dollars for Agriculture Mainframe and Mainframe Peripheral Procurements



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**What is the distribution of Agriculture's compatible mainframe and mainframe peripheral procurements according to type of compatibility?**

Those procurements that Agriculture identified as having a compatible requirement were for either Honeywell Bull, IBM, or Unisys compatibility. Specifically, 181 of the 201 procurements were to satisfy IBM-compatible requirements representing \$56.1 million of \$62 million obligated for all compatible procurements. Also, Honeywell Bull-compatible requirements represented 12 procurements and \$4.4 million. Unisys-compatible requirements represented 8 of the 201 procurements and \$1.5 million of the \$62 million in obligations.

Appendix I  
 Questions and Answers About  
 Agriculture Procurements

Figure I.3: Number of Agriculture Compatible Procurements According to Type of Compatibility

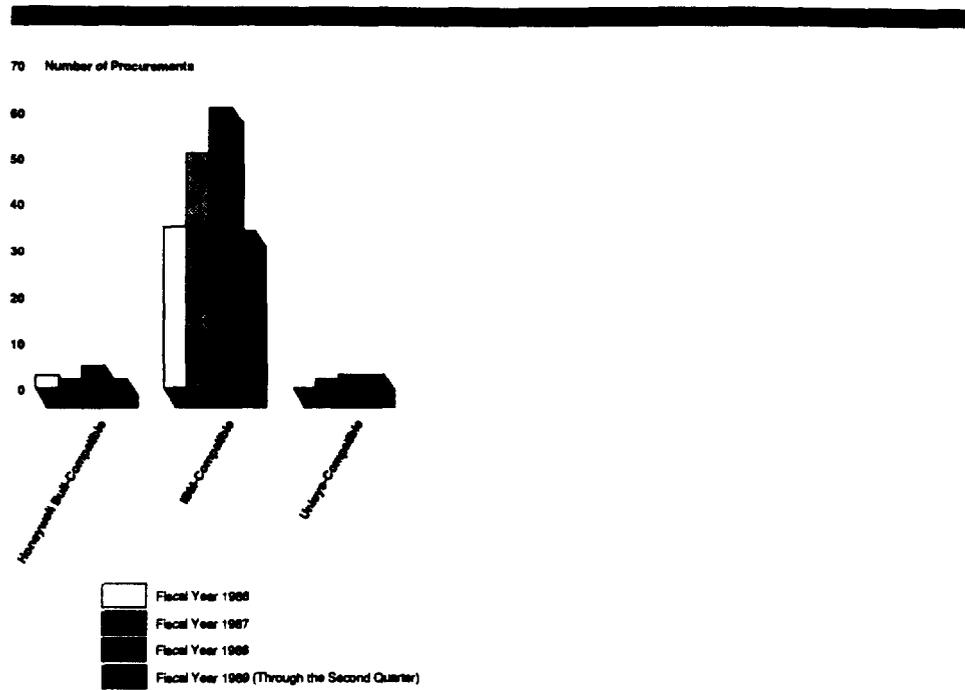
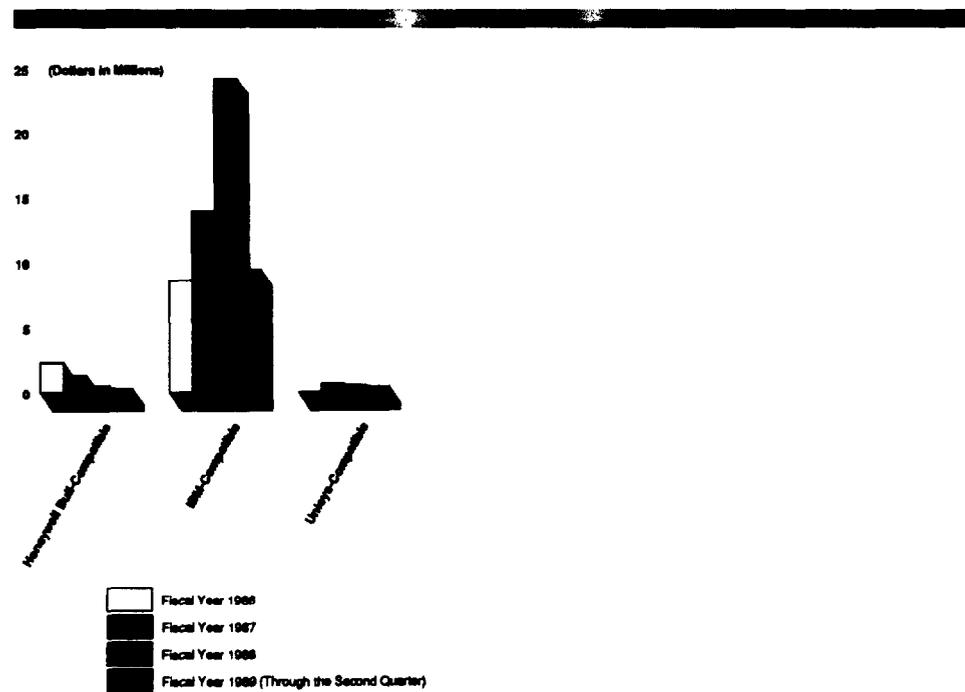


Figure I.4: Dollars for Agriculture Compatible Procurements According to Type of Compatibility



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**Appendix I  
Questions and Answers About  
Agriculture Procurements**

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**What equipment manufacturers are involved in Agriculture's IBM-compatible mainframe and mainframe peripheral procurements?**

Agriculture obtained IBM equipment in the majority of its IBM-compatible procurements in each of fiscal years 1986 through the second quarter of 1989. Of the 181 IBM-compatible procurements during fiscal years 1986 through 1989 (through the second quarter), 153 (85 percent) resulted in Agriculture obtaining IBM equipment. Similarly, of the \$56.1 million obligated to IBM-compatible procurements, \$50.9 million (91 percent) was for procurements involving IBM equipment. In addition to IBM, other manufacturers involved in Agriculture's IBM-compatible procurements included Amdahl, Memorex, National Advanced Systems, and Storage Technology Corporation.

Figure I.5: Number of Agriculture IBM-Compatible Procurements According to Manufacturer of Equipment

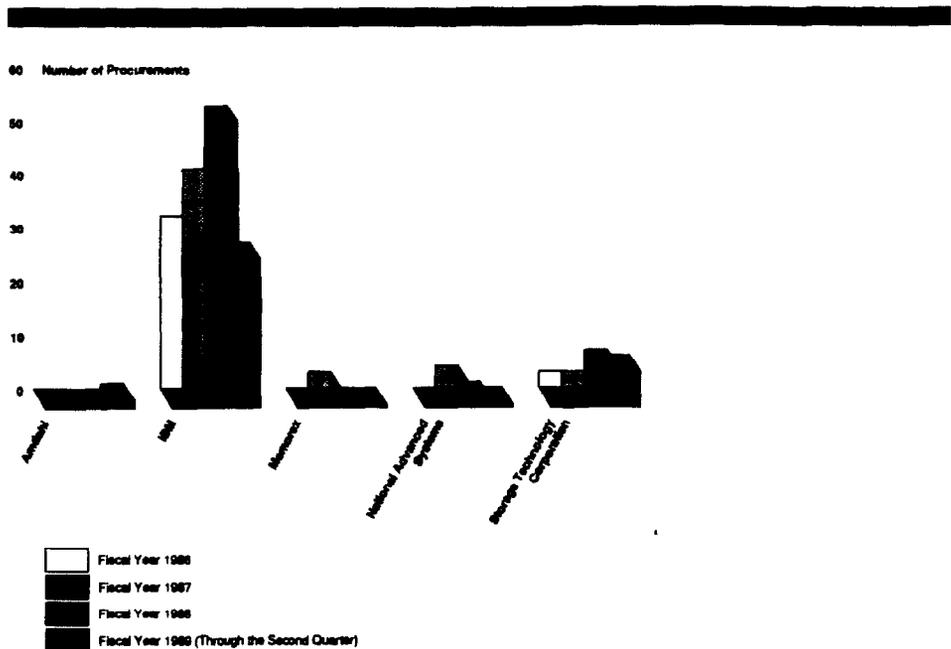
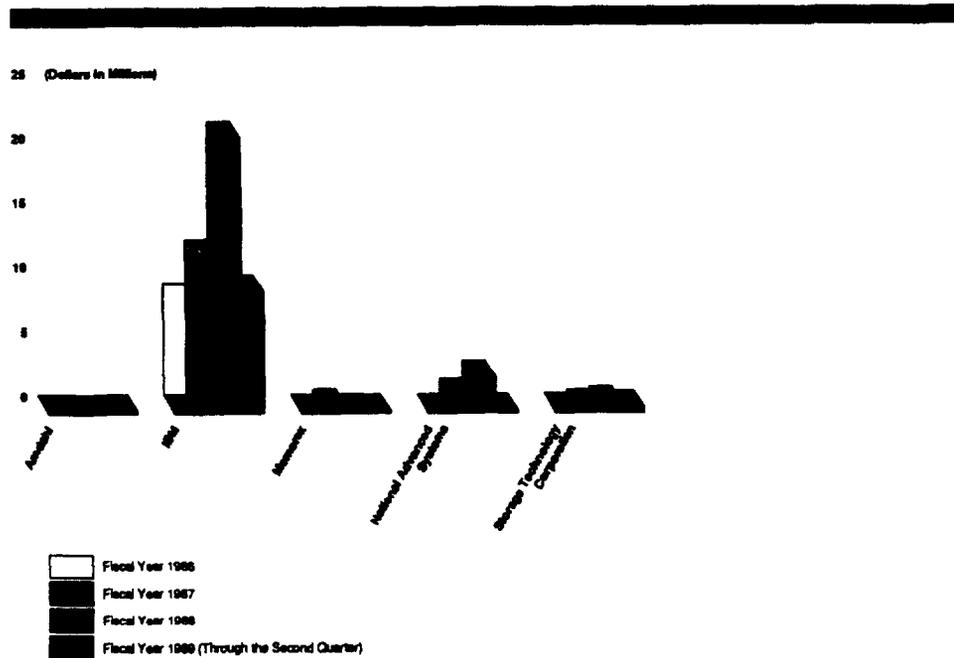


Figure I.6: Dollars for Agriculture IBM-Compatible Procurements According to Manufacturer of Equipment



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**What procurement methods were used to obtain all types of compatible mainframe computers and mainframe peripheral equipment? And, did Agriculture frequently use new contracts with 8(a) contractors to obtain compatible mainframes and mainframe peripherals?**

Using the number of procurements as a measure, modifications to existing contracts were the most frequently used method of obtaining equipment when Agriculture identified compatible requirements. Also, more dollars were obligated to modifications to existing contracts than to any other procurement method during the 3-1/2 fiscal years. During fiscal years 1987 through 1989 (through the second quarter) new contracts with 8(a) firms represented 6 of Agriculture's 201 compatible procurements. Of the \$62 million obligated to compatible procurements, \$800,000 represented procurements involving new contracts with 8(a) contractors.

Appendix I  
 Questions and Answers About  
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Figure I.7: Number of Agriculture Compatible Procurements According to Procurement Method

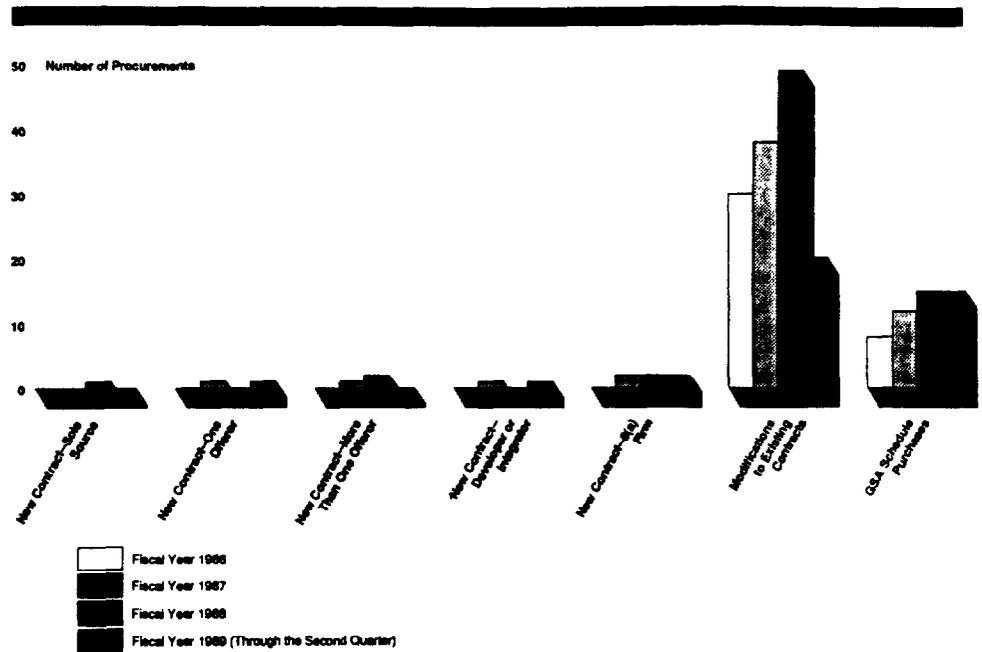
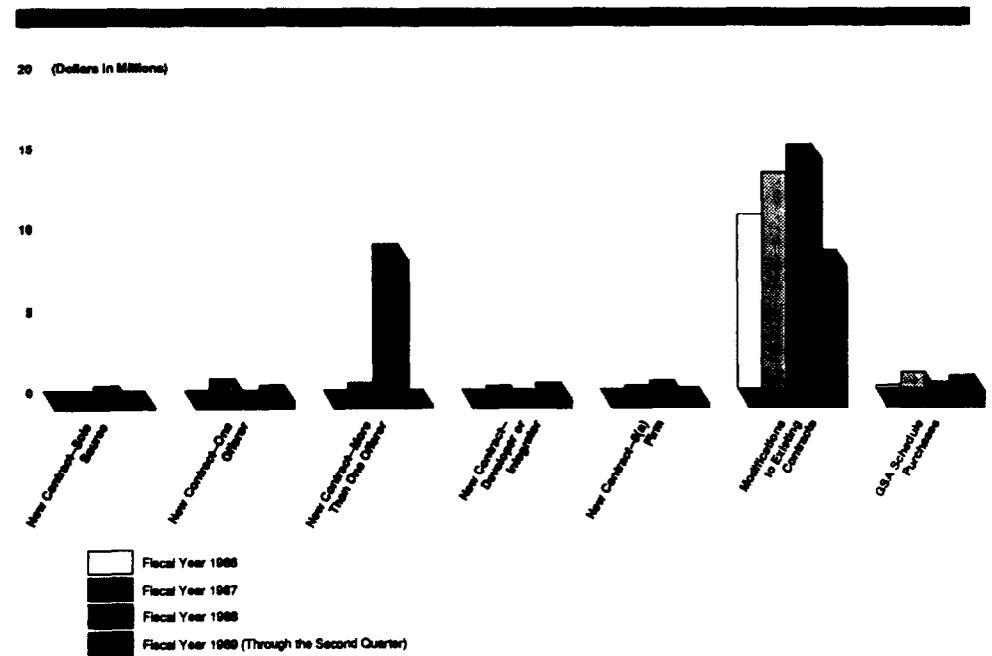


Figure I.8: Dollars for Agriculture Compatible Procurements According to Procurement Method



**What procurement methods were used to obtain IBM-compatible mainframe computers and mainframe peripheral equipment? And, did Agriculture frequently use new contracts with 8(a) contractors to obtain IBM-compatible mainframes and mainframe peripherals?**

Agriculture most frequently used modifications to existing contracts as the procurement method for obtaining IBM-compatible equipment. Of the \$56.1 million obligated for IBM-compatible procurements, modifications to existing contracts accounted for \$42.7 million in dollar obligations—more than any other procurement method. New contracts with 8(a) firms represented 5 of Agriculture's 181 IBM-compatible procurements and accounted for \$600,000 in obligated dollars during fiscal years 1987 through 1989 (through the second quarter).

Appendix I  
 Questions and Answers About  
 Agriculture Procurements

Figure I.9: Number of Agriculture IBM-Compatible Procurements According to Procurement Method

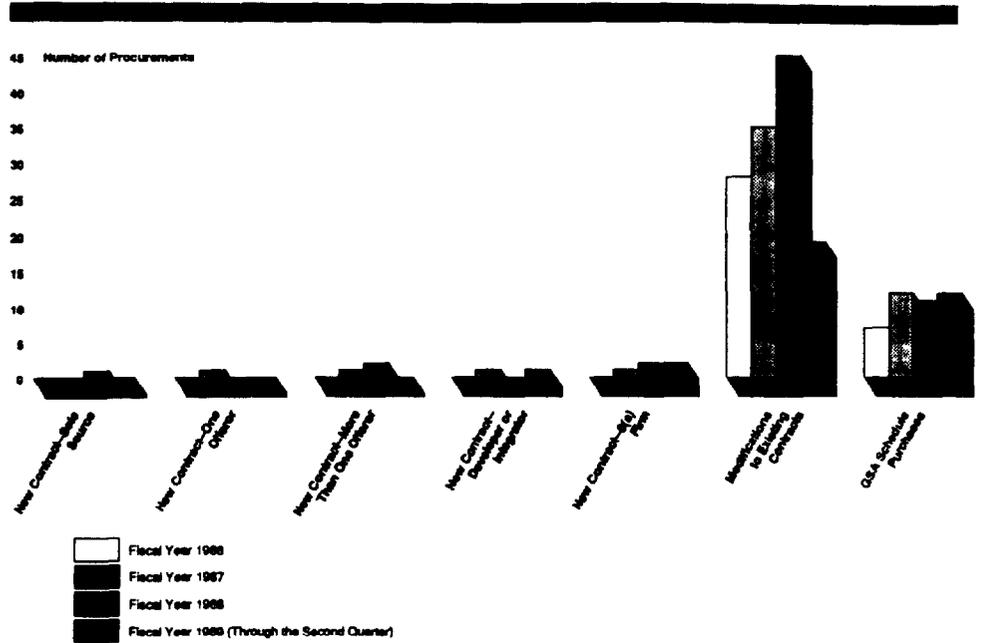
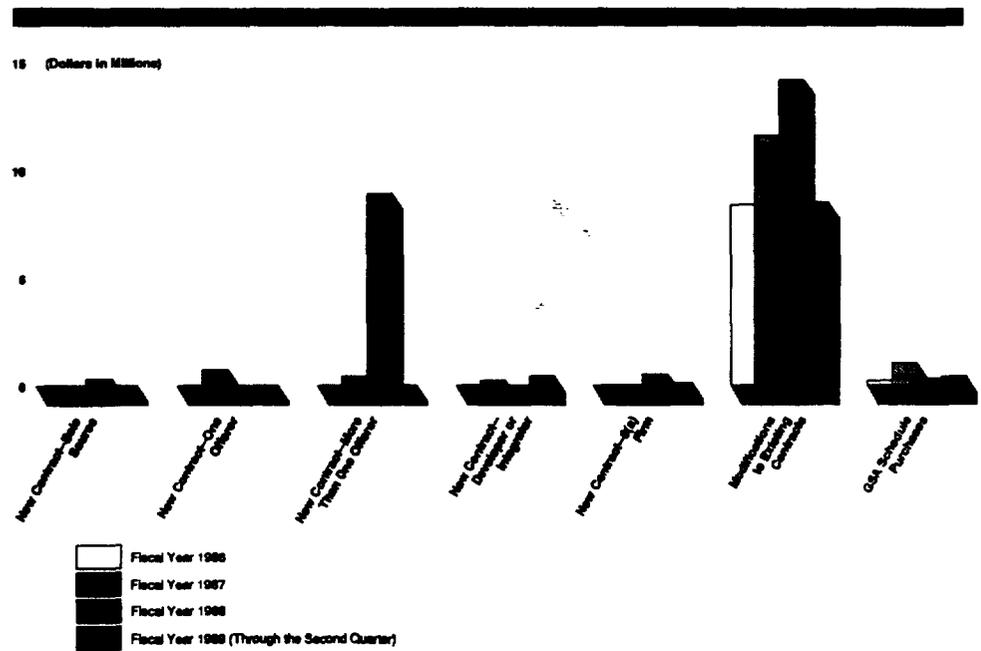


Figure I.10: Dollars for Agriculture IBM-Compatible Procurements According to Procurement Method

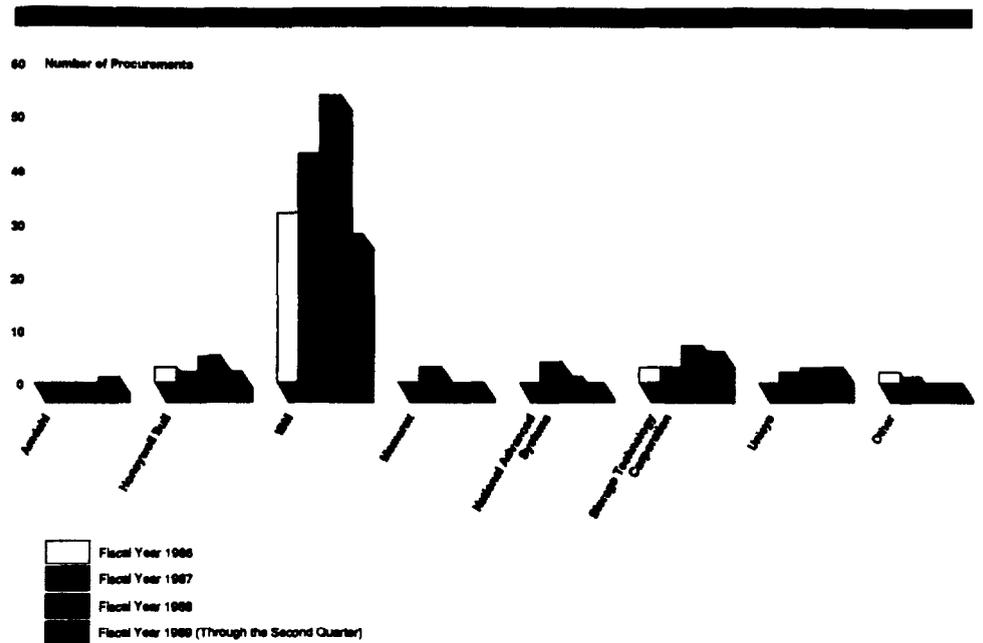


**What equipment manufacturers are involved in Agriculture's mainframe and mainframe peripheral procurements, including both procurements where compatibility is required and procurements with no compatibility requirement?**

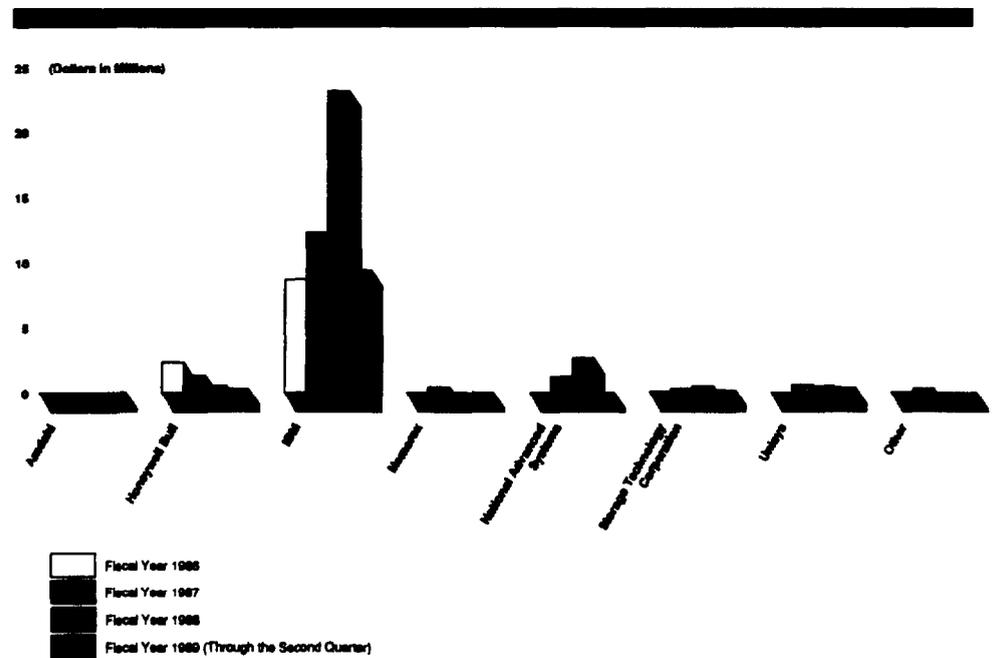
IBM equipment was most frequently supplied to Agriculture for mainframe and mainframe peripheral procurements in each of fiscal years 1986 through 1988 and for the first half of fiscal year 1989, with 157 out of 208 total procurements. Additionally, using obligated dollars as the measure, Agriculture's obligations for procurements involving IBM equipment during the same 3-1/2 year period were \$53.2 million of a total of \$64.6 million. Amdahl, Honeywell Bull, Memorex, National Advanced Systems, Storage Technology Corporation, Unisys, and other manufacturers' equipment was also supplied to Agriculture during the 3-1/2 years.

Appendix I  
 Questions and Answers About  
 Agriculture Procurements

**Figure I.11: Number of Agriculture Mainframe and Mainframe Peripheral Procurements According to Manufacturer of Equipment**



**Figure I.12: Dollars for Agriculture Mainframe and Mainframe Peripheral Procurements According to Manufacturer of Equipment**



# Detailed Statistics on Agriculture Procurements

**Table II.1: Agriculture Mainframe and Mainframe Peripheral Procurements**

Dollars in millions

	Fiscal Year 1986		Fiscal Year 1987		Fiscal Year 1988		Fiscal Year 1989 <sup>a</sup>		Total	
	Number	Amount	Number	Amount	Number	Amount	Number	Amount	Number	Amount
Compatible	38	\$10.9	55	\$15.8	69	\$25.2	39	\$10.1	201	\$62.0
Other	2	<sup>b</sup>	3	0.5	1	2.0	1	0.1	7	2.6
<b>Total</b>	<b>40</b>	<b>\$10.9</b>	<b>58</b>	<b>\$16.3</b>	<b>70</b>	<b>\$27.2</b>	<b>40</b>	<b>\$10.2</b>	<b>208</b>	<b>\$64.6</b>
Compatible Percent of Total	95%	100%	95%	97%	99%	93%	98%	99%	97%	96%

<sup>a</sup>Fiscal year 1989 through the second quarter.<sup>b</sup>Less than \$100,000.
**Table II.2: Agriculture Compatible Procurements According to Type of Compatibility**

Dollars in millions

	Fiscal Year 1986		Fiscal Year 1987		Fiscal Year 1988		Fiscal Year 1989 <sup>a</sup>		Total	
	Number	Amount	Number	Amount	Number	Amount	Number	Amount	Number	Amount
Honeywell Bull-Compatible	3	\$2.3	2	\$1.3	5	\$0.5	2	\$0.3	12	\$4.4
IBM-Compatible	35	8.6	51	13.9	61	24.2	34	9.4	181	56.1
Unisys-Compatible	0	0	2	0.6	3	0.5	3	0.4	8	1.5
<b>Total</b>	<b>38</b>	<b>\$10.9</b>	<b>55</b>	<b>\$15.8</b>	<b>69</b>	<b>\$25.2</b>	<b>39</b>	<b>\$10.1</b>	<b>201</b>	<b>\$62.0</b>

<sup>a</sup>Fiscal year 1989 through the second quarter.
**Table II.3: Agriculture IBM-Compatible Procurements According to Manufacturer of Equipment**

Dollars in millions

	Fiscal Year 1986		Fiscal Year 1987		Fiscal Year 1988		Fiscal Year 1989 <sup>a</sup>		Total	
	Number	Amount	Number	Amount	Number	Amount	Number	Amount	Number	Amount
Amdahl	0	\$0.0	0	\$0.0	0	\$0.0	1	\$ <sup>b</sup>	1	\$ <sup>b</sup>
IBM	32	8.6	41	12.0	53	21.1	27	9.2	153	50.9
Memorex	0	0.0	3	0.4	0	0.0	0	0.0	3	0.4
National Advanced Systems	0	0.0	4	1.2	1	2.6	0	0.0	5	3.8
Storage Technology Corporation	3	<sup>b</sup>	3	0.3	7	0.5	6	0.2	19	1.0
<b>Total</b>	<b>35</b>	<b>\$8.6</b>	<b>51</b>	<b>\$13.9</b>	<b>61</b>	<b>\$24.2</b>	<b>34</b>	<b>\$9.4</b>	<b>181</b>	<b>\$56.1</b>

<sup>a</sup>Fiscal year 1989 through the second quarter.<sup>b</sup>Less than \$100,000.

Appendix II  
Detailed Statistics on  
Agriculture Procurements

**Table II.4: Agriculture Compatible Procurements According to Procurement Method**

Dollars in millions

	Fiscal Year 1986		Fiscal Year 1987		Fiscal Year 1988		Fiscal Year 1989 <sup>a</sup>		Total	
	Number	Amount	Number	Amount	Number	Amount	Number	Amount	Number	Amount
New Contract—Sole Source	0	\$0.0	0	\$0.0	1	\$0.3	0	\$0.0	1	\$0.3
New Contract—One Offeror	0	0.0	1	0.7	0	0.0	1	0.3	2	1.0
New Contract—More Than One Offeror	0	0.0	1	0.4	2	8.9	0	0.0	3	9.3
New Contract—Developer or Integrator	0	0.0	1	0.2	0	0.0	1	0.4	2	0.6
New Contract—8(a) Firm	0	0.0	2	0.2	2	0.5	2	0.1	6	0.8
Modifications to Existing Contracts	30	10.7	38	13.3	49	15.1	20	8.5	137	47.6
GSA Schedule Purchases	8	0.2	12	1.0	15	0.4	15	0.8	50	2.4
<b>Total</b>	<b>38</b>	<b>\$10.9</b>	<b>55</b>	<b>\$15.8</b>	<b>69</b>	<b>\$25.2</b>	<b>39</b>	<b>\$10.1</b>	<b>201</b>	<b>\$62.0</b>

<sup>a</sup>Fiscal year 1989 through the second quarter.

**Table II.5: Agriculture IBM-Compatible Procurements According to Procurement Method**

Dollars in millions

	Fiscal Year 1986		Fiscal Year 1987		Fiscal Year 1988		Fiscal Year 1989 <sup>a</sup>		Total	
	Number	Amount	Number	Amount	Number	Amount	Number	Amount	Number	Amount
New Contract—Sole Source	0	\$0.0	0	\$0.0	1	\$0.3	0	\$0.0	1	\$0.3
New Contract—One Offeror	0	0.0	1	0.7	0	0.0	0	0.0	1	0.7
New Contract—More Than One Offeror	0	0.0	1	0.4	2	8.9	0	0.0	3	9.3
New Contract—Developer or Integrator	0	0.0	1	0.2	0	0.0	1	0.4	2	0.6
New Contract—8(a) Firm	0	0.0	1	<sup>b</sup>	2	0.5	2	0.1	5	0.6
Modifications to Existing Contracts	28	8.4	35	11.6	45	14.2	19	8.5	127	42.7
GSA Schedule Purchases	7	0.2	12	1.0	11	0.3	12	0.4	42	1.9
<b>Total</b>	<b>35</b>	<b>\$8.6</b>	<b>51</b>	<b>\$13.9</b>	<b>61</b>	<b>\$24.2</b>	<b>34</b>	<b>\$9.4</b>	<b>181</b>	<b>\$56.1</b>

<sup>a</sup>Fiscal year 1989 through the second quarter.

<sup>b</sup>Less than \$100,000.

Appendix II  
Detailed Statistics on  
Agriculture Procurements

**Table II.6: Agriculture Mainframe and Mainframe Peripheral Procurements According to Manufacturer of Equipment**

Dollars in millions

	Fiscal Year 1986		Fiscal Year 1987		Fiscal Year 1988		Fiscal Year 1989 <sup>a</sup>		Total	
	Number	Amount	Number	Amount	Number	Amount	Number	Amount	Number	Amount
Amdahl	0	\$0.0	0	\$0.0	0	\$0.0	1	\$ <sup>b</sup>	1	<sup>b</sup>
Honeywell Bull	3	2.3	2	1.3	5	0.5	2	0.3	12	\$4.4
IBM	32	8.6	43	12.2	54	23.1	28	9.3	157	53.2
Memorex	0	0.0	3	0.4	0	0.0	0	0.0	3	0.4
National Advanced Systems	0	0.0	4	1.2	1	2.6	0	0.0	5	3.8
Storage Technology Corporation	3	<sup>b</sup>	3	0.3	7	0.5	6	0.2	19	1.0
Unisys	0	0.0	2	0.6	3	0.5	3	0.4	8	1.5
Other	2	<sup>b</sup>	1	0.3	0	0.0	0	0.0	3	0.3
<b>Total</b>	<b>40</b>	<b>\$10.9</b>	<b>58</b>	<b>\$16.3</b>	<b>70</b>	<b>\$27.2</b>	<b>40</b>	<b>\$10.2</b>	<b>208</b>	<b>\$64.6</b>

<sup>a</sup>Fiscal year 1989 through the second quarter

<sup>b</sup>Less than \$100,000

# Objective, Scope, and Methodology

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In February 1989 we were requested by the Chairman and the Ranking Minority Member, House Committee on Government Operations, to perform a comprehensive review of the government's use of IBM-compatible automated data processing (ADP) procurements. In response to the requests and in discussions with the Chairman's and Ranking Minority Member's offices, we agreed that procurements of mainframes and mainframe peripherals would be included in our review, with emphasis on compatible procurements. Our review covered procurements during the 3-1/2 fiscal years ending in March 1989, at 35 federal agencies.

Our primary objective was to obtain and analyze information on specific aspects of each agency's ADP-related procurements. This report focuses on the Department of Agriculture and includes the number and aggregate dollar value of Agriculture's mainframe-related contracts, distribution of procurements among equipment manufacturers, and breakdown of the various procurement methods Agriculture used to obtain mainframe-related equipment.

We used the following mutually exclusive procurement methods to group Agriculture's procurements. The first three methods represent specific types of new contracts with mainframe and peripheral equipment manufacturers. These consist of sole source new contracts, new contracts that resulted from competitive procedures where only one offeror remained in the procurement at the time the awardee was selected, and new contracts that resulted from competitive procedures where the awardee was selected from among multiple competitors. We also included a category for new contracts with system developers and integrators—except any contracts separately categorized as awarded to 8(a) firms. We also obtained and analyzed data on Agriculture's modifications to existing contracts, use of the General Services Administration's (GSA) multiple award schedule contracts, and other miscellaneous procurement methods.

To accomplish our objective and facilitate Agriculture's information gathering, we designed a questionnaire which, when properly completed by Agriculture, provided us with the necessary information. Our questionnaire included several charts and provided detailed instructions, with definitions and examples, to help Agriculture identify and report the relevant information. Our questionnaire instructions cited pertinent federal regulations to ensure consistency in understanding of the terms used and to identify key definitions.

In preparing instructions for our questionnaire, we recognized the need to clearly and consistently identify mainframe computers, as opposed to superminicomputers and supercomputers. Because technology changes, criteria such as storage capacity, processing speed, physical size, cooling requirements, and cost do not provide an adequate basis for clear and consistent identification of mainframes. Therefore, after consulting with computer vendors, the GSA, other federal agency officials, and Datapro,<sup>4</sup> we considered vendor marketing strategy—in addition to computer architecture and performance—as the basis for classifying particular computers as superminicomputers, mainframes, or supercomputers. Like Datapro, we classified as mainframes some smaller and less expensive models if they belong to a product line, or family, of mainframes sharing a common architecture or operating system. However, models with similar performance characteristics that do not belong to a mainframe family and are manufactured by companies that are not traditionally recognized as mainframe manufacturers were not classified as mainframes. We provided a list of mainframe manufacturers and models in the instructions for our questionnaire as examples of computers that agencies should include in completing the questionnaire.

We obtained comments on preliminary copies of our questionnaire from information resources management officials at the Departments of Agriculture and Transportation, to aid in ensuring the questionnaire's clarity. After modifying the questionnaire based on comments received from officials at the Departments of Agriculture and Transportation, we asked the senior information resources management officials at Agriculture and 34 other federal agencies to complete the questionnaire.

Our questionnaire was furnished to Agriculture in mid-April 1989. Upon receiving Agriculture's response in June 1989, the information was reviewed to determine if the instructions were followed correctly and if the information was clear and consistent. Although we did not independently validate the information supplied in the Agriculture response, our questionnaire contained several internal checks to determine if inconsistencies were present. In some situations we modified the data on the basis of discussions with Agriculture officials. In other cases we excluded inappropriate data. For example, we directed the agencies to include only procurement data for mainframe-related equipment. However, in one instance Agriculture included a procurement for equipment that was not a mainframe or mainframe peripheral. In order to maintain

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<sup>4</sup>Datapro is a trade publication that provides detailed information on computers, peripheral equipment, and software.

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consistency in the statistics across the 35 federal agencies, this procurement reported by Agriculture for equipment other than a mainframe or related peripheral was deleted from our analysis. Our work did not include solicitation or evaluation of documents related to Agriculture's individual procurements. The figures and tables in appendixes I and II were developed from our analysis.

We did not solicit or obtain comments from Agriculture about this report; however, we discussed our scope and methodology with Agriculture officials in May 1990, at Agriculture headquarters in Washington, D.C. Our review was conducted from February 1989 through May 1990, in accordance with generally accepted government auditing standards.

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# Major Contributors to This Report

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