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[THE USE OF OBSOLESCE

NT COMPUTERS
INVOLVES UNNECESSARY COSTS AND PROBLEMS]

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GOOD AFTERNOON, I AM PLEASED TO HAVE THE OPPORTUNITY TO SPEAK AT YOUR CONFERENCE ON ADP MANAGEMENT. ADVANCES IN COMPUTER TECHNOLOGY HAVE FORTUITOUSLY PROVIDED THE GOVERNMENT WITH ECONOMIC SOLUTIONS TO PRESENT OBSOLESCENCE PROBLEMS. IMPLEMENTING MODERN COMPUTER TECHNOLOGY CAN HELP ACHIEVE SEVERAL GOVERNMENT OBJECTIVES FOR THE 1980'S, INCLUDING THE TWO MOST VITAL -- REDUCING THE SIZE AND COST OF GOVERNMENT AND IMPROVING PRODUCTIVITY.

A RECENT GAO REPORT ON FEDERAL COMPUTERS HAS BEEN WIDELY PUBLICIZED IN THE PRESS. THE USUAL HEADLINES ARE CAPTIONED "GAO AUDITORS SAY GOVERNMENT LOADED WITH DINOSAURS." LET ME ASSURE YOU THAT OUR COMPUTER AUDITORS WERE NOT COUNT-

ING THE BONES AND FOSSILS AT THE SMITHSONIAN INSTITUTION.
THE HEADLINES ARE REFERRING TO OUR DECEMBER 1980 REPORT
ENTITLED-- CONTINUED USE OF COSTLY, OUTMODED COMPUTERS IN
FEDERAL AGENCIES CAN BE AVOIDED.

WE UNDERTOOK THIS STUDY TO DETERMINE IF THE FEDERAL
COMPUTER INVENTORY IS OUTMODED, AND IF SO, HOW THIS
SITUATION AROSE, AND HOW TO PREVENT THE SITUATION FROM RE-
CURRING. FOR THE PURPOSE OF THIS STUDY, OBSOLESCENCE WAS
DEFINED AS DECLINING IN USEFULNESS -- USEFUL BEING THE
ECONOMICAL, EFFICIENT, AND EFFECTIVE PROCESSING OF DATA.

THE APRIL 1979 FEDERAL INVENTORY OF GENERAL PURPOSE
COMPUTERS WAS USED AS OUR UNIVERSE. IT SHOWED 12, 645

PROCESSORS WERE BEING USED IN THE GOVERNMENT. FROM THIS INVENTORY WE CONCENTRATED ON THE 1,366 MEDIUM AND LARGE-SCALE COMPUTERS THAT HAD A CENTRAL PROCESSING UNIT PURCHASE PRICE OF MORE THAN \$250,000 OR A LEASING PRICE OF OVER \$10,000 PER MONTH. THIS REPRESENTED 76 PERCENT OF THE INVENTORY BASED ON PURCHASE PRICE.

OUR ANALYSIS REVEALED SOME STARTLING FACTS AND DISTURBING TRENDS. FOR EXAMPLE, OVER HALF OF THE MEDIUM AND LARGE-SCALE COMPUTERS WERE OF THE 1971 VINTAGE OR EARLIER TECHNOLOGY. ALMOST A THIRD WERE 15 YEARS OLD OR OLDER. ONLY 2 PERCENT USED 1975 OR LATER TECHNOLOGY!

AS WE ALL KNOW, MORE THAN A FEW TECHNOLOGICAL ADVANCEMENTS HAVE OCCURRED IN THE LAST 10 TO 15 YEARS.

HERE'S ANOTHER INTERESTING CUT OF THIS DATA. INCLUDED IN THE 1,366 MEDIUM AND LARGE-SCALE COMPUTERS ARE NEARLY 1,000 COMPUTERS MANUFACTURED BY FOUR MAJOR VENDORS. OF THESE:

- 60 PERCENT WERE FIRST AVAILABLE IN 1966 OR EARLIER; 15 YEARS AGO!
- 95 PERCENT WERE FIRST AVAILABLE IN 1974 OR EARLIER; 7 YEARS AGO!

EVEN THOUGH OUR STUDY DID NOT INCLUDE SMALL COMPUTERS, WE OBTAINED AN OMB ANALYSIS SHOWING THAT THE AVERAGE AGE OF SMALL COMPUTERS WAS 6.5 YEARS; THE AVERAGE AGE OF THE MEDIUM AND LARGE-SCALE COMPUTERS WAS 7 YEARS. SO WE MAY

HAVE A SIMILAR PROBLEM DEVELOPING IN THE SMALL COMPUTER
AREA ALSO.

ECONOMIC IMPACT

WHAT IS THE ECONOMIC IMPACT OF CONTINUING TO USE
OUTMODED SYSTEMS? TO ANSWER THIS QUESTION, WE CONDUCTED
DETAILED COST ANALYSES AT FOUR AGENCY COMPUTER INSTALLATIONS.
AT THESE INSTALLATIONS WE FOUND THAT \$1.4 MILLION OR
28 PERCENT OF THEIR ANNUAL OPERATING EXPENSES COULD BE
SAVED BY REPLACING OLDER EQUIPMENT BECAUSE THE OLDER EQUIP-
MENT'S OPERATIONAL COSTS EXCEEDED THE COSTS OF LEASING AND
OPERATING NEWER EQUIPMENT. WHEN YOU CONSIDER THAT THERE
ARE OVER 1,000 COMPUTERS OF SIMILAR VINTAGE IN THE FEDERAL
INVENTORY, THE POTENTIAL SAVINGS BECOME EXTREMELY SIGNIFI-
CANT.

SO, WE DO HAVE AN OBSOLESCENCE PROBLEM, BUT WHY?

PART OF THE PROBLEM IS THAT AGENCY MANAGERS HAVE FAILED TO IDENTIFY ALL THE COSTS AND PROBLEMS ASSOCIATED WITH USING OUTMODED EQUIPMENT. THEY ARE OVERLOOKING HIGH OPERATING EXPENDITURES, EXTRAORDINARY MAINTENANCE EXPENSES, EXCESSIVE ENERGY CONSUMPTION, AND ADDITIONAL COSTS OF SUPPLEMENTAL SERVICES. EVEN THOUGH SALARIES, MATERIALS, SUPPLIES, AND OTHER BUDGETED ITEMS ARE RELATIVELY VISIBLE, MANY HIDDEN COSTS ARE ALSO ASSOCIATED WITH USING OLDER EQUIPMENT.

LET ME ILLUSTRATE BY GOING BACK TO THE FOUR INSTALLATIONS WE VISITED. AT LEAST ONE COMPUTER MANUFACTURED BY

EACH OF FOUR LARGE-SCALE COMPUTER VENDORS WAS INCLUDED
IN OUR INDIVIDUAL INSTALLATION STUDIES. EQUIPMENT OF
DIFFERENT VENDORS WAS SELECTED TO DEMONSTRATE THAT
OBSOLESCENCE CAN APPLY TO ANY MANUFACTURER'S SYSTEM. THE
MODELS SELECTED ARE GENERAL PURPOSE COMPUTERS WHICH WERE
FIRST AVAILABLE IN THE 1960s. WE ACCEPTED THAT THE EXIST-
ING WORKLOAD REPRESENTED VALID AGENCY NEEDS. OUR PRO-
POSED REPLACEMENTS HAD

-- ABOUT THE SAME RELATIVE COMPUTE POWER ^{1/}
AS THE EXISTING EQUIPMENT,

^{1/} RELATIVE COMPUTE POWER IS A MEASURE OF A COMPUTER'S
PROCESSING CAPABILITY IN TERMS OF THE NUMBER OF IN-
STRUCTIONS (OPERATIONS) PROCESSED PER SECOND AND
OTHER FACTORS.

- THE SAME AMOUNT OF OR MINIMUM AVAILABLE
MAIN (CORE) AND MAGNETIC DISK MEMORY
STORAGE CAPACITY,
- A CAPABILITY TO USE THE INSTALLATION'S
SOFTWARE WITHOUT CHANGE, AND
- THE ABILITY TO BE INSTALLED WITH MINOR
OR NO OPERATIONAL DISRUPTIONS.

HIGHER MAINTENANCE COSTS. AT ONE INSTALLATION, THE
AGENCY OWNED ITS COMPUTERS AND WAS PAYING MAINTENANCE
COSTS IN EXCESS OF \$2.3 MILLION EVERY YEAR. BY UPDATING
WITH COMPUTERS OF COMPARABLE POWER AND CAPACITY, THE MAIN-
TENANCE AND LEASE COSTS WOULD STILL HAVE BEEN LESS:
\$2.2 MILLION; AN ANNUAL SAVINGS OF \$100,000.

HIGHER ENERGY COSTS. ENERGY COSTS WERE ANOTHER MAJOR FACTOR. IF THE PROCESSORS AND DISK STORAGE CAPACITY AT ANOTHER INSTALLATION WERE UPDATED WITH COMPARABLE, NEWER EQUIPMENT, WE FOUND THAT THE

- PROCESSORS WOULD USE 80 PERCENT LESS POWER

- DISK MEMORY UNITS WOULD USE 90 PERCENT LESS
POWER

- AIR CONDITIONING COSTS WOULD BE 78 PERCENT
LESS

THE BOTTOM LINE: OVER \$125,000 IN ANNUAL SAVINGS.

HIDDEN COSTS OF USING OLDER EQUIPMENT

SOME COSTS ASSOCIATED WITH OLDER EQUIPMENT ARE INCORRECTLY ACCEPTED AS FIXED EXPENDITURES THAT CAN BE NEITHER REDUCED NOR ELIMINATED. PERSONNEL AND FLOOR SPACE COSTS, AND THOSE EXPENDITURES ATTRIBUTABLE TO SYSTEM UNAVAILABILITY, ARE JUSTIFIED ONCE AND ROUTINELY APPROVED THEREAFTER. THEY SHOULD BE REVIEWED PERIODICALLY TO SEE IF THEY ARE REASONABLE. ALSO, THE EFFECT ON CAPITAL ITEMS -- SUCH AS UNINTERRUPTABLE POWER SUPPLIES, FRONT END PROCESSORS, AND OTHER HARDWARE ADAPTERS -- SHOULD BE CONSIDERED. THE REPLACEMENT OF OBSOLESCENT EQUIPMENT BY MODERN GEAR CAN REDUCE THESE COSTS.

OVERALL OPERATIONAL COSTS CAN BE REDUCED AS LOWER
HARDWARE COSTS ALLOW THE ACQUISITION OF MORE POWERFUL COM-
PUTERS WHICH ACCOMPLISH THE WORK IN LESS TIME. LABOR COSTS
CAN ALSO BE REDUCED BY REPLACING TWO OR THREE OLDER SYSTEMS
WITH A SINGLE MORE POWERFUL SYSTEM WHICH REQUIRES FEWER PER-
SONNEL. IN ONE OF OUR EXAMPLES, REPLACING SEVEN OUTMODED
SYSTEMS WITH TWO NEW SYSTEMS WOULD REDUCE PERSONNEL RE-
QUIREMENTS BETWEEN 25 AND 34 POSITIONS; THIS WOULD SAVE AT
LEAST \$450,000 ANNUALLY.

OLDER UNRELIABLE SYSTEMS CAN SIGNIFICANTLY LOWER
OPERATIONAL AVAILABILITY TIME. THE ACTIONS TAKEN BY AGENCIES
AS A RESULT OF SYSTEM UNAVAILABILITY CAN BE EXPENSIVE. THESE

ACTIONS COULD INCLUDE

- LONGER MAINTENANCE PERIODS, BOTH PRE-
VENTIVE AND UNSCHEDULED,
- EXTENSIVE MACHINE RERUNS,
- UNSCHEDULED PERSONNEL OVERTIME, AND
- INCREASED USE OF OUTSIDE COMPUTER SERVICES.

AGENCIES OPERATING OLDER EQUIPMENT INCUR OTHER HIDDEN COSTS FOR SUCH CAPITAL EXPENDITURES AS UNINTERRUPTABLE POWER SUPPLIES, FRONT END PROCESSORS, PERIPHERAL EQUIPMENT CONTROLLERS, COMMUNICATION ADAPTERS, AND OTHER HARDWARE OPTIMIZERS.

THE COST OF PROVIDING AN UNINTERRUPTABLE POWER SUPPLY IS EXPENSIVE. THIS EXPENSE CAN BE REDUCED BY INSTALL-

ING MODERN ENERGY - EFFICIENT COMPUTERS AND DISK STORAGE
UNITS. THE MONETARY SAVINGS CAN BE SIGNIFICANT SINCE AN
UNINTERRUPTABLE POWER SUPPLY SYSTEM GENERALLY COSTS ABOUT
\$1,500 PER KVA.

ONE OF THE AGENCIES WE VISITED HAS SPENT \$1 MILLION
FOR A FRONT END PROCESSOR THAT WILL ALLOW ITS SYSTEMS TO
DIRECTLY INTERCHANGE DATA AND SHARE PERIPHERALS. THIS
EXPENSE WAS AVOIDABLE HAD THESE OBSOLESCEENT SYSTEMS BEEN
REPLACED WITH MODERN SYSTEMS THAT ARE DESIGNED WITH THESE
FUNCTIONAL CAPABILITIES.

HARDWARE OPTIMIZERS HAVE BEEN ADDED TO MANY OLDER
COMPUTERS TO PERFORM FUNCTIONS WHICH WERE NOT INCLUDED IN

THE ORIGINAL EQUIPMENT DESIGN. THESE OPTIMIZERS INCLUDE CONTROLLERS, COMMUNICATION CONVERTERS, SWITCHES, ADAPTERS, AND OTHER INTERFACE DEVICES. THESE OPTIMIZERS ARE ELIMINATED BY INCORPORATING THEIR FUNCTIONAL CAPABILITY IN THE DESIGN OF UP-TO-DATE COMPUTER SYSTEMS. THE FOUR FEDERAL INSTALLATIONS WE REVIEWED SPENT OVER \$116,000 ANNUALLY TO LEASE AND MAINTAIN COMPUTER HARDWARE OPTIMIZERS. WHILE THE COST ATTRIBUTABLE TO THESE OPTIMIZERS MAY BE RELATIVELY SMALL, IT IS AVOIDED WHEN UP-TO-DATE COMPUTERS ARE INSTALLED.

USING OBSOLESCENT COMPUTERS POSES PROBLEMS

THE PROCESSING EFFICIENCY OF OUTMODED COMPUTERS IS DIMINISHED BY THE PROBLEMS RELATED TO SYSTEM UNAVAILABILITY AND BY THE TECHNOLOGICAL LIMITATIONS INHERENT IN THE DESIGN OF OLD AND NEW EQUIPMENT. OLDER COMPUTER SYSTEMS TEND TO BREAK DOWN MORE FREQUENTLY, REQUIRE LONGER SCHEDULED AND UNSCHEDULED MAINTENANCE PERIODS, AND MAY NOT BE CAPABLE OF OPERATING IN A DEGRADED MODE. USERS OF OBSOLESCENT EQUIPMENT FACE TECHNOLOGICAL LIMITATIONS AS WELL. OLDER COMPUTERS ARE RESTRICTED BY SMALL MAIN MEMORY CAPACITY, MAY BE INCOMPATIBLE WITH NEW ACCESSORY SUPPORTING EQUIPMENT, AND MAY USE ONLY OBSOLESCENT SOFTWARE. IN SOME CASES OUTMODED EQUIPMENT LACKS A MIGRATION PATH TO NEW TECHNOLOGY.

PROBLEMS RELATED TO SYSTEMS UNAVAILABILITY

COMPUTERS OF RECENT DESIGN CAN SIGNIFICANTLY INCREASE OPERATIONAL AVAILABILITY TIME AS COMPARED WITH THE OLDER SYSTEMS, WHICH TEND TO BREAK DOWN MORE FREQUENTLY, REQUIRE LONGER SCHEDULED AND UNSCHEDULED MAINTENANCE PERIODS, AND MAY NOT BE CAPABLE OF OPERATING IN A DEGRADED MODE. To ACCOMMODATE THE WORKLOAD, USERS OF OLDER EQUIPMENT MAY HAVE TO OBTAIN ADDITIONAL CAPACITY AS BACKUP WHEN THEIR BASIC EQUIPMENT FAILS, OR THEY MAY HAVE TO USE OUTSIDE TIMESHARING SERVICES TO SUPPLEMENT THEIR OWNED EQUIPMENT.

OUR ANALYSIS OF AVAILABLE DATA ON EQUIPMENT FAILURES SUPPORTS COMPUTER INDUSTRY CLAIMS THAT TODAY'S COMPUTERS ARE SIGNIFICANTLY MORE RELIABLE THAN PREVIOUS MODELS. FOR

EXAMPLE, THE " MEAN TIME BETWEEN FAILURE" FOR A CLASS OF COMPUTERS INTRODUCED IN 1978 IMPROVED 160 PERCENT OVER THE SAME VENDOR'S MID-1960S COMPUTERS.

ONE OF THE FACILITIES WE VISITED THAT HAD THREE OBSOLETE COMPUTERS WAS EXPERIENCING SYSTEM RELIABILITY PROBLEMS. THE MONTHLY MEAN TIME BETWEEN FAILURE OF THESE THREE COMPUTERS AVERAGED LESS THAN 50 HOURS. NEWER COMPUTER MODELS OFFERED BY THE SAME MANUFACTURER ARE OPERATING WITH A MEAN TIME BETWEEN FAILURE EXCEEDING 500 HOURS.

TECHNOLOGICAL INNOVATIONS HAVE ALSO HELPED IMPROVE COMPUTER SYSTEM AVAILABILITY. MANY FEDERAL COMPUTERS DO NOT HAVE THESE CAPABILITIES. THESE INNOVATIONS INCLUDE:

- DOUBLE ERROR DETECTION AND SINGLE ERROR CORRECTION CAPABILITY.

- ONLINE MAINTENANCE AND DIAGNOSTICS, AND
- FAULT ISOLATION OR MORE COMMONLY REFERRED
TO AS OPERATING IN A " DEGRADING MODE."

TECHNOLOGICAL LIMITATIONS OF OLDER EQUIPMENT

USERS OF OUTMODED EQUIPMENT FACE MANY OBSTACLES. OBSOLETE COMPUTERS CANNOT EXPAND THEIR PROCESSING CAPABILITIES. THE MAXIMUM AMOUNT OF MEMORY OF MANY OLDER COMPUTERS IS IN THE THOUSANDS OF BYTES OR WORDS. THE MEMORY CAPACITY OF MODERN COMPUTERS IS IN THE MILLIONS. THE MAXIMUM MEMORY OF AN OLD PROCESSOR AT ONE OF THE INSTALLATIONS WE VISITED IS 262,000 WORDS, WHILE ITS REPLACEMENT STARTS AT 524,000 WORDS AND IS EXPANDABLE TO 4.2 MILLION WORDS. AT ANOTHER INSTALLATION 3 PROCESSORS HAD A COMBINED

MEMORY CAPACITY OF 6 MEGABYTES WHILE THE THREE REPLACEMENT PROCESSORS HAD A MINIMUM CAPACITY OF 12 MEGABYTES.

OLDER COMPUTERS MAY ALSO BE INCOMPATIBLE WITH NEW ACCESSORY SUPPORTING EQUIPMENT. USERS OF OBSOLESCENT PROCESSORS CANNOT TAKE ADVANTAGE OF GREAT IMPROVEMENT IN DISK MEMORY UNIT TECHNOLOGY BECAUSE THE NEWER DISKS CANNOT OPERATE WITH AGENCIES' OLDER COMPUTERS. NEWER DISK UNITS ARE FASTER AND HAVE A FAR GREATER CAPACITY AT A LOWER UNIT STORAGE COST. THE MAINTENANCE AND ELECTRICAL CONSUMPTION COSTS OF OLDER DISK UNITS OFTEN EXCEED THE LEASING, MAINTENANCE, AND ELECTRICAL CONSUMPTION COSTS OF NEWER DISK UNITS. TODAY, DISK STORAGE COSTS ABOUT \$65 PER MEGABYTE

AND BY THE END OF THE DECADE IT IS PROJECTED TO DROP BELOW \$5 PER MEGABYTE. AT THESE PRICES YOU CANNOT AFFORD TO FOREGO THE OPPORTUNITY TO REDUCE OPERATING COSTS BY RETAINING OBSOLESCEENT EQUIPMENT.

IN ADDITION, OUTMODED COMPUTERS OFTEN USE ONLY OBSOLESCEENT OPERATING SYSTEMS WHICH ARE NO LONGER SUPPORTED BY THE MANUFACTURER. AGENCIES MUST THEN SPEND THEIR OWN RESOURCES TO MAINTAIN AND MODIFY THE OPERATING SOFTWARE.

AGENCIES WITH OBSOLESCEENT SYSTEMS AND SOFTWARE ARE FINDING IT MORE DIFFICULT TO RETAIN AND HIRE PERSONNEL, PROGRAMMERS AND SYSTEM ANALYSTS IN PARTICULAR. THESE PEOPLE WANT TO REMAIN CURRENT WITH INDUSTRY TRENDS AND RETAIN MARKETABLE SKILLS.

IN SOME CASES EXISTING OLDER EQUIPMENT LACKS A MI-
GRATION PATH TO NEW TECHNOLOGY. SOME FEDERAL COMPUTERS
BECOME OBSOLETE BECAUSE THEIR PROGRAMS, AS WRITTEN, WILL
NOT RUN ON ANY MANUFACTURER'S NEW EQUIPMENT, AND REWRITING
THE PROGRAMS WOULD BE VERY COSTLY. THIS SITUATION IS CREAT-
ED WHEN THE COMPUTER'S MANUFACTURER (1) HAS DISCONTINUED
THIS CLASS OF COMPUTERS OR (2) IS NO LONGER IN THE COMPU-
TER BUSINESS. IN THESE CASES, THE ONLY WAY USERS CAN UP-
GRADE THEIR EQUIPMENT IS TO REPLACE BOTH THE SYSTEM HARD-
WARE AND SOFTWARE WITH A COMPLETE SYSTEM REDESIGN.

MANAGING FEDERAL ADP RESOURCES

IN OUR OPINION TOP AGENCY MANAGEMENT HAS NOT PROVIDED THE OVERSIGHT AND DIRECTION TO ASSURE THAT TOTAL OPERATING COSTS ARE IDENTIFIED AND ASSESSED IN MANAGING FEDERAL ADP RESOURCES. HOWEVER, AND PROBABLY MORE IMPORTANTLY, THE CENTRAL AGENCIES HAVE NOT ISSUED POLICY AND GUIDANCE FOR REPLACING OLDER EQUIPMENT WHEN CHANGES IN CURRENT TECHNOLOGY MAKE IT ECONOMICAL TO DO SO. THIS IS NEEDED TO SPUR ON THE TOP MANAGEMENT IN THE AGENCIES.

OMB AND GSA HAVE ACKNOWLEDGED THAT THERE IS NO CENTRAL FEDERAL POLICY REGARDING COMPUTER OBSOLESCENCE, EVEN THOUGH OMB CIRCULAR A-71, DATED MARCH 6, 1965, REQUIRES SUCH POLICY TO BE DEVELOPED. ACCORDING TO THIS CIRCULAR, OMB IS

TO PROVIDE OVERALL LEADERSHIP AND COORDINATION IN MANAGING
FEDERAL ADP EQUIPMENT AND RESOURCES.

GSA IS RESPONSIBLE FOR PROVIDING COMPARATIVE INFOR-
MATION ON THE CHARACTERISTICS AND PERFORMANCE CAPABILITIES
OF EQUIPMENT, AND DEVELOPING AND PUBLISHING GUIDELINES AND
CRITERIA GOVERNING THE REPLACEMENT OF EQUIPMENT TO AVOID
USAGE BEYOND THE POINT OF ECONOMIC ADVANTAGE.

OMB AND GSA OFFICIALS AGREED THAT A SPECIFIC POLICY AND
GUIDANCE IS NEEDED TO RESOLVE THE OBSOLESCENCE PROBLEM. THESE
OFFICIALS, HOWEVER, COULD NOT EXPLAIN WHY NOTHING HAD BEEN
DONE FOR 15 YEARS.

TO GET THE GOVERNMENT BACK ON THE PROPER TRACK, WE BE-
LIEVE TWO THINGS NEED TO BE DONE. FIRST, WE MUST REPLACE

OBSOLETE COMPUTERS WITH MODERN, ECONOMICAL EQUIPMENT NOW,
WHERE IT IS ECONOMICALLY FEASIBLE. SECONDLY, WE MUST
IMPROVE THE MANAGEMENT OF FEDERAL ADP RESOURCES SO THAT
OBSOLESCENCE DOES NOT HAPPEN AGAIN.

TO ACCOMPLISH THIS WE RECOMMEND THAT GSA ISSUE GUID-
ANCE TO AGENCIES OUTLINING THE CRITERIA TO BE USED, AND
THE COST COMPARISONS TO BE MADE IN DETERMINING ECONOMIC
OBSOLESCENCE. AMONG OTHER THINGS, WE SUGGESTED THAT GSA
INCORPORATE THE FOLLOWING PRINCIPLES INTO ITS GUIDELINES:

- EXISTING APPLICATIONS AND WORKLOADS NEED
NOT BE REJUSTIFIED;

- REPLACEMENT SYSTEMS SHOULD HAVE APPROXIMATELY THE SAME RELATIVE COMPUTE POWER AS THE OLD SYSTEM;

- THE REPLACEMENT SYSTEM'S MEMORY STORAGE (CORE AND DISK) CAPACITY SHOULD BE RESTRICTED TO THE EXISTING AMOUNT;

- REPLACEMENT SYSTEMS SHOULD BE CAPABLE OF USING EXISTING SOFTWARE INCLUDING, WHERE POSSIBLE, PLUG COMPATIBLE OR EMULATION PROCESSORS.

THE FUNDAMENTAL POINT IS: AGENCIES SHOULD BE ALLOWED TO UPDATE THEIR EQUIPMENT, WITHOUT UPGRADING THEIR CAPACITY.

WE DO NOT WANT TO REWARD AGENCIES FOR PAST BAD MANAGEMENT.

WE ALSO RECOMMENDED THAT OMB REQUIRE FEDERAL AGENCIES TO ASSESS THEIR ADP REQUIREMENTS FOR THE 1980'S, PLAN THEIR PROCUREMENT STRATEGIES, AND IMPROVE MANAGEMENT'S ADP KNOWLEDGE AND INVOLVEMENT.

BECAUSE OF THE SEVERITY OF THE PROBLEM AND BECAUSE THE CENTRAL AGENCIES WILL NEED TIME TO IMPLEMENT OUR RECOMMENDATIONS TO THEM, WE ALSO RECOMMENDED THAT FEDERAL AGENCIES DETERMINE IMMEDIATELY IF THEIR SYSTEMS ARE ECONOMICALLY OUTMODED BY USING THE SAME CRITERIA AND CONSIDERATIONS WE USED IN OUR STUDY. IF THE SYSTEMS ARE OUTMODED, THE AGENCIES SHOULD MOVE TO REPLACE THEM EXPEDITIOUSLY.

GSA, IN ITS REPLY TO OUR FINAL REPORT STATED "WE HAVE RECENTLY (46 FR 1196, JANUARY 5, 1981) PROMULGATED

POLICIES AND PROCEDURES WHICH SPECIFICALLY RESPOND TO THE
RECOMMENDATIONS."

THEIR COMMENTS CLOSE WITH

"WE BELIEVE THAT THESE PROVISIONS WHEN IMPLEMENTED BY
AGENCIES WITHIN THE OVERALL FRAMEWORK OF GSA'S MANAGEMENT
AND PROCUREMENT REGULATIONS CAN PROVIDE A BASIS FOR FEDERAL
AGENCY ATTAINMENT OF THE STATUTORY OBJECTIVES OF ECONOMY
AND EFFICIENCY IN ADP MANAGEMENT, ACQUISITION, AND USE."

OMB, IN ITS REPLY TO THE REPORT STATED:

"WE AGREE THAT COMPUTER OBSOLESCENCE IS A MAJOR PROBLEM
AREA AND WE CONCUR WITH THE RECOMMENDATIONS. CURRENTLY, IN
IMPLEMENTING PUBLIC LAW 96-511, OMB IS DEVELOPING A FIVE-
YEAR ADP/TELECOMMUNICATIONS PLANNING MECHANISM FOR ALL

FEDERAL AGENCIES. WE FEEL THAT ALL THE RECOMMENDATIONS CAN BE IMPLEMENTED THROUGH THIS FIVE-YEAR PLANNING MECHANISM.

THE DETAILS OF THIS FIVE-YEAR PLAN ARE STILL BEING DEVELOPED; HOWEVER, IT IS OUR CURRENT INTENTION TO REQUIRE AGENCIES TO ANNUALLY IDENTIFY ALL OBSOLETE COMPUTERS AND DEVELOP EXPLICIT PLANS FOR THEIR REPLACEMENT."

AS A CLOSING REMARK I WOULD LIKE TO EMPHASIZE THAT REPLACING ECONOMICALLY OBSOLESCENT COMPUTERS IS ONLY THE FIRST STEP IN BRIDGING THE GAP THAT HAS RESULTED FROM RETAINING THE 1960S TECHNOLOGY WHILE ATTEMPTING TO MEET THE ADP NEEDS OF THE 1980s. AS MANAGERS OF YOUR AGENCIES' ADP RESOURCES YOU MUST CONTINUALLY REASSESS HOW ADP CAN BE USED TO ACCOMPLISH THE AGENCIES' MISSION.