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Briefing Report to the Chairman
Subcommittee on Defense,
Committee on Appropriations
House of Representatives

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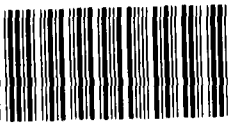
ADP OPERATIONS

Consolidation of Navy's Personnel and Pay Computer Resources



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

INFORMATION MANAGEMENT
& TECHNOLOGY DIVISION

March 27, 1986

B-221554

The Honorable Joseph P. Addabbo
Chairman, Subcommittee on Defense
Committee on Appropriations
House of Representatives

Dear Mr. Chairman:

In response to your November 4, 1985, request, we evaluated the Navy's Personnel and Pay Systems Consolidated Computer Center project, PERSPAY, whose costs are now expected to exceed $176 million by 1991. On January 23, 1986, we gave you a fact sheet (GAO/IMTEC-86-6FS) covering PERSPAY's history, procurement, and costs. The enclosed briefing report expands on the fact sheet and addresses the Navy's success in meeting earlier, established congressional expectations and Navy objectives for PERSPAY.

PERSPAY began as a joint Navy Finance Center and Naval Military Personnel Command data processing equipment procurement to achieve, among other things, economies of scale. Your Subcommittee expected PERSPAY to achieve consolidation of data processing operations at a single site, and integration of personnel and pay data bases. In our view, the progress made to date on this project falls considerably short of your earlier expectations.

We compiled the information presented here from interviews with PERSPAY officials and from Navy documents. We interviewed current and former congressional staff and Navy officials involved in PERSPAY's early years. We reviewed PERSPAY contracts and related documents and consultant information on PERSPAY.

Your office requested that we not obtain official agency comments, but we did discuss the issues we raise in this briefing report with appropriate Navy officials. We will send copies to the Secretary of the Navy, the Administrator of General Services, and the Director of the Office of Management and Budget. Other interested offices will be furnished copies upon request.

Please contact Theodore Gearhart, Group Director, on 275-3188 with any questions on the report.

Sincerely yours,

William Franklin
Associate Director

Contents

ABBREVIATIONS

ADP	automatic data processing
CDC	Consolidated Data Center
GAO	General Accounting Office
GSA	General Services Administration
IBM	International Business Machines
NFC	Navy Finance Center
NMPC	Naval Military Personnel Command
PERSPAY	Personnel and Pay Systems Consolidated Computer Center project

OVERVIEW

On November 4, 1985, the Chairman, Subcommittee on Defense, House Appropriations Committee, requested that we evaluate the Navy's Personnel and Pay System Consolidated Computer Center project, popularly known as PERSPAY. Costs for this project are expected to exceed $176 million by 1991. We were requested to evaluate the success the Navy is having in meeting earlier, established congressional expectations and Navy objectives of PERSPAY.

In the early 1970s the Naval Military Personnel Command (NMPC) and the Navy Finance Center (NFC), operating in different locations but sharing some personnel and pay data elements, both lacked computer capacity to accomplish their mission requirements. To partially alleviate this problem, in 1975, the Navy obtained separate delegations of procurement authority and later purchased, without competition (sole source), International Business Machines (IBM) computers for NMPC and NFC for an interim period until plans for more complex, fully competitive procurements could be implemented.

In 1977, during a congressionally requested review of the Navy's Advanced Information System project, which included NMPC's plans to competitively satisfy the 1975 delegation, we noted that NFC was planning a similar procurement. Realizing that NMPC and NFC routinely process and share each other's data, we suggested the Navy attempt a joint, competitive procurement to achieve economies of scale. We also suggested the Navy study the advantages of collocating the acquired ADP equipment at a centralized site.

Prompted by our suggestion, the Navy agreed to pursue a joint, fully competitive procurement. The Navy also believed that by consolidating the automatic data processing (ADP) equipment at a single site, it would realize (1) savings in computer operations personnel; (2) savings in computer hardware costs; and (3) a reduction to total space requirements. These were viewed as sound, cost-effective objectives. So, in the late 1970s the Navy started out to satisfy the requirements of the 1975 interim authorizations and centralize ADP mission requirements of NMPC and NFC at a single site. However, in planning the procurement strategy, eventually known as PERSPAY, the Navy faced a major conversion effort because much of its software was written in several, non-standard programming languages and was being operated on numerous, different computers.

Because the required competitive nature of such a procurement could yield a non-compatible computer vendor, conversion costs could be significant. As a result, the Congress intervened and recommended an interim approach (the upgrade of existing ADP equipment), which would require the Navy to convert its software to conform to federal standards prior to initiating

the planned, fully competitive, consolidated NFC and NMPC ADP procurement. Such a solution would lessen the impact of conversion costs on computer vendor selection in the future, when the contract was to be competitively awarded.

Instead of following the congressional suggestion, the Navy planned a procurement strategy that included separate computer hardware procurements. In December 1980, the Navy requested and received from the General Services Administration (GSA), separate delegations of procurement authority that culminated in the replacement of existing ADP equipment, acquired under the 1975 interim authorizations, with state-of-the-art equipment at NMPC and NFC. It also created a modern ADP facility--the Consolidated Data Center (CDC) in Bratenahl, Ohio--for processing personnel and pay applications.

The separate procurement approach precluded achievement of the initial objectives expected from the joint NMPC and NFC competitive procurement strategy--economies of scale and savings in (1) computer operations personnel, (2) computer hardware costs, and (3) total space requirements. It is not clear why the Navy adopted this strategy instead of a consolidated procurement that would have achieved these objectives. Further, it is unclear why GSA approved the delegation of procurement authority for the separate computer hardware procurements.

With respect to the more encompassing consolidation objectives expected by the Subcommittee in equipment, personnel, software applications, and integration of personnel and pay data bases, the current Navy approach falls far short of achieving these objectives. In our view,

--PERSPAY has yet to achieve total consolidation of ADP equipment. Large computers used as PERSPAY remote input-output processors continue to be separately maintained by NMPC and NFC at their operations locations.

--With respect to software applications, classified applications will remain at NMPC and only user-specified unclassified applications will be transferred.

--PERSPAY officials are adamant that integration was not a PERSPAY goal. Some Navy documents, however, indicate that integration is a long-range objective. Also, in providing testimony to the Senate Committee on Defense Appropriations in March 1985, the Secretary of the Navy and the Chief of Naval Operations stated that integration was necessary to improve overall accuracy of military personnel and pay records--certainly a view not in concert with PERSPAY officials' statements concerning PERSPAY goals.

In summary, the Navy's original intent to consolidate its ADP equipment procurements for its military pay and personnel systems--to achieve economies of scale--was an appropriate

procurement strategy. Instead of following this procurement strategy, the Navy implemented two separate procurements--one for NMPC and one for NFC--that subsequently negated many of the benefits that might have been gained through the consolidated procurement approach. At the same time there have been significant PERSPAY accomplishments. The Navy created a state-of-the-art ADP facility--the CDC--to provide automated support for personnel and pay functions. As such the CDC has improved the timeliness of processing personnel and pay data and is expected also to provide, among other things, improved resource utilization, processing control, data center services, and data security.

We provide this briefing report to aid the Subcommittee in deciding whether the current course of PERSPAY is reasonable, economical, and consistent with congressional intent.

INTRODUCTION

The Chairman, Defense Subcommittee, House Appropriations Committee, on November 4, 1985, asked us to study the Navy's Personnel and Pay Systems Consolidated Computer Center project, known as PERSPAY. The Subcommittee's predominant concern was whether the Navy has followed congressional intent in procuring and managing a consolidated personnel and payroll system.

OBJECTIVES

In addressing this concern, the Subcommittee asked us to evaluate the following four aspects.

1. The history of the Navy's PERSPAY system, including information on the impetus of the PERSPAY system, congressional concerns, and various funding and life cycle cost profiles.

2. The current status of PERSPAY, including objectives, milestones, accomplishments, and a comparison with original objectives, milestones, and actions.

3. The specific missions that will be consolidated and those missions that PERSPAY will support.

4. The procurement of ADP equipment in support of the interim upgrade of the original systems.

On January 23, 1986, we provided the Subcommittee with a fact sheet,[1] basically addressing these four aspects of PERSPAY from an historical perspective. By providing a 10-year chronology of key project events and pertinent ADP equipment and cost information, the fact sheet was meant as a frame of reference for the greater detail and analyses in this expanded briefing report.

SCOPE AND METHODOLOGY

In performing this study, we obtained and analyzed PERSPAY and Navy correspondence, documents, and congressional reports addressing PERSPAY issues; we reviewed ADP management and procurement procedures; and we used PERSPAY cost data that appeared in our fact sheet, but we did not independently verify its accuracy. We interviewed PERSPAY officials and current and former Navy officials and congressional staff involved with PERSPAY from its initiation to the present. We also interviewed a consultant familiar with the early years of PERSPAY and reviewed the pertinent project data he provided.

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[1] Information on Navy's Personnel and Pay Computer Project, GAO/IMTEC-86-6FS, January 23, 1986.

Since it was not within the scope of your request we did not assess the merits of integrating personnel and payroll data bases.

Our work was performed primarily at the major PERSPAY sites: the Navy Finance Center, Cleveland, Ohio; the Consolidated Data Center, Bratenahl, Ohio; the Office of the Navy Comptroller, Washington, D.C.; and the Naval Military Personnel Command, Washington, D.C.

Your office requested that we not obtain agency comments regarding the contents of this report, though at various times during our review, we did discuss pertinent PERSPAY issues with appropriate Navy officials.

THE NAVY'S PERSPAY PROJECT

PERSPAY is a Navy acronym for a project involving two closely related but separate functions--personnel and payroll. Specifically, PERSPAY is the Navy's consolidation of data processing operations of two major organizations--NMPC in Washington, D.C., and the NFC in Cleveland, Ohio.

Historically, both NFC and NMPC have operated separate computer centers to support their data processing requirements. Efforts to consolidate NFC and NMPC ADP operations date from 1978 and were formally established as PERSPAY by the Comptroller of the Navy in 1979. It attempts to consolidate the data processing operations of NFC and NMPC at a single site; the Rear Admiral Isaac Campbell Kidd Computer Center in Bratenahl, Ohio. This facility, known as the CDC, had previously served as NFC's data processing center. The CDC, located about five miles from NFC, currently operates under the NFC commanding officer.

NFC and NMPC

PERSPAY is a joint effort of the Comptroller of the Navy and the Deputy Chief of Naval Operations (Manpower, Personnel, and Training). Both are top-echelon commands in the Navy's hierarchy. Under the Navy Comptroller's command, NFC plans, develops, implements, and administers Navy active duty-, reserve-, retired-pay, and related systems. Under the command of the Deputy Chief of Naval Operations (Manpower, Personnel, and Training), NMPC performs officer- and enlisted-personnel distribution, career development, personnel administration, and other related functions.

NFC and NMPC are implementing PERSPAY, as is the CDC, which has surfaced recently as a directional force behind the project. To avoid confusion, this briefing report attributes project events and actions to either NFC or NMPC, not their commands. Where appropriate, CDC is also singled out, even though it is organizationally aligned with NFC.

THE PRE-PERSPAY PERIOD

The pre-PERSPAY period, approximately from 1975 through 1979, covers the project's early years, before it was officially known as PERSPAY. Events and actions during these formative years were the impetus behind the current project.

In 1975, the GSA granted NFC and NMPC separate delegations of procurement authority to purchase without competition (sole source) IBM computers (a dual IBM 370/158 system for NFC and an IBM 370/165 for NMPC) for an interim period. Each authorization stipulated replacement of the interim computers by 1979 through fully competitive procurements. At the time, the interim procurements appeared feasible. However, as indicated below, subsequent Navy initiatives impinged on both NFC's and NMPC's meeting this requirement.

PERSPAY IMPETUS

In 1977, the House Committee on Government Operations asked us to review the Navy's Advanced Information System project. This system included NMPC's plan to competitively replace ADP equipment acquired under its 1975 interim authorization. During the course of the review, we noted NFC's plan for a similar procurement, also to satisfy its 1975 interim authorization.

Realizing that NFC and NMPC computers routinely process, share, and compare each other's personnel-related data, we suggested that the Navy might satisfy its equipment needs with a joint procurement. We brought this to the Navy's attention in February 1978, when NFC and NMPC were pursuing unilateral procurements for their respective replacement acquisitions, due by 1979. In our final report,[2] we also suggested the Navy study the advantages of collocating (joining) the NFC and NMPC data processing centers at a centralized site.

Prompted by our suggestion, NFC and NMPC halted their unilateral acquisitions and agreed to pursue a joint, fully competitive procurement. This became known as the Brand X project, which commenced in April 1978. To give the Navy time to plan and implement the new procurement approach and conduct a study on a centralized site, GSA allowed NFC and NMPC to use their existing IBM computer systems through February 1982. This gave the Navy about 3 more years to replace its interim ADP equipment competitively.

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[2]The Navy's Advanced Information System--Personnel Management Information System for the 1980-1990's, LCD 78-122, September 18, 1978.

In January 1979, the Navy issued two key Brand X planning documents--the site-selection study and a master plan. The study was an economic analysis of four alternative sites for the Brand X equipment. The study recommended that the existing NFC and NMPC computer centers be consolidated at the Bratenahl Annex (later known as the CDC), which was serving as NFC's data processing facility. In July 1979, the CDC was formally approved as the Brand X consolidated data processing site.

The site study indicated the following benefits would accrue from locating the new ADP equipment at the centralized CDC site instead of at NFC and NMPC:

--a 25-percent savings in the number of computer operations personnel;

--a 20-percent savings in computer hardware costs; and

--a reduction of 6,000 square feet in total space requirements.

The study also established several Brand X milestones. A target date of June 1980 was set for awarding the Brand X joint procurement. And in February 1982, NFC and NMPC would release (available for reutilization) their current sole-source ADP equipment. The study indicated the need for sufficient time to convert, test, and run NFC and NMPC operations in a parallel mode before transferring their work loads to the CDC. The Brand X system was to be fully operational (processing NFC and NMPC applications) in May 1982.

PROJECT GOALS AND OBJECTIVES ESTABLISHED

The Brand X master plan, also issued in January 1979, formally established project goals and objectives as follows:

--merge ADP operations;

--reduce redundancy of information flow and processing of data;

--effect transition to the new operational base by the most economical means; and

--transfer all mission-essential ADP systems.

The master plan did not specify integration of personnel and pay data bases as a goal or objective. However, the plan did recognize that the requirements of the Deputy Chief of Naval Operations (Manpower, Personnel, and Training) and the Navy Comptroller for compatible ADP equipment were necessary to further facilitate integration of personnel and pay systems.

In June 1979, a consultant familiar with the Brand X project expressed concern to the Comptroller of the Navy about what he viewed as unsteady progress. Among other things, the consultant said that the project's basic objectives were unclear and that NFC and NMPC did not appear to be totally committed to consolidation at the centralized data processing site. He noted it also was not clear which NMPC systems would be transferred to the CDC. He cautioned that Navy officials were suggesting that consolidation would mean only side-by-side computer operations and maintenance of two fully independent data bases and files that would not be integrated. Based on the direction the Brand X project was heading, the consultant indicated that the Navy might have a difficult time convincing the Congress that the Brand X project would result in significant savings. He believed such savings possible only through total integration of NFC and NMPC applications and operations.

In September 1979, the Navy requested a delegation of procurement authority from GSA to purchase the Brand X ADP equipment, which would replace equipment bought under the 1975 interim authorizations. The equipment was to be installed at the CDC and would be procured under a 20-year contract. Estimated project costs were $171.8 million, assuming no conversion costs, or $221.4 million with conversion costs.

Closing out the pre-PERSPAY period, in a November 1979, memorandum, the Comptroller of the Navy approved a name change (from Brand X to PERSPAY) and set PERSPAY goals and objectives to include

--a consolidated data processing facility to support NFC's and NMPC's ADP mission requirements;

--standby and backup processing;

--systems growth and mobilization[3] capability;

--funding methodology for the CDC, including a system for user reimbursement; and

--transfer of all user-specified application systems to the CDC.

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[3]Putting the armed forces into a state of readiness for active service.

THE INCREASING CONGRESSIONAL INTEREST PERIOD

During 1980 and 1981, the Subcommittee and the House Government Operations Committee expressed increasing concern about PERSPAY. The project was embarking on an era most noteworthy for a dramatic change in procurement strategy.

Near the end of the pre-PERSPAY period, the Navy planned the joint, fully competitive ADP equipment procurement that would have satisfied the 1975 interim authorizations and would have provided replacement equipment for NFC and NMPC. The Navy studied several alternatives before settling on a final procurement strategy.

Based on economic and other analyses, the Navy decided on an acquisition concept modeled on policies in the Office of Management and Budget Circular A-109. The Budget Office's concept uses demonstration tests between competing vendors to obtain system-performance information before the production contract is awarded. Doing so provides assurance that the computer system will operate as required before large amounts of money are spent.

Because the required competitive nature of this procurement could yield a non-compatible computer vendor, conversion costs could be significant. This was because application software would have to be rewritten to overcome different system characteristics when it is transferred from one hardware manufacturer to another. Even if compatible non-IBM equipment were procured, some conversion costs would be incurred.

Besides the conversion costs, the selected procurement strategy also assumed

--the joint procurement would secure a 30-percent discount for the procured ADP equipment;

--four major vendors would compete for the contract (IBM and three "non-compatibles");

--the new system (stated in terms of IBM equipment as a point of reference) initially would have four IBM 3033s and would gain two IBM 3033s by the end of the contract;

--NMPC would experience a 15-percent annual growth in computer capacity requirements, while NFC's annual growth would be 10 percent; and

--only 20 percent of NMPC's personnel would accept transfer to the CDC.

CONGRESSIONAL CONCERNS

The Navy was proceeding with the A-109 procurement approach but had not consummated the procurement when the Subcommittee and the House Government Operations Committee began inquiring about the project. In fact, the Navy had already requested a delegation of procurement authority from GSA to initiate the joint and competitive acquisition for NFC and NMPC equipment, using this approach.

House Government Operations Committee perspective toward PERSPAY

Congressional interest in the PERSPAY project was first indicated in February 1980. Staff of the House Government Operations Committee questioned the Navy's use of the A-109 approach because it would have required the addition of all application software conversion costs to the hardware costs. The logic behind this view was twofold: that conversion costs can be a significant factor in computer replacements, and the incumbent vendor's product line would have a competitive advantage over non-compatible equipment (since its applications software would not require a major conversion). To ensure maximum competition, the Committee believed that ADP equipment contracts should be awarded on the basis of lowest hardware bid, without consideration of ancillary costs, such as applications software conversion.

Realizing that conversion costs for PERSPAY would be significant, particularly for NMPC's applications,4 the House Government Operations Committee recommended a different procurement approach. The Committee indicated it would support a 4-year temporary authorization for functionally compatible ADP equipment, which would be replaced later with equipment via a fully competitive procurement when NMPC software conversion costs would no longer be such a major factor.

House Appropriations Defense Subcommittee perspective toward PERSPAY

The documentation we collected suggests that the Subcommittee's increased interest in PERSPAY first came in April 1980. The Subcommittee's initial concern apparently centered on the Navy's plans to develop a PERSPAY procurement strategy as outlined by the House Government Operations Committee. This proposed strategy seemed inconsistent with an ADP procurement concept the House Appropriations Committee had been encouraging for years, namely, lowest overall total costs, including all conversion costs.

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[4]These were written in several non-standard programming languages that would have to be converted to comply with federal standards before being consolidated with NFC's systems.

However, our documentation indicates that in June 1980 the Subcommittee and the House Government Operations Committee agreed that an interim solution was needed prior to NMPC's consolidation with NFC's systems. This was because the consolidated ADP environment would require both NFC and NMPC to be using a standard operating system already established at the CDC. NFC was already in compliance; NMPC, however, was using a different operating system. Additionally, many NMPC applications were written in several non-standard programming languages, necessitating a major conversion effort by NMPC.

In June 1980 the Subcommittee suggested that the NMPC conversion could be accomplished by upgrading the existing NMPC equipment. Simultaneously, NFC would use its existing hardware until NMPC converted to the standard operating system established by the CDC. Upon completion, the Navy could proceed with the joint, fully competitive, consolidated ADP equipment procurement it initially planned to replace both NFC's and NMPC's equipment.

Documentation related to the interim solution suggests the Subcommittee was also concerned about whether the Navy intended to integrate NFC and NMPC operations. The Subcommittee took the Navy's failure to address integration in its PERSPAY objectives as an indicator of a lack of commitment to integration.

The Subcommittee hearings of June 1980 posed some of these consolidated procurement and integration concerns to the Navy. The Navy responded that integration of data bases is not a prerequisite to consolidating data processing operations, and that, while integration is not a PERSPAY objective, PERSPAY would facilitate future data base integration. As a result of the Subcommittee's concern, the Navy subsequently initiated a synchronization study that addressed integration.

THE NAVY'S NEW PROCUREMENT STRATEGY

At the June 1980 hearings, the Navy told the Subcommittee it had withdrawn the September 1979 request to GSA for a delegation of procurement authority to competitively replace existing NFC and NMPC equipment, under the A-109 approach. Instead the Navy said it was preparing a request for two separate authorizations. One would enable NMPC to procure ADP equipment and convert its applications to the standard operating system established at the CDC. The other would enable NFC to procure ADP equipment for the CDC. The Navy said the NFC ADP equipment would provide sufficient processing capability to implement eventual consolidation and to support planned growth of the NFC and NMPC applications systems until the follow-on, fully competitive acquisition could be completed.

In September 1980, the Subcommittee issued House Report 96-1317, which discussed information from the June 1980 hearings and results of a review of PERSPAY. The report observed the need to

--convert NMPC applications software prior to attempting any consolidation at the CDC, and

--require some interim hardware upgrade rather than new ADP equipment, but only for NMPC.

The report further suggested that NMPC should acquire two used IBM 370/168s, but NFC should continue using its existing two 370/158s.

The report also reiterated the concern that the Navy was not really committed to consolidation in all aspects. Instead, PERSPAY was moving toward two separate operations under one roof. Accordingly, the Subcommittee directed the Navy to develop an operating plan supporting a single-site operation and a consolidated data base prior to seeking funds for the project for fiscal 1982.

In November 1980, PERSPAY officials briefed the Subcommittee staff on PERSPAY's status. Having considered Subcommittee concerns, the Navy indicated it was proceeding with the revised ADP equipment acquisition strategy it mentioned at the June 1980 hearings. In short, the Navy withdrew the previously requested authorization to jointly and competitively procure ADP equipment for NFC and NMPC (the modified A-109 approach), and requested interim authorizations to separately procure equipment for NFC and NMPC. Also, PERSPAY officials said (1) they had developed a PERSPAY concept-of-operations-and-support agreement between NFC and NMPC that committed the Navy to consolidation; (2) effort was under way to study data synchronization, the first step to NFC and NMPC data integration; (3) the ADP equipment for CDC was necessary for the eventual consolidation and applications transfer and would not result in more capacity than the CDC needed; and (4) the Subcommittee's recommended IBM 370/168 solution for NMPC requirements was cost prohibitive as an interim solution. A Navy memorandum subsequent to this briefing said the Subcommittee asked many questions but finally agreed that the revised procurement approach looked sound, and had no objection to it.

In February 1981, GSA granted the Navy separate delegations of procurement authority to acquire compatible computer systems for NFC and NMPC until a fully competitive acquisition could be completed. These authorizations, to be completed by December 1982, replaced existing computer systems at both the NFC and NMPC sites. NMPC would receive two computers (and associated peripheral equipment), each with eight megabytes of memory capacity, at an estimated cost of $7.3 million. NFC would receive four computers (each with 12 megabytes of memory), an option to acquire an additional computer, and peripheral equipment for the CDC, at an estimated cost of $45.3 million.

NMPC's computer equipment would (1) be installed in Washington, D.C., and be used to convert its applications to the operating system established at the CDC; (2) bring those NMPC applications supported by commercial time-sharing systems

in-house; and (3) alleviate work load growth problems. Despite the Navy's release date of October 1985 for this computer equipment, none of it has yet been released: it is being used to convert NMPC applications, process classified applications, and serve as a remote input-output processor for PERSPAY.

NFC's computer equipment would be installed at the CDC and be used to implement the consolidation effort. One of the computers (subsequently transferred to NMPC in Washington, D.C.) would be dedicated to processing classified personnel data. The CDC equipment is expected to be released in December 1988, upon completion of a fully competitive procurement.

CONGRESSIONAL INVOLVEMENT DECREASES

According to records we have reviewed, the last meeting--in April 1981--between the Navy and Subcommittee staff focused on the current status of PERSPAY. Among other things, PERSPAY officials said that GSA had authorized the ADP equipment procurements for NFC and NMPC, and that the Navy had recently prepared equipment specifications for the NMPC computers (which would be new IBM 3033-type mainframes). The Subcommittee staff assistant suggested NMPC would be reluctant to move its applications to the CDC if NMPC received this state-of-the-art computer equipment because it would be able to support its own processing requirements.

At this meeting, the Navy also mentioned it had initiated a data base synchronization study. The Navy made no promises that data integration would become a reality in the near future, and said this study was merely the first step toward that goal. Discussion occurred on the Subcommittee's earlier suggestion to upgrade NMPC's equipment to IBM 370/168s rather than purchase new, state-of-the-art equipment. PERSPAY officials said environmental constraints at NMPC (insufficient power, chilled water, and space), and insufficient processing capability of the suggested two machines made this alternative economically infeasible. PERSPAY officials said they would need four IBM 370/168s to do the planned conversion; they therefore opted for the more powerful IBM 3033 computers. According to a subsequent Navy memorandum, the meeting concluded with the Subcommittee staff assistant still concerned about the Navy's intentions about consolidation and integration.

During our review, we met with the former Subcommittee staff assistant, who was involved in the June 1980 hearings and subsequent briefings on PERSPAY. He recalled that the Navy was inconclusive about PERSPAY; nebulous answers were often given to the Subcommittee's concerns. We discussed the Subcommittee's then expectations for PERSPAY.

The former staffer believed that consolidation of data processing operations and integration of personnel and pay data bases were PERSPAY objectives. He said that the Subcommittee was under the impression that data base integration and the fully

competitive replacement of the ADP equipment acquired as an interim measure would occur by 1983 or 1984. Further, he said it was the Subcommittee's perception that people and equipment would be moved to the CDC, resulting in a reduction of the NMPC presence in Washington, D.C., since the CDC would run the entire consolidated operation. According to him, the Subcommittee believed all NMPC applications were to transfer to the CDC.

The data base synchronization study the Navy cited as responding to the Subcommittee's concerns about PERSPAY was completed in October 1981. It concluded that PERSPAY would do little to achieve data base integration for NFC and NMPC applications. It suggested an approach for integrating pay and personnel data that, if followed, would probably take 5 to 7 years to accomplish. During our review, a Navy official told us that no formal action was taken on the study's recommendations.

THE PROCUREMENT PERIOD

This period, approximately from mid-1981 through 1983, focuses largely on events related to the ADP equipment acquired under PERSPAY. Somewhat overlapping the previous period, this segment encompasses the Navy's implementation of its new delegations of procurement authority, problems encountered along the way, and transition plans for the final phase--consolidation. The NFC contract award for ADP equipment installed at the CDC closes out this period.

NFC and NMPC were operating with fairly old ADP equipment when they planned their PERSPAY acquisitions. According to the Navy, the equipment was also capacity constrained. In July 1981, when the Navy was determining what size computers to procure for PERSPAY, NMPC's and NFC's (including the CDC) existing computers consisted of:

	IBM model	Model year	Number
NMPC	360/65	1965	1
	370/165	1970	1
NFC	360/30	1965	1
	370/158	1972-76	3

The NMPC computer systems were processing some, but not all, personnel applications planned for conversion and transfer to the CDC. Some of the applications were widely dispersed and being processed at various time-sharing locations outside NMPC's computer center. The types of equipment supporting these applications were many and varied. Consequently, a large conversion effort would be required before NMPC's applications could be transferred to the CDC.

In contrast, NFC was processing all its payroll applications in-house, using the computer systems noted in the chart. Moreover, since NFC had already converted its applications to the standard operating system established at the CDC, its conversion effort would be minimal.

THE NAVY UNDERESTIMATED SYSTEM CAPACITY REQUIREMENTS

Federal ADP acquisition policy stipulates that a comprehensive and definitive requirements analysis must be conducted to determine what size computers are needed to support computer capacity requirements. Accurate and realistic work load projections, properly validated, are the key to determining these requirements. When the requirements were being developed for the PERSPAY ADP equipment, PERSPAY officials had neither the expertise nor the needed work load information to properly size the equipment. Not only did they lack personnel experienced in

computer capacity management, but also the work load projections were based largely on judgmental and historical information developed under the Brand X procurement. As a result, the projections were grossly underestimated, according to PERSPAY officials. They also said the initial ADP equipment requirements were inadequate, necessitating subsequent changes in the equipment requirements.

The first revision of the Navy's planning for the PERSPAY procurement came in August 1981. NMPC's initial ADP equipment requirements, prepared for a December 1980 agency procurement request and approved by GSA in February 1981, were revised to be more in line with updated NMPC requirements. NMPC officials said key performance information had not been available when the initial equipment requirements were prepared. According to them, the revised equipment requirements were based on more detailed planning and observations of other installations processing work loads similar to what NMPC was projecting. The major change was the doubling of computer memory capacity (from 8 to 16 megabytes) per computer.

In November 1981, the Navy requested a second major revision to NMPC's requirements and solicitation documents. Again, poor initial planning was said to be the cause. NMPC's original strategy was to install two IBM 3033s at its computer center in Washington, D.C. Floor space and other constraints at NMPC, however, would not allow the first computer to be installed when it would be needed. To preclude the possibility of delaying the project, NMPC and NFC agreed to install NMPC's first PERSPAY computer at the CDC. Since CDC was not prepared to install an IBM 3033, NMPC had to again revise its equipment requirements. Instead of an IBM 3033, NMPC requested that its first PERSPAY computer be downgraded to an IBM 4341--which the CDC could support.

Poor initial work load requirements and projections also caused a major change in NFC's original ADP equipment requirements. When NFC's initial equipment requirements were submitted with NMPC's in December 1980, NFC said it would need five 12 megabyte memory capacity computers (four to process the consolidated work load and one to process classified personnel applications).

In April 1982, after updating its work load projections, NFC determined that the memory capacity of the four CDC computers would need to be doubled. NFC requested an increase in computer memory capacity to 24 megabytes per computer to accommodate (1) growth in NFC and NMPC online applications; (2) growth in telecommunications requirements for the CDC; (3) the applications on the standard operating system established for the CDC; (4) a commercially available data base management software package; and (5) known future personnel and pay initiatives. PERSPAY officials

said the initial NFC requirements analysis had been inadequate to support PERSPAY needs.

NMPC's and NFC's requests for these equipment changes were subsequently approved by GSA, and the Navy eventually got upgraded capacity and more sophisticated computers than originally planned for PERSPAY. In May 1982, the Navy summarized the cost impact of these changes. Due largely to the increases in computer memory capacity, the Navy estimated PERSPAY ADP life cycle equipment costs would increase by about $24.7 million, from $52.6 million to $77.3 million.

PROJECT MILESTONE SLIPPAGES

Not only did these computer equipment changes impact project costs, they also contributed to project slippages. Originally the Navy said it would award the contract for NMPC's computer equipment in January 1981, and complete the transfer of NMPC applications to the CDC in September 1984. NMPC's contract was awarded in December 1982, almost a 2-year slippage. Most of NMPC's applications have not been transferred to the CDC; that is expected by October 1986.

NFC's computer equipment contract, originally scheduled for June 1982, was awarded in January 1984; this slippage represented about 18 months. Transfer of NFC's applications, scheduled for completion in April 1983, was not actually accomplished until September 1984.

THE NAVY'S RECOMMITMENT TO PERSPAY

Until April 1983, PERSPAY was carried out through various ad hoc NFC and NMPC planning groups, which were not well coordinated; an effective management structure was not in place to direct the project. Formal planning was lacking, and the project had no single, independent program manager with overall authority and responsibility for day-to-day management.

The Joint Conceptual Planning Group, established during this period, was the first significant step in emphasizing management of PERSPAY. The group's purpose was to respond to the critical need for coordinated planning and focus the project on tasks that needed to be completed. The group, consisting of key PERSPAY management officials, established a framework for developing more effective management strategies for implementing the PERSPAY project.

The Navy established a more formal and intensive planning process and developed a PERSPAY master plan. The master plan, issued in October 1983, described an organized and logical approach for achieving PERSPAY goals and objectives.

INTERIM VS REPLACEMENT ADP EQUIPMENT

The master plan indicated that CDC equipment procurements would take advantage of state-of-the-art ADP technologies. According to Navy officials, the decisions to acquire state-of-the-art equipment and to install computers not only at the CDC but also at NFC and NMPC were necessary to facilitate the transfer of NMPC applications and enhance PERSPAY consolidation and other project goals.

ADP EQUIPMENT IN PLACE

January 1984, when the PERSPAY contract for the CDC computer equipment was awarded, marks the end of the procurement period. This contract and the one awarded in December 1982 for NMPC's computer equipment procured most of the computers currently in place at the CDC, NFC, and NMPC.

The following table presents a profile of the computers currently in place for PERSPAY. It does not include an IBM 3081 for the CDC that the Navy has an option to acquire under the NFC contract.

Location	IBM model	Memory capacity (megabytes)	Primary function
CDC	3081	24	Process NFC/NMPC work loads
	3084*	48	Process NFC/NMPC work loads
NFC	4341	12	Remote input/output
NMPC	4341	8	Convert NMPC applications
	4341	8	Process classified systems
	3033	16	Remote input/output

* This is actually two IBM 3081s that were joined to form a multiprocessor commonly called an IBM 3084.

THE CONSOLIDATION PERIOD

With the awarding of the second ADP equipment contract in January 1984, PERSPAY shifted emphasis from procurement and focused on consolidation of the NFC and NMPC data centers--a major PERSPAY goal. Additional PERSPAY goals and objectives provide for

--transfer of all user-specified personnel and pay applications to the centralized site;

--a communications network interface to support remote user access;

--contingency ADP support--standby and backup recovery processing in the event of a disaster;

--system growth to support mobilization of personnel in the event of a national emergency;

--a charge-back system for services provided to CDC customers; and

--more responsive, more reliable data processing, including more accurate and timely data exchange between NFC and NMPC.

The Joint Conceptual Planning Group emphasized achievement of PERSPAY goals and objectives. An example is their emphasis of the establishment of the CDC as a major state-of-the-art ADP facility to ultimately process both Navy payroll and personnel applications. PERSPAY officials indicate that the CDC, among other things, will provide improved resource utilization, processing control, data center services, and data security. In addition to PERSPAY's master plan, the Navy began to develop planning documents on architecture, data communications, and technical support. PERSPAY officials believe they are well on the way to achieving all the project's goals and objectives.

CONSOLIDATION AND INTEGRATION ISSUES

Current PERSPAY initiatives do not appear to meet Subcommittee consolidation and integration expectations. Our understanding from reviewing the congressional records is that the Subcommittee expected PERSPAY to achieve consolidation as follows.

--All NFC and NMPC data processing systems (applications) were to be transferred to a centralized site that would consolidate the various payroll and personnel applications.

--NFC and NMPC data processing support functions also would be assumed by the consolidated facility. NFC and NMPC personnel would move to the centralized site. Most, if not all, NFC's and NMPC's data processing operations would be taken over by the consolidated facility.

--NFC and NMPC data files were to be integrated. The consolidated facility would integrate the separate personnel and payroll files to form a single, integrated data base.

PERSPAY officials contend the project was never intended to accomplish the Subcommittee's expectations. In reviewing the many Navy documents that address consolidation and integration, we found many inconsistencies regarding what PERSPAY was intended to accomplish. One example was the NMPC applications scheduled for transfer to the CDC. Some Navy documents suggest all NMPC applications would be transferred; others indicate only those applications specified by the user would be transferred.

PERSPAY officials stated that there may have been discussions very early in the project about moving NFC and NMPC functions and personnel to the consolidated site; to some extent this happened. But, according to these officials, moving all data processing functions and staff was never formally agreed to or documented.

PERSPAY officials were even more adamant about data base integration. They contend that integration has never been a PERSPAY objective. In contrast, however, the Secretary of the Navy and the Chief of Naval Operations in March 1985, testifying to the Senate Subcommittee on Defense Appropriations, stated "Under PERSPAY, personnel and pay records will be collocated at the CDC, and common data elements will be shared between the two data bases. This integrated data base will allow pay and personnel records to be updated simultaneously to greatly improve the overall accuracy of military members' records." PERSPAY officials do admit, however, that consolidation of personnel and pay applications will provide the ADP environment for possible future data base integration.

Consolidation of applications systems

Since September 1984, all 12 payroll and related applications systems previously processed at NFC have been resident on the CDC computers. Transfer of these applications was accomplished 18 months later than the original milestone, due primarily to NFC's ADP equipment contract being awarded late, and not operational problems. Unlike NMPC's applications, the payroll applications software was already operating at the CDC so there were fewer conversion and transfer problems. NFC's proximity to and

organizational alignment with the CDC were positive factors in the transition.

Transferring NMPC applications to the CDC has proceeded at a much slower pace. The initial deadline was September 1984. PERSPAY officials now say it will be October 1986 before the majority of this effort is completed. Several factors are responsible for the delay. First, the contract for NMPC's new computer equipment was awarded almost 2 years late. Second, NMPC applications were geographically dispersed. Third, NMPC chose to bring the dispersed applications together before converting and transferring them to the CDC.

The Navy believed conversion was the biggest problem facing NMPC. Unlike NFC's software, the NMPC applications software was written in nine different computer languages and was run on several different types of computer hardware. Therefore, NMPC had a significant conversion effort--which Navy officials stated was grossly underestimated--before it could transfer its applications to the CDC.

NMPC has identified a total of 73 personnel applications under its authority but plans to transfer responsibility to the CDC for processing only 57. Five of the 57 applications are resident on CDC computers. Transfer of the remainder (52) is expected to be largely completed by October 1986.

Originally, all NMPC applications were to be transferred to the CDC. However, PERSPAY officials told us they decided that it is more beneficial to retain certain applications in Washington, D.C. For example, five applications will either be eliminated or redesigned; six classified applications will remain in Washington, D.C., because the CDC is not set up to handle classified processing; and five applications will be maintained by NMPC's Distribution Support Division.

The latter--the Distribution Support Division applications--involves the assignment and distribution of Navy personnel world-wide. NMPC personnel, who used NMPC's personnel master file for support, said (1) they require online access to the personnel data, currently not being provided; (2) turn around time was poor; and (3) the data were often inaccurate. As a result, the division is acquiring ADP equipment to provide online and improved support. The equipment to be acquired for these five applications will duplicate the PERSPAY personnel master file that will eventually be transferred to the CDC. Estimated cost to procure ADP equipment (seven IBM 4300 series computers) is $28 million. This sum is not part of PERSPAY funding.

NMPC officials admitted that absorbing the Distribution Support Division's applications under PERSPAY and moving them to the CDC is technically feasible. But they believe excessive telecommunication costs, user control, system flexibility, and

online response time favored acquiring the new equipment and establishing the operation in Washington, D.C.

Consolidation of ADP equipment and personnel

The data processing equipment at NFC and NMPC has yet to be consolidated in their entirety at the centralized site. Both NFC and NMPC have computers that serve as remote input-output processors. The computers also perform functions such as data transcription, document scanning, printing, distribution, and quality control.

Both NFC and NMPC were supposed to provide ADP personnel to help process their applications at the CDC. Because of its proximity to the CDC, the NFC transfer of about 100 ADP personnel was easily accomplished. Because the NMPC transfer meant relocation from Washington, D.C., it was agreed that NMPC would transfer 92 billets (vacancies) instead of 92 people to the CDC.

Initially, the Navy projected significant personnel savings through consolidation of NFC and NMPC data processing operations. Because of the decision to install ADP equipment at all three sites and, according to PERSPAY officials, the unanticipated work load growth, these savings will not be realized. According to one Navy document, a total of 322 personnel at NMPC and CDC will provide ADP support for PERSPAY instead of the initially planned 137 personnel.

Integration

Perhaps the most unresolved PERSPAY issue is whether the integration of NFC and NMPC data bases was a PERSPAY goal. Because the Subcommittee had reservations about whether the Navy was committed to integration, the fiscal 1981 House Report on Appropriations directed the Navy to develop an operating plan supporting integration. PERSPAY officials insist that integration of personnel and pay data bases was never a PERSPAY goal. However, in 1981, to satisfy Subcommittee concerns, they awarded a contract for a data synchronization study that addressed integration. In May 1984, PERSPAY officials discussed the need to make planning decisions as soon as possible to maximize benefits for the PERSPAY project. Integration was discussed then as a long-range initiative.

To correct the problem of inaccurate pay records, as reported by the Navy under the Federal Managers' Financial Integrity Act, the NFC is currently conducting a military pay integration project. This project, expected to provide an information-system plan by June 1986, is an attempt to integrate common payroll and personnel data elements into a single file structure. NMPC, in a similar project, is identifying personnel data that can be shared by users of more than one information system. These projects are separately financed initiatives not included under PERSPAY appropriations.

Finally, the Navy Comptroller's 1985-95 Strategic Financial Management Master Plan cites pay and personnel data base integration as a desirable long-range goal, noting that its lack is currently a major problem.

Separate and distinct from the PERSPAY goals the Subcommittee expected, Navy officials state that the following goals and objectives are what they expect PERSPAY to achieve.

CONTINGENCY PLANS FOR DISASTER RECOVERY

PERSPAY is supposed to provide standby or backup processing for vital applications in the event of disaster (floods, fires, or earthquakes). Contingency plans for such events are required by Office of Management and Budget Circular A-130, "Management of Federal Information Resources."

PERSPAY officials contend the CDC has greatly enhanced in-house, backup, disaster-recovery processing capability over what previously existed. However, PERSPAY officials admit they are concerned about the CDC's vulnerability to serious environmental disasters that could totally disable or destroy the CDC. Undoubtedly this concern was heightened when the January 31, 1986 earthquake, measuring 5.0 on the Richter scale, occurred in several states, including Ohio. The quake's center was about 30 miles from the CDC. To date, however, PERSPAY has no adequate contingency plan for emergency response, backup operations, and post-disaster recovery.

The CDC has been working on a reciprocal disaster-recovery arrangement with the Air Force Accounting and Finance Center, in Denver. This might provide emergency backup for some applications. But neither facility would have excess capacity to process the entire work load or even a reasonable number of critical applications for the other. A GAO report[5] concluded that such agreements do not provide adequate backup capability because, by giving up excess capacity, it automatically puts the agency providing the backup in a contingency environment of its own.

Independent of PERSPAY and its funding, NFC has recently initiated a data processing security system project that addresses the ADP equipment backup capability issue. This project could include leasing a commercial "hot site" recovery center to provide recovery backup for NFC, NMPC, and the CDC in emergencies. A hot site is a preconditioned, hardware-equipped facility that allows outside users with extended outages to use a remote facility on a

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[5]Most Federal Agencies Have Done Little Planning for ADP Disasters, GAO/AFMD-81-16, December 18, 1980.

fee basis until the user's data center can be reconstructed and made operational.

MOBILIZATION

According to Navy officials, PERSPAY is supposed to provide data processing capability to respond to drastic changes in total processing requirements. Mobilization (putting the armed forces into a state of readiness for active service) would significantly increase the active duty rolls and would be a real test for the CDC system's capabilities. However, the CDC is not prepared for such a full mobilization because detailed data processing requirements for this event have yet to be defined. In a recent small-scale mobilization test the Navy conducted, the CDC could provide ADP resources only on a limited basis. CDC officials told us this issue concerns them, but is something that has yet to be seriously addressed.

CHARGE-BACK SYSTEMS

Computer-cost charge-back systems help control ADP overhead costs at central computer centers. A charge-back system enables the central site to recover its operating costs by charging users for the services provided. It also forces users to revalidate their continuing need for automated information and data processing services.

PERSPAY officials, recognizing the importance of a charge-back system, established it as a PERSPAY objective. To date, such a system has not been realized. Resource requirements of the applications processed at the CDC are being tracked, and a cost-allocation algorithm is being developed, according to PERSPAY officials. However, a charge-back system is not expected until after the consolidation effort is completed.

DATA ACCURACY AND DATA EXCHANGE BETWEEN NFC AND NMPC

Among other things, PERSPAY is supposed to provide more responsive, more reliable data processing and to result in more accurate and timely data exchanges between NFC and NMPC. Indications are that data exchanges between NFC and NMPC under PERSPAY are more timely than prior to PERSPAY but that accuracy of the data exchanged has not improved. Navy reconciliation reports suggest data discrepancy rates between payroll and personnel data are still very high.

Data accuracy problems are largely the result of inaccurate data transmitted to NFC and NMPC from payroll and personnel field offices. PERSPAY simply processes the data; it cannot ensure data accuracy. PERSPAY officials recognize this problem, and agree that NFC and NMPC data accuracy will improve only after resolution of problems at the field offices. The Navy has initiated the

Source Data System, a project that is expected to correct the field data problem, which involves no PERSPAY funds.

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