REPORT BY THE

AUDITOR GENERAL

OF CALIFORNIA

A REVIEW OF THE EMPLOYMENT DEVELOPMENT DEPARTMENT'S ACQUISITION OF NEW AUTOMATED SYSTEMS AND ITS MANAGEMENT OF ITS PROGRAMS AND FIELD OFFICES

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FEBRUARY 1989

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February 22, 1989

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Honorable Elihu M. Harris, Chairman
Members, Joint Legislative
Audit Committee
State Capitol, Room 2148
Sacramento, California 95814

Dear Mr. Chairman and Members:

The Office of the Auditor General presents its report concerning our review of the Employment Development Department's Acquisition of New Automated Systems and Management of Its Programs and Field Offices. In this report, we examine how effectively the department is managing the development of its major automated systems and how well the department complies with state requirements in administering contracts for electronic data processing services. We also examine whether the department pays disability insurance benefits promptly and how adequately it staffs its tax auditing function. Finally, we examine whether the department has a high rate of sick-leave usage, a high number of work-related disabling injuries, or a high number of grievances filed.

Respectfully submitted,

KURT R. SJOBERG
Acting Auditor General

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SUMMARY

RESULTS IN BRIEF

During our review of the Employment Development Department's (department) acquisition of new automated systems and its management of its programs and field offices, we found few weaknesses in a number of areas. However, we noted the following conditions in other areas:

- The department has experienced cost increases and schedule delays in the development of its six automated systems. However, these systems should provide, and some have, improved services to the public or reduced costs to the State. Further, our consultant found that although the department has had these problems in developing its automated systems, it has made numerous improvements over the last two years. However, some other areas still need improvement;

- Some parts of the Tax Accounting System (TAS), one of the three completed systems, did not operate correctly, resulting in a backlog of the department's daily workload and the delayed collection of approximately $27.4 million in tax revenues. We estimate that the department spent between $3.4 and $4.9 million to correct problems with the TAS and eliminate the backlog. The department also did not earn at least $1.0 million in interest because of delayed collections;

- The department has not always issued first payments promptly to all claimants for disability insurance (DI) benefits; and

- Although it has been successful at identifying delinquent taxpaying employers, the department could increase the amount of delinquent taxes that it identifies if it uses more staff time in its audit activities.

BACKGROUND

The department is responsible for assisting California's employers in meeting their labor needs, job seekers in attaining gainful employment, disadvantaged persons in becoming self-sufficient, and unemployed and disabled workers by maintaining benefit payment programs. The department is also responsible for supporting state activities and benefit programs by collecting payroll taxes and assisting employment and training and vocational education program planners.

The fiscal year 1989-90 Governor's Budget reports that, in fiscal year 1987-88, the department processed approximately 2.7 million first claims for Unemployment Insurance (UI) and more than 850,000 first claims for Disability Insurance (DI) and paid approximately $1.8 billion in UI benefits and almost $1.4 billion in DI benefits.

To review the department's acquisition of new automated systems and its management of its programs and field offices, we pursued a wide variety of audit objectives related to automated systems development, program management, and personnel practices and working conditions. We found few weaknesses in a number of areas. For example, we found few weaknesses in the methods used by the department to distribute staff resources to the field offices for the Job Service and UI programs.

PRINCIPAL FINDINGS

The Department Has Experienced Cost Increases and Schedule Delays in the Development of Its Six Automated Systems

In 1978, the department began developing the first of six new systems that have automated, or will automate, many of the department's

operations. These automated systems should provide, and some have, improved services to the public or reduced costs to the State. However, the department reported that it has spent, or estimates that it will spend, $33.1 million (123 percent) more than it originally estimated to develop three of the systems and took, or is taking from 10 to 27 months longer than it originally estimated to complete five of the systems. Delays in completing the systems may delay the department's ability to achieve the cost savings or other benefits that the new systems will provide.

The changes in the estimated costs and completion dates for the three systems whose costs increased by $33.1 million may have occurred because the department changed the design of the systems after the conceptual design stage. According to the deputy director of the Administration Branch, the department revised the scope or design of the three systems primarily for the following reasons: federal and state laws were passed that required the department to perform additional functions that required that it make changes to the systems; the changes should result in cost savings, cost avoidances, and increased revenues to the department; or additional user needs had to be satisfied to carry out the activities of the department's programs. Also, according to our consultant, changes in estimated costs and completion dates may have occurred because the department's staff were relatively inexperienced, and the department did not have a documented, formal estimation process for developing reliable estimates.

Some Parts of the TAS Did Not Operate Correctly When Implemented

As of December 1988, the department had completed three of six new automated systems. Although two of the three systems, when implemented, generally operated as intended, one did not. When the department began phasing in the TAS in October 1986, some parts, such as the cashiering functions, operated without significant problems. However, other parts of the TAS did not operate correctly. For

example, the system produced erroneous tax billings and refunds to employers and inaccurate computer records. Even though the department took action to correct the problems, a backlog resulted in its daily workload, and we estimate that it spent between $3.4 and $4.9 million in staff, contractor, and computer processing costs to correct the TAS and eliminate the backlog.

Additionally, we estimate that the department delayed collection of approximately $27.4 million in tax revenue from October 1987 through July 1988 because it assigned its tax audit and collection staff to eliminate the backlog. Although the department will eventually collect most of this tax revenue, not all of it may be collected as some employers may go bankrupt, close their businesses, or move out of the State. Because of the delay in collecting these revenues, the State did not earn at least $1.0 million in interest. According to our consultant, some of the problems with the TAS occurred because the department did not sufficiently test it before implementation and did not properly convert information from the old system files to the new.

The Department Has Improved the Way It Develops Automated Systems but More Improvements Are Needed

Our consultant found that, over the last two years, the department has made numerous improvements in the way that it develops automated systems but that some areas still need improvement. For example, the department has centralized its management of its major automation projects under one division, currently reports project activities effectively, and has developed computer programming standards. However, the department still does not have staff who possess the necessary experience to develop and manage large, complex automated systems. Also, the department lacks an up-to-date system development methodology and written quality assurance procedures, and it needs to replace its project tracking system to improve its

planning and monitoring of project activities. Even though the department hired contractors to provide the expertise and procedures that the department needed to manage its new automated systems, it is in the department's best interest to have in-house expertise and appropriately documented procedures.

The Department Did Not Always Comply With State Requirements in Administering Contracts Related to Its Six Automated Systems

The department did not always comply with state requirements in administering contracts for the development of its automated systems. In four amendments to two contracts, the department did not clearly define in writing the additional work that contractors were to perform. Further, the department did not obtain the Department of General Services' approval before contractors started work on one of nine contracts and 2 of 15 contract amendments. In addition, the department did not withhold the required minimum of 10 percent from progress payments made to contractors on two of four contracts that we tested for this requirement. By not putting in writing all the work that contractors are to perform, the department is at greater risk of paying contractors for work not performed or performed poorly than if the contractors' responsibilities were in writing.

The Department Has Not Always Paid Disability Insurance Benefits Promptly

State law requires the department to issue first payments for claims for DI benefits within 14 days of receipt of a properly completed first claim. Although there is some disagreement over when the 14-day time period starts, the department has not issued all first payments as promptly as it could have. Department studies show that, during a week in April 1988, the 21 DI field offices did not issue 13.6 percent of first payments within 14 days of entering data from the claims into the department's automated system. In addition,

our own tests indicate that the percentage of claims that field offices do not pay promptly is sometimes higher than the department's studies indicate. Delays in processing payments can create financial difficulty for some claimants. The department disagrees that it is failing to meet the deadline established in the law because it interprets the law to require that the 14-day time period starts the day that a field office has sufficient information to decide whether a claimant is eligible to receive benefits. However, the Legislative Counsel maintains that the 14-day time period starts the day a field office receives a properly completed claim form. (Even if the claimant has provided a properly completed claim form, the department sometimes must obtain more information.)

A number of factors have contributed to the department's delays in paying DI claims. The first factor, which is beyond the department's control and which can prohibit the department from issuing first payments within 14 days of receiving a claim form, is that claimants and third parties do not always respond promptly to requests for information necessary for the department to determine whether a claimant is eligible to be paid. Nevertheless, other factors are within the department's control. For example, we reviewed the actions of staff to obtain information and issue payments for 10 of 34 late claims in our sample at one field office. A department representative agreed that documents in the claim files indicated that staff should have acted faster for 5 of the 10 claims. Also, numerous telephone calls to field offices reduce the staff time available for processing claims.

According to the deputy director of the DI Branch, the department is installing a new automated system that produces monthly reports showing the percentage of all claims for which first payments were issued promptly during the month. The deputy director also said that the system identifies late claims and that the department intends to require that field office staff determine whether staff could have acted faster to pay any of the late claims identified.

The Department Needs To Audit More Employers

We reviewed the department's performance from fiscal year 1984-85 to fiscal year 1987-88 and found that the department has been successful at identifying delinquent taxpayers since fiscal year 1984-85. However, it needs to increase the number of employers it is auditing because the number of staff hours devoted to performing audits and the number of audits performed have not kept pace with the growth in the number of employers and employees in the State during the same period. For example, the number of employers and employees increased by approximately 17 percent and 11 percent, respectively, during this period. However, the number of hours that tax auditors spent auditing and the number of audits that they performed decreased by approximately 8 percent and 7.4 percent, respectively.

The department could increase the amount of delinquent taxes that it identifies and the tax revenues that it collects if it performed more audits. For example, based on department data and analysis by our statistical consultant, we estimate with 90 percent confidence that if the district offices had performed 20 percent more audits in fiscal year 1987-88, the department could have identified at least an additional $9.7 million in amounts owed to the State for that fiscal year. Also, based on our estimates and department data, the department collects approximately 58 percent of the amounts owed to the State identified through audits in a fiscal year within nine months of the next fiscal year; therefore, the State could have received an additional $5.6 million in federal and state revenues as a result of the 20 percent increase in audits. Based on department data, we estimate that the cost to conduct these additional audits and collect the additional revenues is approximately $1.5 million.

To estimate the level to which the district offices could successfully increase the number of audits, the department should estimate the benefits and costs for varying levels of audit effort. According to the deputy director of

the Tax Branch, the department now has the ability, through the TAS, to determine the dollar return for each dollar invested in the audit program. The department expects this information to be available in early 1990.

The Department Does Not Have a High Rate of Sick-leave Usage, Work-related Disabling Injuries, or Grievances Filed

One of the purposes of our review was to determine whether employees in the field offices of the department are subjected to excessive stress. A high rate of sick-leave usage, work-related disabling injuries, and grievances filed could be indicators of employees reacting to stress on the job. (A disabling injury is any injury that results in lost time from work beyond the date of injury.) Compared with employees from all state departments and six other large state departments, employees of the department, in general, do not use excessive amounts of sick leave, suffer an excessive number of work-related disabling injuries, or file an excessive number of grievances. For example, department employees used an average of 8.6 days of sick leave per employee in fiscal year 1986-87 compared with an average of 8.5 days per employee for all state employees. Moreover, in the six field offices that showed the highest rates of sick-leave usage compared with other field offices, these high rates were attributable to only one or two employees at each of the offices.

Personnel Practices That Could be Strengthened

We identified two areas related to personnel that could be strengthened. Currently, the department does not have statewide standards to evaluate employee job performance in the UI and DI programs. The development of statewide performance standards would ensure a more consistent method of performance evaluation among field offices. The department is in the

process of developing statewide performance standards for the UI program and plans to develop and implement statewide performance standards for the DI program once its new automated system is operating statewide. In addition, we found that one candidate from a sample of 64 candidates was persuaded to waive his interest in a position. As a result, another individual who would have otherwise been ineligible unfairly got the position. According to the deputy director of the Administration Branch, the department is revising one of its forms used to contact candidates to enable it to better detect incidents involving candidates who might have been persuaded to waive interest in positions.

CORRECTIVE ACTION

In the first quarter of fiscal year 1988-89, the department increased the number of hours spent auditing and the number of audits performed. In addition, according to the deputy director of the Tax Branch, the department is currently recruiting additional auditors.

RECOMMENDATIONS

To improve its acquisition of future automated systems and its management of programs and field offices, the Employment Development Department should take the following actions:

- For future automated systems, our consultant recommends that the department use experienced staff, continue with its plans to develop a formal estimation process, follow prudent testing and data conversion methodologies before implementation, obtain or develop an up-to-date system development methodology, establish written quality assurance procedures, obtain or develop a more complete project tracking system, and train project managers in the use of the tracking system;

- Comply with all state requirements in administering contracts for the development of automated systems;

- To promptly issue first payments for disability insurance benefits, ensure that field office staff promptly obtain information necessary to determine claimants' eligibility, continue with plans to determine whether staff could have acted faster to pay late claims, and complete implementation of measures to reduce the number of telephone calls to field offices;

- To increase the amount of delinquent taxes identified, identify the levels of costs and benefits that would accrue under varying levels of audit effort, and use the information to obtain the staffing levels that most benefit the State; and

- Follow through with its plans to develop and implement statewide personnel performance standards for the Unemployment Insurance and Disability Insurance programs and to revise its follow-up forms to detect any incidents involving employees who have encouraged eligible candidates to waive interest in a position.

AGENCY COMMENTS

The Employment Development Department generally agrees with the findings and recommendations in this report. However, the department believes that we do not recognize many of its accomplishments. Also, the department believes that although department staff assigned to develop the six new automated systems were initially inexperienced, it has now developed staff expertise that is among the highest available anywhere in the public sector.

INTRODUCTION

The Employment Development Department (department) reports to the Health and Welfare Agency and is headquartered in Sacramento with field offices throughout the State. The department is responsible for assisting California's employers in meeting their labor needs, job seekers in attaining gainful employment, disadvantaged persons in becoming self-sufficient, and unemployed and disabled workers by maintaining benefit payment programs. The department is also responsible for supporting state activities and benefit programs by collecting payroll taxes and assisting employment and training and vocational education program planners.

The department administers five major employment-related programs: Job Service, Unemployment Insurance, Disability Insurance, Employment Training, and Employment Tax collection and accounting. Also, it is organized into six branches: Administration, Disability Insurance, Operations, Tax, Employment and Training, and Program Review.

The Administration Branch performs the general administrative work of the department and consists of five divisions. The Automation Administration Division plans, organizes, and directs the management of major automation projects. The Data Processing Division develops and maintains computer systems, programs, and data bases and provides

electronic data processing services in support of department programs. The Personnel Programs Division provides services related to hiring, discipline, classification and pay, employer and employee relations, and management training. The Fiscal Programs Division is responsible for developing the department's annual budget, ensuring that expenditures are consistent with the budget, and accounting for all department expenditures. The Business Services Division provides the supportive services to house and equip the department's operations.

The Disability Insurance (DI) Branch administers the DI program, which provides workers with partial replacement for their loss of wages when they are unable to perform their usual work because of pregnancy or illness or injury not related to their jobs. The fiscal year 1989-90 Governor's Budget reports that in fiscal year 1987-88, more than 9.9 million workers were covered by the state DI plan, which is financed through a tax on workers' earnings. The Governor's Budget also states that the program processed more than 850,000 first claims and paid almost $1.4 billion in DI benefits. The Central Operations Division, within the DI Branch, formulates and recommends policies and procedures for the DI program, provides program coordination with other activities of the department, and provides technical assistance and training for the DI field offices. The DI field operations are organized into two area offices, one located in Sacramento and one in Los Angeles. The DI Branch has 21 DI field offices throughout the State and one nonindustrial DI office in Sacramento for state employee claims.

The Operations Branch is responsible for administering the delivery of Unemployment Insurance (UI) and Job Service (JS) programs through the department's 139 UI and JS field offices. Through the UI program, workers who have lost their jobs through no fault of their own are paid benefits. According to the Fiscal Year 1989-90 Governor's Budget, in fiscal year 1987-88, more than 746,000 employers paid into the UI Fund to provide coverage to approximately 12 million workers. The Governor's Budget further states that the program processed approximately 2.7 million first claims and paid approximately $1.8 billion in unemployment benefits. Through the JS programs, the department helps employers find qualified applicants and job seekers find employment for which they qualify. The JS programs also provide special services for veterans, migrant and seasonal farm workers, and applicants with marginal job skills or barriers to employment, as well as employment counseling, job search workshops, and information on the labor market and occupational supply and demand. The Fiscal Year 1989-90 Governor's Budget reports that, in fiscal year 1987-88, the JS programs registered more than 740,000 individuals and placed almost 285,000 individuals in jobs.

The Tax Branch administers the coverage and financing provisions of the UI and DI programs, the Employment Training Tax program, and the Personal Income Tax withholding program. The Tax Branch also performs accounting, audit, enforcement, collection, and public education activities. The Central Collections Division, within the Tax Branch, collects amounts owed by employers for unpaid UI and

Employment Training taxes, DI contributions, and California Personal Income Tax withholdings. The Field Audit and Compliance Division, also within the Tax Branch, registers new employers, audits employers to ensure compliance, and collects taxes in the most difficult cases. Within the Tax Branch, there are 37 Employment Tax district offices throughout the State.

The Employment and Training Branch provides policy and program support for Operations Branch field offices and coordinates the department's employment and training programs with those directed by other agencies. The UI Division, within the Employment and Training Branch, formulates and recommends policies, standards, and procedures for the UI program. The JS Division formulates and recommends policies, standards, and procedures for the department's job placement and job training programs, which include the JS, Work Incentive, Job Corps, Job Agent, Service Center, and other special employment assistance programs. The Employment Data and Research Division provides the public, the department, and other government agencies with analyses of economic, occupational, and socio-demographic information, develops labor market information, and conducts special research. The Job Training Partnership Office administers the Job Training Partnership Act Program.

The Program Review Branch provides independent reviews of the effectiveness and efficiency of the programs and service delivery systems administered by the department. These reviews include fiscal

audits, management reviews, program evaluations, investigations of fraudulent activities, and workload validation.

SCOPE AND METHODOLOGY

The purpose of this audit was to review the department's acquisition of new automated systems and its management of its field offices. To do this, we pursued a wide variety of audit objectives related to automated systems development, program management, and personnel practices and working conditions.

Automated Systems Development

To determine whether the department increased its estimates of development costs or extended its estimates of development schedules in completing its six new automated systems, we compared the development costs and completion dates established in the department's original Feasibility Study Reports with the estimates in the latest available reports provided by the department. To determine the reasons for increases in development costs and delays in the completion of these systems, we reviewed documents such as Feasibility Study Reports, Special Project Reports, and Post-Implementation Evaluation Reports.

To assist in our determination of reasons for the increases in development costs and delays in completing the department's automated systems, we obtained the services of Arthur Young, a management

consulting group. To determine whether the department has a system development methodology in place, our consultant compared the department's methodology for the development and implementation of automated systems with prudent methodologies used in other governmental entities and private businesses. To determine why the department's Tax Accounting System did not initially operate as intended, our consultant reviewed the department's proposed and actual implementation methodology and compared this methodology with generally accepted implementation methodologies. To assess the department's current ability to manage and develop future large automated systems, our consultant compared the department's current organization and process for developing new automated systems with those used by other governmental entities and private businesses. (See the Appendix for our consultant's report.)

To determine whether the department complied with state laws and regulations concerning the procurement of computer goods and services, we analyzed nine consultant and maintenance contracts and 15 amendments to these contracts related to the six new automated systems.

Program Management

To determine how promptly the department issued first payments for claims for DI benefits, we reviewed 1,009 (16.1 percent) of 6,253 first payments issued by 4 of the 21 DI field offices. In 3 of the 4 field offices, we randomly selected samples of first payments from one

week in 1987 and one week in 1988 to compare with studies of promptness that the department performed during two one-week periods in 1987 and one week in 1988. In the fourth field office, we randomly selected a sample of payments from a week in only 1988 because we could not obtain the records necessary to select a sample of first payments for a week in 1987. So that we could determine whether the department's studies were an accurate measure of consistent performance, we ensured that the weeks that we reviewed were similar to the weeks that the department studied in terms of the hours that staff worked and the number of first and continued claims that staff processed. We did not select samples from the same weeks that the department studied because of concerns that the field offices might not have operated as usual during the department's studies.

To determine the cause of late first payments, we reviewed the actions of the field offices to issue payments for some of the late claims in our samples. We also reviewed studies that the department conducted on telephone problems in the field offices.

To determine whether the department's tax audit efforts have kept pace with changes in the number of employers and employees in the State, we reviewed the department's and federal government's data on these elements for fiscal years 1984-85 through 1987-88. We did not audit the data that the department and the federal government provided.

To determine whether the department's tax audit efforts comply with federal goals for audit activities, we reviewed the federal Department of Labor's reports on the department's performance of its audit activities.

We also reviewed the following areas and found few weaknesses:

- The department's obtaining of funds for the JS and UI programs through certain programs administered by the federal Department of Labor;

- The reasonableness of the methods used by the department to distribute staff resources to the field offices for the JS and UI programs;

- The number of staff positions allocated and used in JS, UI, and DI activities;

- Changes in the population, labor force, unemployment rate, and number of unemployed as reflected by changes in staffing and in service levels for activities related to first claims for UI; and

- The performance and promptness of the JS and UI field offices in providing services for the JS and UI programs based on the federal government's assessment.

The department changed the method used to distribute staff resources to the DI field offices during fiscal year 1987-88. As a result, we could not test its method for distribution.

Personnel Practices and Working Conditions

We included in our review tests to determine whether employees were being subjected to excessive job-related stress and whether field offices were using different standards to evaluate the performance of employees. To determine whether department employees were experiencing excessive job-related stress, we reviewed the department's sick-leave usage, number of work-related disabling injuries, and number of grievances filed.

To determine whether department employees use excessive amounts of sick leave, we compared the department's rate of sick-leave usage for fiscal year 1986-87 with the average rate of usage for all state employees and with the average rate at the following six large state departments: the Department of Developmental Services (DDS), the Department of Health Services (DHS), the Department of Motor Vehicles (DMV), the Department of Social Services (DSS), the Franchise Tax Board (FTB), and the State Department of Education (SDE). For fiscal year 1986-87, we also reviewed sick-leave usage by work unit within the department to identify any units with excessive sick-leave rates.

To determine whether the rate of work-related disabling injuries filed by employees of the department is excessive, we compared the department's rate of work-related disabling injuries per 100 employees and the number of work days the department lost per 100 employees for work-related disabling injuries with the statewide rates for 1984, 1985, and 1986 published by the Department of General Services. We also compared the department's rates with the rates at the DDS, DHS, DMV, DSS, FTB, and SDE as reported by the Department of General Services.

To determine whether the department's employees file an excessive number of grievances, we obtained the number of grievances filed by department employees in 1986 and 1987 and the number filed by employees at the DDS, DHS, DMV, DSS, FTB, and SDE. For each department, we calculated the grievance rate for each year as the number of grievances per 100 employees, and we compared these rates.

To determine whether the department has statewide personnel performance standards in the UI and DI field offices, we reviewed standards or goals in use in 19 of these field offices. We also reviewed the most recent performance evaluations for 41 employees in 15 UI and DI field offices.

To determine whether the department persuaded job candidates to waive their interest in positions, we reviewed over 2,000 personnel

transaction forms and approximately 390 lists of candidates, and we contacted 64 eligible candidates from these lists.

We also reviewed the following areas and found few weaknesses:

- The department's compliance with the grievance process specified by contracts between the California State Employees' Association and the State and by the department's Personnel Management Handbook;

- The department's security in the field offices; and

- The purchase and distribution to the field offices of ergonomic furniture for automated work stations.

AUDIT RESULTS

I

THE EMPLOYMENT DEVELOPMENT DEPARTMENT'S DEVELOPMENT OF NEW AUTOMATED SYSTEMS

In 1978, the Employment Development Department (department) began developing the first of six new systems that have automated, or will automate, many of the department's operations. These automated systems should provide, and some have, improved services to the public or reduced costs to the State. However, the department reported that it has spent, or estimates that it will spend, $33.1 million (123 percent) more than it originally estimated to develop three of the six systems and took, or is taking, from 10 to 27 months longer than it originally estimated to complete five of the systems. Delays in completing the systems may delay the department's ability to achieve the cost savings or other benefits that the new systems will provide.

The changes in the estimated costs and completion dates for the three systems whose costs increased by $33.1 million may have occurred because the department changed the design of the systems after the conceptual design stage. According to the deputy director of the Administration Branch, the department revised the scope or design of the systems primarily for the following reasons: federal and state laws were passed that required the department to perform additional functions that required that it make changes to the systems; the

changes should result in cost savings, cost avoidances, and increased revenues to the department; or additional user needs had to be satisfied to carry out the activities of the department's programs. Also, according to our consultant, changes in estimated costs and completion dates may have occurred because the department's staff were relatively inexperienced and the department did not have a documented, formal estimation process for developing reliable estimates.

As of December 1988, the department had completed three of the six systems. Although two of the three systems, when implemented, generally operated as intended, one did not. When the department began phasing in the Tax Accounting System (TAS) in October 1986, some parts, such as the cashiering functions, operated without significant problems. However, other parts of the TAS did not operate correctly. For example, the system produced erroneous tax billings and refunds to employers and inaccurate computer records. Even though the department took action to correct the problems, a backlog resulted in its daily workload, and we estimate that it spent between $3.4 and $4.9 million in staff, contractor, and computer processing costs to correct the TAS and eliminate the backlog. Additionally, we estimate that the department delayed collection of approximately $27.4 million in tax revenue from October 1987 through July 1988 because it assigned its tax audit and collection staff to eliminate the backlog. Although the department will eventually collect most of this tax revenue, not all of it may be collected as some employers may go bankrupt, close their businesses, or move out of the State. Because of the delay in

collecting these revenues, the State did not earn at least $1.0 million in interest. According to our consultant, some of the problems with the TAS occurred because the department did not sufficiently test it before implementation and did not properly convert information from the old system files to the new.

Finally, our consultant found that, over the last two years, the department has made some improvements in the way that it develops automated systems but that some areas still need improvement. Also, even though the department hired contractors to provide the expertise and procedures that the department needed to manage its new automated systems, it is in the department's best interest to have in-house expertise and appropriately documented procedures.

AN OVERVIEW OF THE TYPICAL PROCESS USED TO DEVELOP AUTOMATED SYSTEMS AND A DESCRIPTION OF THE RELATED REPORTING REQUIREMENTS

Projects to develop new automated systems generally go through several different stages, which Table 1 summarizes.

TABLE 1

THE DIFFERENT STAGES IN THE DEVELOPMENT OF AN AUTOMATED SYSTEM

Stage	Objective
1. Needs identification	Identify the need for automation.
2. Feasibility study	Determine whether automation is feasible and identify potential alternatives.
3. Conceptual design	Identify user needs for the new system.
4. System design	Develop the general design of the system.
5. Technical design	Develop the technical design of the system based on the system design.
6. Coding and testing of computer programs	Develop and test computer programs based on the technical design. This phase also includes training the users.
7. Implementation	Convert the old files to the new system and begin operation of the new system.
8. Post-implementation	Evaluate the new system and prepare the Post-Implementation Evaluation Report.

The first opportunity for a department to assess the advantages and disadvantages of a proposed automated system is through a feasibility study. The results of a feasibility study are documented in a Feasibility Study Report (FSR). In an FSR, a department identifies a problem or an opportunity to be addressed, defines the objectives to be achieved to effectively respond to the problem or opportunity, describes the current method of operation, and then describes various alternative methods to be considered in selecting one method. For each method that satisfies the defined objectives, the

department provides estimated costs and benefits, and if necessary, schedules for developing and implementing the method. Benefits can include improved services, cost savings, avoidance of future costs, and increased revenues. Based on an evaluation of these alternative methods, the department selects the one that it believes best solves the problem. Once the department receives approval of the FSR from the Department of Finance's Office of Information Technology (OIT), it can begin spending funds to develop the system.

A department prepares various types of status reports to describe its progress in developing the system. These reports are submitted to the OIT and to the Office of the Legislative Analyst. If the project proceeds without exceeding approved costs and deadlines, or within acceptable limits, the department prepares Quarterly Progress Reports, stating that the project is on schedule. Acceptable limits include project costs and benefits that have stayed within 10 percent of planned estimates and project completion time periods that have not exceeded 10 percent of the original estimates. If the project is not proceeding within approved or acceptable limits, the department prepares a Special Project Report explaining why. When the department completes the automated system, it prepares a Post-Implementation Evaluation Report to show the system's efficiency and effectiveness.

MAJOR SYSTEMS DEVELOPED
OR UNDER DEVELOPMENT

In 1978, the department began developing the first of six systems that have automated or will automate its tax collection, benefit payment, accounting, and employment service operations. The goal of the department's automation efforts is to better meet the needs of the State's employers and the unemployed. Table 2 summarizes the status of the six automated systems.

TABLE 2

THE STATUS OF THE DEPARTMENT'S SIX NEW AUTOMATED SYSTEMS AS OF DECEMBER 31, 1988

Automated System	General Purpose	Status
Disability Insurance Phase One (DI-1) system	Benefit payments	Completed
Job Service Order Sharing (JSOS) system	Job referrals	Completed
Tax Accounting System (TAS)	Tax accounting	Completed
Unemployment Insurance and Automated Benefit Accounting System (UI/ABAS)	Benefit payments and accounting	In progress
Disability Insurance Phase Two (DI-2) system	Benefit payments	In progress
Job Service Automation (JSA) system	Job referrals	In progress

Through the use of these systems, the department plans to improve services to the public or reduce costs to the State. In 1978, the department embarked on the first phase of the Disability Insurance (DI-1) system. The department intended the DI-1 system to, among other things, increase the percentage of first payments made within seven days from 25 percent to 65 percent by the end of 1984, reduce clerical time spent processing payments from an average of seven minutes per payment to five minutes per payment by 1983, reduce personnel costs by more than $1.9 million by the end of 1984, eliminate the duplication of clerical effort required to process first claims, and reconcile disability insurance payments with department records.

Through the Job Service Order Sharing (JSOS) system, the department intended to, among other things, increase job opportunities for applicants to the Job Service programs, increase the number of placements, allow more staff time for direct placement services, and enhance the department's image as a modern, efficient agency. With this system, the department planned to link field offices within a "common labor market area."

In 1984, the department began development of the Tax Accounting System (TAS). The department intended the TAS to, among other things, provide a centralized computer file of employment tax data, improve the management of employer accounts, improve the timeliness of recording accounts receivable, reduce personnel costs, and increase revenue collection.

The department began development of the Unemployment Insurance and Automated Benefit Accounting System (UI/ABAS) in 1985. The UI/ABAS automation project originally consisted of three separate automation projects, each of which was approved by the OIT. In March 1988, the department consolidated these projects into a single project with four interrelated components. According to the deputy director of the Administration Branch, the department completed one of the components in May 1988 and most of another component by August 1988. The department estimates that it will fully complete the UI/ABAS in March 1990. The department intended the system to, among other things, consolidate three separate activities related to overpayment recovery occurring in the department's field offices, the Benefit Overpayment Group, and the Data Processing Division; reduce nonfraudulent overpayments of unemployment insurance by 50 percent; increase the percentage of error-free claims; increase revenues; provide a payment authorization and reconciliation system for the field offices; decrease personnel and operating costs; reduce the number of forms and volume of paperwork required to process first claims; and improve the percentage of first claims paid within 14 days to 87 percent.

In 1986, the department began development of the second phase of the Disability Insurance (DI-2) system. The department intended the DI-2 system to accelerate the processing and paying of claims and enhance "communications and the transfer of information between [department] programs and offices." To do this, the department

intended to provide, among other things, a single automated system for all basic activities related to claims, centralize claim and payment functions, provide the ability to process a claim and authorize a payment on the day a claim is received, and reduce costs by issuing and mailing checks from a central location.

Also in 1986, the department began development of the Job Service Automation (JSA) system. Among other things, the department intended the JSA to eliminate the need for applicants to separately register for the Unemployment Insurance and Job Service programs; allow employers access to the entire statewide pool of applicants; give applicants access to job openings listed in all department field offices; and reduce staff time required to maintain hardcopy applicant files, manually maintain employer files, manually maintain, take an inventory of, and order supplies, and manually schedule and track specific applicants.

As of December 1988, the department had completed the DI-1, JSOS, and TAS systems. Although the department achieved some of the desired benefits from these completed systems, we could not determine whether the department achieved all of the desired benefits. For example, department data indicate that the department saved or avoided $3.7 million in additional costs because of the DI-1 system in 1984. The department also eliminated certain duplicate clerical efforts. Additionally, in fiscal years 1986-87 and 1987-88, because of the TAS, and despite some implementation problems, the department submitted two

budget change proposals to eliminate 264 personnel years and to transfer $6.0 million from its personnel budget to its operating expenses and equipment budget. (A personnel year is the equivalent of one person working full time for one year.) However, since the department had not issued the Post-Implementation Evaluation Report for the TAS by December 1988, we could not determine the increases in productivity that the department achieved from the TAS to justify these staffing cuts and budget transfers. Finally, although department information indicates that the JSOS improved services to employers, we could not verify that the department increased staff time for direct placement services or increased employment opportunities for applicants.

COST INCREASES AND SCHEDULE DELAYS FOR THE DEPARTMENT'S SIX NEW AUTOMATED SYSTEMS

Although the department plans to provide improved services to the public or cost savings to the State through the use of these six new systems, it has experienced cost increases and schedule delays. According to the latest available reports, the department estimates that costs to develop the six systems will be $82.4 million, an increase of $36.6 million or 80 percent more than the original estimates of $45.8 million. Development costs include the costs of the department's staff who worked on these systems, contractors' fees, and the costs that the Health and Welfare Data Center charges for data processing services. Table 3 summarizes increases in development costs

for each system from the estimate in the first Feasibility Study Report (FSR) through the estimate in the latest available report provided by the department. The source of the department's most current estimates are either the department's most recent amendments to its FSRs, the most recent Special Project Reports, or the Post-Implementation Evaluation Reports for the systems.

TABLE 3

INCREASES IN DEVELOPMENT COSTS FOR THE DEPARTMENT'S SIX NEW AUTOMATED SYSTEMS

System	Original Estimate	Reported Actual Cost or Current Estimate	Difference	Percentage Increase
DI-1	$ 1,395,700	$ 1,710,800*	$ 315,100	22.6%
JSOS	12,393,024	14,672,200	2,279,176	18.4
TAS	7,261,554	12,706,002	5,444,448	75.0
UI/ABAS	11,147,000	29,869,000	18,722,000	168.0
DI-2	5,074,753	5,903,200	828,447	16.3
JSA	8,521,857	17,492,300	8,970,443	105.3
Total	$45,793,888	$82,353,502	$36,559,614	79.8%

* This cost figure does not reflect certain development costs for the DI-1 system, such as the department's staff time. We could not determine how much the department exceeded the original estimate because the department reported in its Post-Implementation Evaluation Report for the DI-1 system that it commingled the development, implementation, and ongoing maintenance costs.

As Table 3 shows, the TAS, UI/ABAS, and JSA systems experienced increases of 75 percent or more in estimated costs. The development costs for these three systems have increased by $33.1 million (123 percent) to a total estimated cost of $60.1 million. This $33.1 million increase in the estimated development costs consists of a $13.8 million increase in department staff costs, a $10.2 million increase in contractors' fees, an $8.8 million increase in costs for data processing services, and a $300,000 increase in all other development costs (such as start-up costs, equipment, and software).

In addition to the increases in estimated costs to complete its automated systems, the department is not meeting its estimated completion dates. The department has completed, or estimates that it will complete, five of the six systems at least 10 months later than the completion dates that it estimated in its FSRs. Table 4 shows the delays in completion for the six systems. Although we did not determine whether any of the delays were unnecessary, delays in the completion of the systems may result in delays in achieving the cost savings or other benefits that the new systems will provide.

TABLE 4

DELAYS IN MEETING ORIGINALLY ESTIMATED COMPLETION DATES FOR THE DEPARTMENT'S SIX NEW AUTOMATED SYSTEMS

System	Original Estimate	Revised Completion Date	Delay (in Months)
DI-1	05/83	08/84	15
JSOS	*	02/88	--
TAS	07/86	06/88**	23
UI/ABAS	12/87	03/90***	27
DI-2	03/88	01/89	10
JSA	06/89	03/91	21

* The department reported fiscal year 1986-87 as the completion date for the JSOS system.

** The department put the TAS into operation in October 1986; however, once implemented, it experienced major operational problems that are discussed further on in this chapter. According to the director of the department, the problems with the TAS were corrected, and it was fully operational as of June 1988.

*** This project consists of four components. Please see page 20 for more information.

Reasons for Cost Increases and Delays

The changes in the estimated costs and completion dates occurred because the department changed the design of the systems after the conceptual design stage. Also, according to our consultant, the

department's staff were relatively inexperienced and the department did not have a documented, formal estimation process for developing reliable estimates.

Design Changes

According to our consultant, design changes made after the conceptual design stage may have contributed to some of the cost increases and schedule delays.

On six occasions, the department made design changes to the TAS, UI/ABAS, and JSA systems after the conceptual design stage. For example, in February 1987, 34 months after the conceptual design stage for the TAS, the department reported in a Special Project Report (SPR) design changes that included the addition of tax audit and compliance functions and other related functions such as a new field audit evaluation function and an automated case assignment and tracking function. Other changes included a decrease in the total number of computer programs from 589 to 497. The department also reported that over 1,400 changes or improvements had been or were being incorporated into the TAS to provide users with a system that addressed their needs. The department also reported a $3.0 million increase in development costs for the TAS. Of this $3.0 million increase, $1.5 million was for an increase in costs for data processing services

from the Health and Welfare Data Center, more than $800,000 was for an increase in the cost for department staff, and more than $700,000 was for an increase in the contractor's fees.

Also, in an SPR dated seven months after the conceptual design stage for the JSA system, the department reported a $4.4 million increase in development costs and a 14-month extension for the development of the JSA system. The department cited system complexity and design changes as reasons for the increases and extensions. The department reported that the design changes included additional methods for accurately matching job openings and applicants and providing more effective management reports. More than 45 percent of the cost increase was for an increase in the contractor's fees.

According to the deputy director of the Administration Branch, the department revised the scope or design of the TAS, UI/ABAS, and JSA projects primarily for three reasons. First, federal and state laws were passed that required the department to perform additional functions that required that it make changes to the systems. Second, these changes should result in cost savings, cost avoidances, and increased revenues to the department. Finally, additional user needs had to be satisfied to carry out the activities of the department's programs.

Lack of Experienced Staff

Our consultant found that the managers and other staff assigned to the projects were relatively inexperienced. According to our consultant, for the development of large complex systems, an agency should select managers and other staff already experienced in such efforts. Our consultant states that it is generally best to staff such projects with managers who have at least six years of experience in system development and with programmers and analysts who have an average of three to four years of experience. Without sufficient experience, project managers have difficulty estimating project work efforts, assessing the technical quality of work performed, and effectively monitoring the performance of contractors. Consequently, projects managed by inexperienced staff may result in poorly designed systems, unnecessary cost overruns, and schedule delays.

Our consultant reviewed the data processing experience of managers and other staff assigned to the TAS, UI/ABAS, DI-2, and JSA systems and found that the managers and other staff of all four systems were relatively inexperienced. For example, the staff assigned to the JSA system and the UI/ABAS averaged less than one year of experience. For the DI-2 system, seven of the ten computer programmers assigned had less than six months of experience. Moreover, none of the staff of the four systems had prior experience developing other large, complex systems. In addition, four of the five project managers did not have a data processing background.

According to our consultant, the department's lack of experienced staff on these projects may have led to some cost increases and completion delays. For example, inexperienced staff resulted in the department paying contractors to perform work that the department originally planned to have its own staff perform. For instance, for the UI/ABAS, the department amended its contract to increase contractor fees by $3.2 million because department and other state staff lacked the necessary experience to complete the system. The department also amended a contract for the JSA system to increase fees by $1.4 million to, among other things, assign work to the contractor that was originally assigned to the department's staff.

No Formal Estimation Process

Our consultant found that the department did not have a documented, formal estimation process to ensure that its initial estimates of the cost and time to complete the work were reliable. A formal estimation process consists of a sample work plan for identifying the work to be performed, an historical data base of information that provides empirical data regarding the level of effort required to perform similar work, and a method for customizing the sample work plan and historical data base to develop reliable estimates for the particular project.

According to our consultant, without a documented, formal estimation process, projects may experience cost overruns, schedule delays, and an insufficient number of staff. Our consultant also found

that the department has made progress toward implementing a formal estimation process by developing a document that includes historical estimate information based on many of the system development activities.

THE RECENTLY IMPLEMENTED TAS HAS HAD MAJOR OPERATING PROBLEMS

As of December 1988, the department had completed the DI-1, JSOS, and TAS systems. The DI-1 system and the JSOS generally operate as intended and have not experienced any significant operating problems. However, since it was put into operation in October 1986, the TAS has experienced major operating problems. In our Comprehensive Financial and Compliance Audit Report for the year ended June 30, 1987 (Report F-700, March 1988), we reported that, under certain conditions, the department's new TAS did not safeguard the State from errors in employer tax records, nor did it ensure reliable financial data. However, the department prepared and adopted a comprehensive plan for corrective action to resolve these problems.

The TAS maintains control over approximately 831,000 active employer accounts and maintains records for employer payroll taxes. Employer payroll taxes consist primarily of Personal Income Tax and disability insurance contributions withheld from employees' salaries and of employers' contributions for unemployment insurance. In fiscal year 1987-88, collections of employer payroll taxes totaled

approximately $14 billion. The TAS computes tax overpayments, liabilities, penalties, and interest and generates follow-up notices to employers who are delinquent in paying their payroll taxes, bills, and tax refunds. Additionally, the TAS produces accounting information for all transactions related to employer tax collections.

When the department implemented the TAS in October 1986, some parts, such as the cashiering functions, operated without any significant problems. However, other parts of the TAS did not operate correctly. For example, as we reported in March 1988, the TAS produced erroneous tax billings and refunds to employers and inaccurate computer records. Specifically, the department reported receiving 24,000 responses to 74,000 billings that the TAS generated to employers for unpaid payroll taxes in April 1987. These responses were for billings that required clarification or were incorrect. Further, in August 1987, the department erroneously issued to employers 3,623 tax refunds totaling $842,083. By January 1988, the department reported that it had recovered 2,970 of these erroneous refunds, which totaled $700,951.

Additionally, as we reported in March 1988, the problems the department experienced with the TAS created a backlog of work items. As of October 1, 1987, the department had a backlog of more than 332,000 work items. These work items included answering employers' questions about tax bills and processing employers' tax refunds. The department needed to eliminate the backlog before it could determine

whether employers owed additional taxes, were due tax refunds, or owed nothing. Until the backlog was eliminated, the department was restricted in its ability to effectively audit employers and collect taxes from them. The department reported that it had substantially eliminated the backlog by April 1988.

The department used a "Workload Diversion Program" from October 1987 through July 1988 to assist in eliminating a portion of the backlog. The program diverted some of the 332,000 work items and central office workload to the department's Employment Tax district offices (district offices) to be worked on by tax collectors, auditors, and clerical staff. We estimate that the district office employees reported approximately 64,000 hours worked on the Workload Diversion Program at a cost of more than $1.1 million in staff salaries and benefits. Also, the department assigned central office staff to eliminate the remainder of this backlog. Based on department data, we estimate that to eliminate the remainder would take approximately 103,000 hours or $1.5 million in central office salaries and benefits. However, we could not determine the actual cost or the hours worked by the central office staff on this backlog because the department did not record the actual number of hours worked. Additionally, to correct the TAS, the department spent at least $2.3 million for salaries and benefits for data processing staff and fees for contractors and data processing services from the Health and Welfare Data Center. Therefore, we estimate that, to eliminate the backlog and correct problems with the TAS, the department spent between $3.4 and $4.9 million.

Further, of the 64,000 hours that district office employees reported working on the Workload Diversion Program, more than 49,000 hours were reported by audit and collection staff. Because the auditors and collectors were working on the Workload Diversion Program and were not performing their normal audit and collection duties, they were unable to pursue employers who were delinquent in paying their payroll taxes. Using the department's hourly collection rates, we estimated the tax revenue that the audit and collection staff would have collected if every hour spent working on the Workload Diversion Program had been spent collecting taxes from employers. We estimate that the department could have collected an additional $27.4 million in tax revenue from employers during the ten months that the Workload Diversion Program was in effect. Because of the delay in collecting the $27.4 million, we estimate that the State did not earn at least $1.0 million in interest. Although the department will eventually collect most of this tax revenue and interest, not all of it may be collected as some employers may go bankrupt, close their businesses, or move out of the State.

Additionally, certain functions of the TAS were not operational for extended periods of time after October 1986. For example, the automated lien function of the TAS was not fully operational until October 1987. A lien is the right to take and hold or sell the property of a debtor as security or payment for a debt. Before the department implemented the TAS, all liens against employers

who owed taxes were filed and tracked by a manual system. Beginning in October 1986, the department planned to use the TAS to file tax liens against employers.

However, because the automated lien function of the TAS was not fully operational until October 1987 and because the department used its manual system to file liens only sparingly after August 1986, the department did not file a significant number of liens against employers who owed the State money. We compared the number and dollar value of liens filed before the department implemented the TAS with the number and dollar value of liens filed after TAS implementation. From January 1986 through August 1986, the eight-month period before the department stopped processing liens under the old system, the department averaged, during regular work hours, 838 liens filed per month with a total average dollar value per month of approximately $4.4 million. However, from September 1986 through October 1987, the department averaged only 67 liens filed per month with a total average dollar value per month of approximately $531,000. Thus, based on the department's prior lien activities, we estimate that the department could have filed 10,789 liens with a value of almost $54.3 million from September 1986 to October 1987. However, because the department does not keep records of the collections from liens, we could not determine the amount of collections that the department lost from not filing its usual number of liens.

Reasons for Parts of the TAS Not Operating Correctly

According to our consultant, parts of the TAS did not work correctly because the department did not sufficiently test it before the department placed it into operation and did not properly transfer the data from the old system files to the new TAS files.

Testing is vital to the success of automated systems. It is generally accepted that the longer a defect in a system goes undetected, the costlier and more time-consuming it will be to correct. For example, a General Accounting Office study reports that defects are seven times more expensive to correct after the system is in operation than during testing of the system. Effective testing translates directly into long-term cost savings from a reduced number of errors.

The department's contractor proposed a prudent testing methodology that was to be used for development of the TAS. However, according to our consultant, the department and its contractor did not sufficiently perform all of the testing procedures. Our consultant found that the department did not thoroughly test the TAS or perform a pilot test of the TAS. A pilot test can include a parallel test or a phased implementation test. For example, in a parallel pilot test, the old system and new system operate concurrently, and the data generated from the old system are used to validate the accuracy of the data

generated from the new system. A phased pilot test implements components of the new system over time to more easily control any unexpected problems. (See page IV-6 of the Appendix for a complete description of the testing procedures that the department performed and did not perform.)

According to the department's TAS project administrator, the department followed all of the testing procedures specified by its contractor, except for the pilot test. Further, the project administrator stated that the department and its contractor believed a pilot test was not possible without introducing potentially untraceable errors into the department's employer tax records. However, according to our consultant, the department could not provide documentation to support the conclusion that a pilot test was not possible.

In addition to insufficient testing of the TAS, the department and its contractor did not follow a prudent methodology for converting data from the old system files to the new TAS files. Even though the department's contractor established a prudent methodology for converting the data, the department and its contractor did not follow the methodology. According to our consultant, the department omitted or only partially performed several key procedures. For example, our consultant noted that the department did not perform a test conversion of all data from the old employer files to the new TAS files. The purpose of a test conversion is to determine the types of errors that could occur when the system is implemented. Resulting errors are

analyzed and corrected before the system is finally implemented. According to our consultant, test conversions should include all the old files. However, our consultant found that the department performed test conversions on a judgemental sample of not more than 5 percent of the old files. (See page IV-2 of the Appendix for a complete description of the conversion procedures that the department performed and did not perform.)

According to the department's TAS project administrator, the department believed that the results from the conversion tests that it performed justified progressing with the TAS implementation and correcting any conversion errors after implementation. However, the TAS project administrator further stated that errors in TAS programming prevented the department from promptly correcting conversion errors after implementation and immediately created backlogs.

According to our consultant, the department's decision to not follow prudent methods for testing the TAS computer programs and for converting data to the new TAS files resulted in a significant number of errors in the computer programs and data files of the TAS when the department implemented it. We reviewed the first 2,544 Incident Report Forms (IRFs) that the department's staff submitted on the TAS as of May 1987, eight months after the department placed the TAS on-line. In these IRFs, staff cited programming problems, data conversion problems, procedure changes, and other types of problems and requested improvements to the TAS. Of the 2,544 IRFs, we estimate that 705

(27.7 percent) related to computer programming errors. These programming errors needed correction before the TAS could operate as intended. Additionally, 186 (7.3 percent) of the 2,544 IRFs related to data transfer errors. These data transfer errors created inaccurate information in an unknown number of employer accounts and created a backlog of work items requiring correction by the department's staff.

AN ASSESSMENT OF THE DEPARTMENT'S CURRENT ABILITY TO MANAGE THE DEVELOPMENT OF AUTOMATED SYSTEMS

Even though the department has had problems in the past in developing its automated systems, our consultant found that the department has made a number of improvements in its organization and process for developing new systems. However, compared with prudent practices normally used by other governmental entities and private businesses, some areas still need improvement.

Improvements Made

The department has improved its organization and process for developing new automated systems in the following ways: it has centralized its management of its major automation projects under one division; it effectively reports project activities; it has effectively organized project teams; and it has developed standards for preparing computer programs.

Centralizing Automation Projects

According to our consultant, the formation of the Automation Administration Division (AAD) in June 1987 significantly improved the department's management of its automated system development. The AAD centralizes the management of the department's major automation projects under one division. Before the establishment of the AAD, each automation project was managed under the branch in which it would be used, and the branch users were primarily responsible for the success of the new systems. However, the department recognized that this decentralized approach was not effective in managing automation projects.

Reporting of Project Activities

According to our consultant, department staff currently effectively report project activities to management. Specifically, for each of the automation projects that our consultant reviewed, the department usually distributed weekly project plans, weekly detail status reports (from the department's contractors), and monthly management status reports. The department's management also holds periodic status meetings to discuss and resolve project issues.

Organizing Project Teams

The department has organized its project teams effectively. For example, each project team under the AAD consists of a significant number of the future system's users, and the responsibility for creating training material and user manuals rest with these users. Moreover, each project team is responsible for one automation project and has a full-time project manager.

Standards for the Writing of Computer Programs

The department has developed standards regarding how its staff should prepare computer programs. All automation projects must conform to these standards, which are intended to ensure that the department's programming staff write computer programs consistently.

Areas Needing Improvement

Our consultant noted that other aspects of the department's organization and process for developing new automated systems need improvement: the department still does not have sufficiently experienced staff to develop and manage large, complex automated systems; it does not have an up-to-date system development methodology; it does not have written quality assurance procedures; and it does not have an adequate project tracking system. Even though the department

hired contractors to provide the expertise and procedures that the department needed to manage its new automated systems, it is in the department's best interest to have in-house expertise and appropriate documented procedures.

Staff Experience

The department still does not have staff who possess the necessary experience to develop and manage large, complex automated systems, and it still relies extensively on outside consultants. Without sufficiently experienced staff, the department may be risking the continuation of some of the same problems that it has experienced in the past. As our consultant noted on page 28 of this report, the department's lack of experienced staff may have resulted in cost increases and schedule delays during the development of some of the department's automated systems.

System Development Methodology

According to our consultant, the department does not have its own up-to-date system development methodology to guide the development of its automated systems; instead, the department relies upon the system development methodologies of its contractors. A system development methodology provides a formal approach to the definition, analysis, design, construction, implementation, and maintenance of automated systems. Although the department does have a set of system

development guidelines called the Structured Development Process (SDP), the department last revised the SDP on June 15, 1984, and does not use the SDP on any of its current projects.

Section 4909.4 of the State Administrative Manual requires that departments that develop automated systems establish a system development methodology. Moreover, according to our consultant, it is not in the department's long-term interests to depend upon contractors for a methodology. For example, as department staff move on to other automation projects, they will need to be retrained on a new methodology if another contractor is involved who uses a different methodology. The department recognizes this problem and is currently planning to develop or acquire a system development methodology.

Quality Assurance

According to our consultant, the department lacks written quality assurance procedures for the review of completed parts of automated systems. Quality assurance ensures that system development and the resulting products are of high quality. For example, quality assurance includes reviewing the work performed to ensure that standards are being met. Various forms of quality assurance are taking place on all of the department's projects. However, the effectiveness of the department's quality assurance process is questionable because the department lacks written procedures to guide its quality assurance efforts. For example, the department has not fully defined the role of

its new Integration Group, which is assigned the responsibility for quality assurance. According to our consultant, the lack of written quality assurance procedures may result in incomplete or inaccurate work products. Further, maintenance and problem resolution for systems of poor quality tend to be costly and time-consuming.

Project Tracking

Our consultant found that although the department has a tracking system, the department needs to replace it to improve the efficiency and effectiveness of its planning and monitoring of project activities. Although the department's current tracking system does allow project managers to track individual project activities, the system does not provide, for example, summary information or graphic capabilities. These limitations can hinder the project manager's ability to recognize and respond to resource or scheduling problems promptly. For instance, graphic capabilities could include the Critical Path Method, which is a tool used to schedule project tasks. Without this tool, it is difficult for project managers to assess whether a delay in one task will affect the overall project schedule. For automated systems that are as large and complex as the ones that the department is developing, a more complete project tracking system would enhance project managers' efficiency and effectiveness in planning and monitoring project activities. (The Appendix, pages V-1 through V-12, contains more detailed information on the improvements that the department has made and that the department still needs to make.)

CONCLUSION

The Employment Development Department reported that it has spent, or estimates that it will spend, more than it originally estimated to develop its six new automated systems and took, or is taking, longer than originally planned to complete five of them. As a result, estimates of development costs for three of the automated systems have increased by $33.1 million, (123 percent) and the completion date for five of the systems has each been extended by at least ten months. The department currently estimates that the six systems will cost approximately $82.4 million to develop and that it will complete the last system in March 1991. The changes in the estimated costs and completion dates for the three systems whose costs increased by $33.1 million may have occurred because the department changed the design of the systems after the conceptual design stage. Also, according to our consultant, changes in estimated costs and completion dates may have occurred because the department had relatively inexperienced staff and it lacked a documented, formal estimation process for developing reliable estimates.

Also, some parts of the Tax Accounting System, one of the three implemented systems, experienced major operating problems. Even though the department took action to correct the problems, a backlog resulted in its daily workload, and we

estimate that it spent between $3.4 and $4.9 million to correct problems with the TAS and eliminate the backlog. Additionally, we estimate that the department delayed collection of approximately $27.4 million in tax revenue during the period of the Workload Diversion Program and did not earn at least $1.0 million in interest because of the delay in collecting this revenue. According to our consultant, some of the TAS operating problems occurred because the department did not sufficiently test the TAS before implementation and did not properly convert information from the old system files to the new.

Finally, our consultant found that, over the last two years, the department has made numerous improvements in the way that it develops automated systems but that some areas still need improvement. For example, the department has centralized its management of its major automation projects under one division, improved its project reporting procedures, and developed computer programming standards. However, the department still does not have sufficiently experienced staff to develop and manage large, complex automated systems. Also, the department lacks an up-to-date system development methodology and written quality assurance procedures, and it needs to replace its project tracking system to improve its planning and monitoring of project activities. Even though the department hired contractors to provide the expertise and

- Follow through with its plans to obtain or develop an up-to-date system development methodology to guide the development of future automated systems;

- Establish written procedures to guide its quality assurance efforts;

- Obtain or develop a more complete project tracking system to effectively and efficiently plan and monitor project activities; and

- Train project managers in the use of the project tracking system.

II

THE EMPLOYMENT DEVELOPMENT DEPARTMENT DID NOT ALWAYS COMPLY WITH STATE REQUIREMENTS IN ADMINISTERING CONTRACTS RELATED TO ITS SIX NEW AUTOMATED SYSTEMS

The Employment Development Department (department) did not always comply with state requirements in administering contracts for the development of its automated systems. In four amendments to two contracts, the department did not clearly define in writing the additional work that contractors were to perform. Further, the department did not obtain the Department of General Services' (DGS) approval before contractors started work on one of nine contracts and 2 of 15 contract amendments. In addition, the department did not withhold the required minimum of 10 percent from progress payments made to contractors on two of four contracts that we tested for this requirement. By not putting in writing all the work that contractors are to perform, the department is at greater risk of paying contractors for work not performed or performed poorly than if the contractors' responsibilities were in writing. Also, by not obtaining appropriate approvals, the department exposes the State to potential liability and bypasses the review of a control agency whose purpose is to conserve the financial interests of the State.

THE DEPARTMENT'S ELECTRONIC DATA PROCESSING CONTRACTS

We reviewed nine of the contracts that relate to the six automated systems that we discuss in Chapter I to determine whether the department administered the contracts in compliance with state regulations. These contracts include six consulting contracts and three maintenance contracts. The department issued 15 amendments to these contracts. The nine contracts have an original value of approximately $11.9 million, and the 15 amendments added about $13.4 million for a total value of approximately $25.3 million.

AMENDMENTS TO CONTRACTS DID NOT ALWAYS DESCRIBE ADDITIONAL WORK TO BE PERFORMED

Although Section 12100 of the Public Contract Code requires that the DGS make or supervise all contracts for the acquisition of electronic data processing (EDP) goods and services, Section 5200.5 of the State Administrative Manual also requires departments to participate during the procurement process. Specifically, departments should participate in drafting solicitation documents and in specifying technical requirements, evaluation criteria, and any special terms and conditions of the contract necessary to meet department needs. Moreover, Section 1212.2 of the State Administrative Manual requires contracts to contain a clear description of the work that contractors

are to perform. Finally, according to the Legislative Counsel, contract amendments generally must comply with regulations that apply to contracts.

Four amendments to two contracts that we reviewed increased the contractors' fees by approximately $4.0 million, and three of these amendments to one of the contracts increased the number of hours that the contractor would work. However, none of the four amendments contained a written description of the changes to the automated systems that the contractor was to make.

The original contracts for the development and implementation of the Tax Accounting System (TAS) and the Automated Benefit Accounting System (ABAS) specified that the contractors were responsible for the completion of tasks and the provision of goods and services and not just for providing staff time. Further, each contract included the department's request for proposal and the contractor's proposal as part of the contract. The requests for proposal contained descriptions of the functions to be automated as well as the standards of performance that the automated systems must meet. For the TAS, the contractor's proposal identified the types of screens, reports, and forms the system would be capable of producing. In addition, this proposal specified the number of computer programs that the contractor would be responsible for providing.

The first, second, and fourth amendments to the TAS contract increased the estimated number of hours that the contractor's staff would work and increased the contractor's fees from approximately $2.9 to more than $5.6 million or by more than 93 percent. However, the first and second amendments did not describe the changes that the contractor was supposed to make to the system, and the fourth amendment did not describe the additional work that the contractor was to perform.

However, the department apparently did direct the contractor to make changes to the design of the TAS. The department's justification letter to the DGS for the first amendment to the contract stated that the amendment was necessary to expand the design of the TAS. For example, the number of computer programs that the contractor was to develop under the original contract was 240 and, according to the justification letter, the first amendment would increase the number of computer programs to 589. However, the provisions in the actual amendment simply increased the cost for programming from $545,020 to approximately $1.0 million. The amendment does not contain any information as to how many computer programs the contractor would provide or how the computer programs would be modified.

According to the TAS project manager, the changes in the work to be performed by the contractor were described in detail in the revised project work plans and proposal prepared and submitted by the contractor. The TAS project manager also stated that the department's

legal office advises that these changes are legally binding and enforceable against both parties even though the department did not forward the revised proposal to the DGS as an attachment to the contract. However, for the first two amendments, the revised project work plan only cited the increase in the number of days that the contractor's staff would work. Moreover, the revised proposal was not included in any of the amendments that were signed by the parties even though, to be binding, the contract required alterations to the contract to be signed by the parties.

Additionally, in its second amendment to the ABAS contract, the department increased the value of the contract by approximately $1.3 million (72 percent), but did not describe the additional work to be performed. The deputy director of the Administration Branch concurs that the department did not fully describe the changes in the work that the contractor was to perform. The deputy director also indicated that the products that the contractor was to provide were fully defined but that the specific functions of these products were not redefined. However, we believe that definitions of the specific functions of the contract products are essential to a complete definition of the products.

Because the contract amendments do not describe in writing the changes that the contractors are responsible for making to the automated systems, the department is at a greater risk of having to pay

contractors for work not performed or performed poorly than if the contractors' responsibilities were in writing.

STARTING WORK ON CONTRACTS AND AMENDMENTS BEFORE DGS APPROVAL

Section 1206 of the State Administrative Manual states that the DGS must approve all contracts, with the exception of contracts for $10,000 or less. Moreover, Section 1241.6 of the State Administrative Manual states that performance under a consulting services contract must not commence before approval by the DGS. Further, all nine of the contracts that we reviewed contained provisions that stated that the contracts were not effective until the DGS approved them. Additionally, according to the Legislative Counsel, contract amendments are generally subject to the same requirements of the State Administrative Manual as the original contract.

However, of the nine contracts and 15 amendments that we reviewed, the department failed to obtain DGS approval for one contract and 2 amendments until 4, 15, and 24 months after the contractors started work on them. For example, the contractor for the ABAS started work on the third amendment approximately 15 months before the DGS approved the amendment. The deputy director for the Administration Branch stated that the contractor chose to work on the amendment's tasks before DGS approval and that the contractor understood and accepted the risk that the amendment would not be approved. He also

stated that the contractor realized that delaying the project work until normal contract approval processes were completed would have resulted in significant schedule changes, benefit delays, and cost increases. However, the department did not submit the third amendment to the ABAS contract to the DGS for approval until at least 15 months after the contractor began work on the amendment. Moreover, Section 1204 of the State Administrative Manual states that, except in emergency cases to protect human life or state property, agencies must submit each contract in time for the DGS to approve it before commencement of work.

In two other cases, the department allowed contractors to perform maintenance work on the computer equipment of the Job Service Order Sharing System (JSOS) 24 months and 4 months before DGS approval. For example on November 10, 1983, the department contracted with a vendor to maintain JSOS computer equipment from January 1, 1984, to December 31, 1986. Also, this vendor performed maintenance between November 1984 and December 1986 on additional EDP equipment that was installed after the original contract was written. However, the department did not request approval of a contract amendment to cover the additional maintenance until after August 11, 1986. In the department's justification memorandum to the DGS explaining the need for the amendment, the department stated that, because of turnover in staff assigned to the monitoring of the contract and the new staff's lack of understanding of the amendment process, the contract was not updated promptly.

Of the contracts and amendments that we reviewed, the DGS ultimately approved all that were not exempt from DGS approval. However, the State Administrative Manual, Section 1204, states that, except in emergency cases to protect human life or state property, the DGS will disapprove contracts that agencies submit after the period of performance of the contract has begun. Because the department failed to obtain DGS approval before contractors began work on one contract and two amendments, the State was exposed to potential liability for work performed by the contractors. Further, according to the State Administrative Manual, Section 1203, the DGS is responsible for conserving the financial interests of the State and, thus, for preventing state agencies from making imprudent expenditures. The DGS cannot fulfill these responsibilities if the department does not submit contracts and amendments to the DGS for approval before contractors begin work.

NOT ALWAYS WITHHOLDING THE REQUIRED MINIMUM FROM PROGRESS PAYMENTS

Section 1244 of the State Administrative Manual requires that, when departments make a progress payment on a consulting contract, departments must withhold at least 10 percent from the amount due to the contractor until satisfactory completion of the entire contract. However, for two of four consulting contracts that we reviewed, the department did not withhold the required minimum of 10 percent from the amounts due to the contractor.

For example, for the TAS project, as of August 14, 1987, the department had paid the contractor approximately $5.2 million in seven progress payments but did not withhold any percentage of the amounts due to the contractor. Also, as of February 26, 1987, the department had paid about $1.3 million to the ABAS contractor in seven progress payments but withheld only 5.1 percent, or $65,688, of the total amount due to the contractor.

The deputy director of the Administration Branch stated that the department followed the provisions of the contracts and that although the department did not intend to withhold 10 percent from each progress payment, it did intend to withhold the final 10 percent of the ceiling amount of the contracts. Although we found that the contracts' withholding provisions are not clear, the department shares responsibility with the DGS to ensure that contracts comply with the requirements of the State Administrative Manual. Currently, the department withholds 10 percent from progress payments made to contractors working on the automated systems that we reviewed.

CONCLUSION

When the Employment Development Department amended its contracts for electronic data processing services, it did not always clearly define in writing the additional work that contractors were to perform. In addition, the department did not always obtain the Department of General Services' approval

before contractors started work. Also, the department did not always withhold the required minimum of 10 percent from progress payments made to contractors. By not putting in writing all the work that contractors are to perform, the department is at greater risk of paying contractors for work not performed or performed poorly than if the contractors' responsibilities were in writing. Further, by not obtaining the appropriate approvals, the department exposes the State to potential liability and bypasses control procedures established to conserve the financial interests of the State.

RECOMMENDATIONS

To ensure that it complies with all state requirements, the Employment Development Department should take the following actions:

- Ensure that amendments to contracts clearly describe any additional responsibilities to be fulfilled by the contractors;

- Apply for and obtain approval from the Department of General Services before contractors start work on contracts or amendments; and

- Withhold the required minimum of 10 percent from all progress payments made to contractors.

III

THE EMPLOYMENT DEVELOPMENT DEPARTMENT HAS NOT ALWAYS PAID DISABILITY INSURANCE BENEFITS PROMPTLY

State law requires the Employment Development Department (department) to issue first payments for claims for disability insurance (DI) benefits within 14 days of receipt of a properly completed first claim. Although there is some disagreement over when the 14-day time period starts, the department has not issued all first payments as promptly as it could have. Department studies show that, during a week in April 1988, the 21 DI field offices did not issue 13.6 percent of first payments within 14 days of entering data from the claims into the department's automated system. In addition, our own tests indicate that the percentage of claims that field offices do not pay promptly is sometimes higher than the department's studies indicate. Delays in processing payments can create financial difficulty for some claimants. The department disagrees that it is failing to meet the deadline established in the law because it interprets the law to require that the 14-day time period start the day that a field office has sufficient information to decide whether a claimant is eligible to receive benefits. However, the Legislative Counsel maintains that the 14-day time period starts the day a field office receives a properly completed claim form. (Even if the claimant has provided a properly completed claim form, the department sometimes must obtain more information.)

A number of factors have contributed to the department's delays in paying DI claims. The first factor, which is beyond the department's control and which can prohibit the department from issuing first payments within 14 days of receiving a properly completed claim form, is that claimants and third parties do not always respond promptly to requests for information necessary for the department to determine whether a claimant is eligible to be paid. Nevertheless, other factors are within the department's control. For example, we reviewed the actions of staff to obtain information and issue payments for 10 of 34 late claims in our sample at one field office. A department representative agreed that documents in the claim files indicated that staff should have acted faster for 5 of the 10 claims. Also, numerous telephone calls to field offices reduce the staff time available for processing claims.

THE DEPARTMENT'S PROCEDURES FOR PROCESSING DISABILITY INSURANCE CLAIMS

State statutes created the DI program in 1946 to compensate workers sustaining a loss of wages due to sickness or injury. The amount of compensation depends on the wages that the claimant earned in the past. The claimant must also meet other eligibility requirements established in the law. According to the deputy director of the DI Branch (branch), the following steps must occur for a person to receive benefits once the person submits a claim form to a DI field office: when the field office receives the claim form, a claims examiner

performs a preliminary review to determine whether any information is missing from the form or whether the information provided raises any questions about the claimant's legal eligibility for the program. Next, the DI procedures manual instructs a claims examiner to telephone claimants, physicians, or employers for any additional information needed. For claims requiring information from other sources, field office staff prepare and mail forms requesting the additional information.

After the claims examiner completes the review, a computer operator enters data from the claim into the automated system. This entry generates a report, based on the claimant's past wages, showing the amount of compensation that the claimant is entitled to receive. An examiner reviews the report, and if the examiner determines that the claimant earned sufficient wages to receive benefits and if the examiner has no eligibility questions, he or she authorizes the computer operator to generate a first payment through the automated system. However, when the field office staff have sent forms requesting necessary information, the examiner does not authorize the first payment and he or she suspends activity on the claim pending receipt of the requested information. If the field office does not receive the information within a specified time period, the procedures manual requires that the examiner take additional action to obtain the information. According to the deputy director of the branch, these

procedures applied to the claims that we reviewed; however, the department has since changed the procedures in most field offices because of the installation of a new automated system.

OUR TESTS SHOW THAT A HIGHER PERCENTAGE OF CLAIMS WERE NOT PAID PROMPTLY THAN THE DEPARTMENT'S STUDIES INDICATE

The Unemployment Insurance Code was amended, effective January 1, 1986, to require the department to issue a first payment to an eligible claimant within 14 days of receiving a properly completed first claim for DI benefits.

According to the department's studies of the number of claims that DI field offices pay promptly, the department often has not issued first payments of DI benefits within 14 days of receiving claims. For example, according to its own studies, the department's 21 DI field offices did not issue first payments within 14 days for 19.9 percent of claims paid during an October 1987 study and for 13.6 percent of claims paid during an April 1988 study. Moreover, our tests showed that the percentage of claims that are not being paid within 14 days is sometimes higher than the department's studies indicate. As Table 5 shows, we estimate that the four field offices that we reviewed did not

issue within 14 days between 19.8 and 26.4 percent of the first payments that were issued during the weeks that we reviewed in 1988. However, for a week in April 1988, the department reported that these four field offices did not pay 13.4 percent of claims within 14 days.[1]

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[1]Although some of the differences between our results and the department's results could have occurred because we tested different weeks than the department, we also noted weaknesses in the department's procedures that could have affected the reliability of the department's results and, thus, led to differences between our results and the department's. First, the department does not perform the tests frequently enough to reflect the percentage of claims that field offices consistently do not pay promptly. Second, the department announces the dates of the studies in advance. This practice provides the opportunity for manipulating the studies to make field offices appear to pay more claims promptly than they actually pay. The department is currently installing a new automated system that may eliminate these weaknesses in the department's studies. According to the deputy director of the branch, the automated system produces monthly reports that show the percentage of all claims paid promptly during the month. Further, according to the deputy director, the system also identifies late claims so that staff can review them to determine the reasons for delayed payments and determine whether the staff could have acted faster to pay the claims.

TABLE 5

ESTIMATES FOR FOUR DISABILITY INSURANCE FIELD OFFICES OF THE PERCENTAGE OF FIRST PAYMENTS NOT ISSUED PROMPTLY COMPARED WITH THE RESULTS OF DEPARTMENT STUDIES

We based our estimates in the following table on samples sufficiently large to give us a 95 percent level of confidence that the ranges that we identified accurately reflect the percentage of first payments not issued promptly during the weeks that we tested. The department's results should reflect the exact percentage of first payments not issued promptly during the weeks of its studies because the department's procedures required that all first payments issued during the week of the study be reviewed. We selected weeks for our review that were similar to the weeks that the department studied in terms of the number of hours worked and the number of claims processed.

		Percentage of First Payments Not Issued Within 14 Days		Estimates of the Percentage Differences Between Our Results and and the Department's
Field Office	Year of Study	Estimates for the Weeks We Tested	Results for the Weeks the Department Tested	
Culver City	1987	16.9 - 31.1%	11.6%	5.3 - 14.5%
	1988	10.1 - 24.1	7.6	2.5 - 16.5
San Jose	1987	14.5 - 27.3	13.3	1.2 - 14.0
	1988	18.2 - 32.2	12.5	5.7 - 19.7
Santa Ana	1987	32.5 - 45.1	40.5	--
	1988	30.3 - 43.3	20.4	9.9 - 22.9
San Francisco*	1988	3.2 - 11.9	11.3	--
Percentage of first payments not issued within 14 days for all four field offices	1987	25.1 - 32.8	23.7**	1.4 - 9.1
	1988	19.8 - 26.4	13.4	6.4 - 13.0

* We did not perform a test for October 1987 because the field office manager could not locate the documents necessary for selecting a sample.

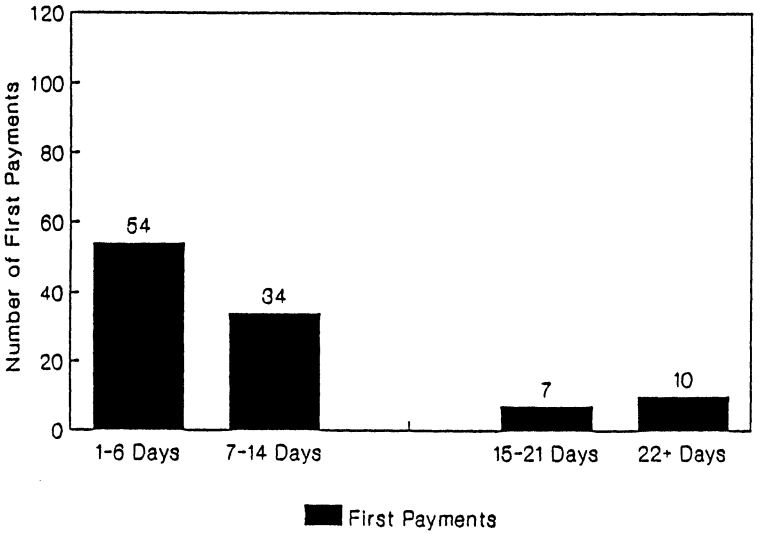
** These results do not reflect data from the San Francisco field office.

While all four field offices paid over one-half of all claims paid on time within 6 days of entering them into the automated system, for over one-half the claims paid late, the field offices required 22 days or more to issue the first payments. Chart 1 shows the number of days that the four field offices took to issue first payments for claims paid on time and claims paid late.

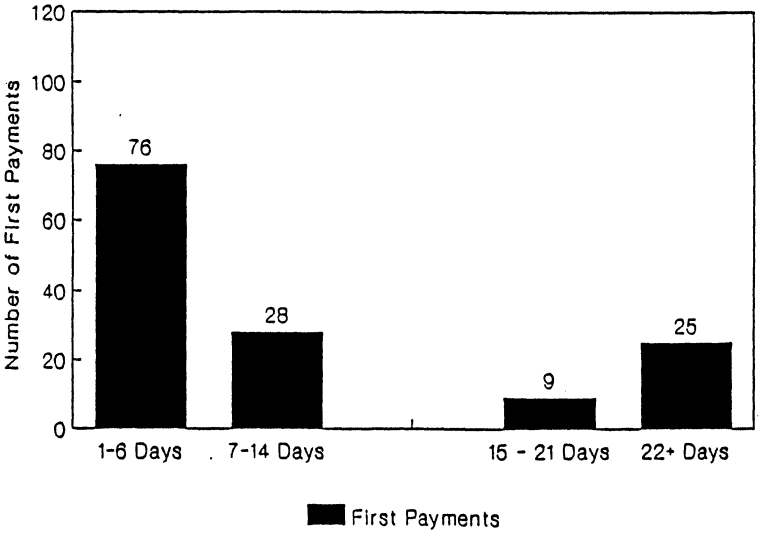
CHART 1

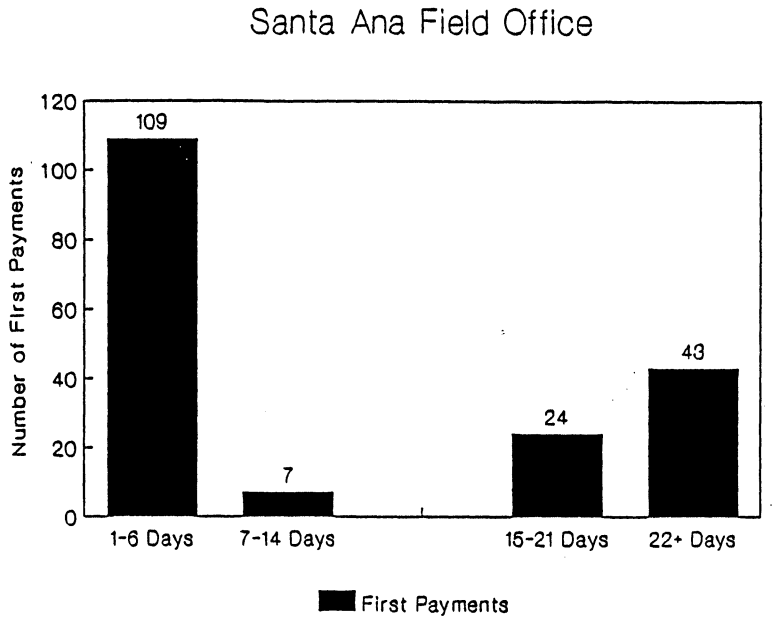
THE NUMBER OF DAYS FOUR FIELD OFFICES TOOK TO ISSUE FIRST PAYMENTS OF DISABILITY INSURANCE BENEFITS FROM 1988 SAMPLES OF PAYMENTS FOR CLAIMS PAID WITHIN 14 DAYS AND CLAIMS NOT PAID WITHIN 14 DAYS

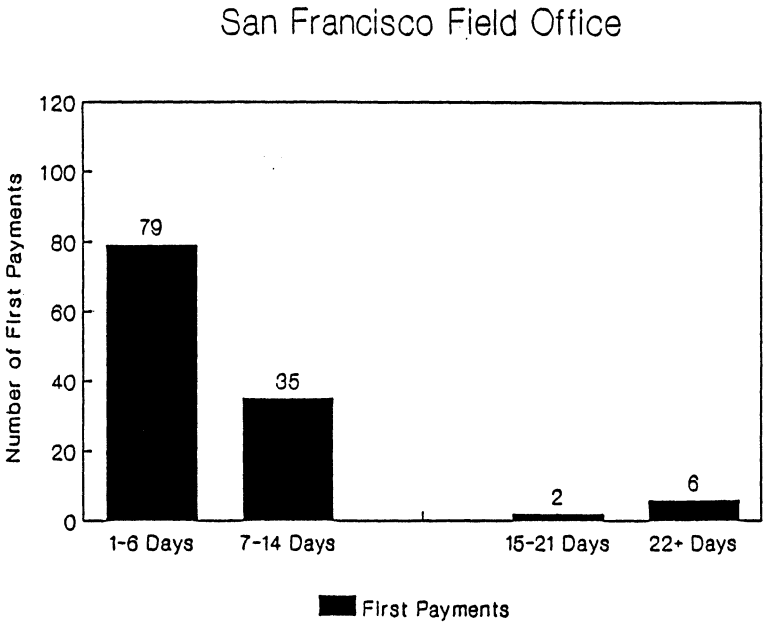
Culver City Field Office



San Jose Field Office







Source: Results of tests by the Office of the Auditor General

Late benefits can cause financial difficulty for some claimants. Seven of 11 claimants whom we contacted who received late benefits had to withdraw money from savings accounts while waiting to receive these benefits. One of these claimants depleted his savings waiting for his benefit check to arrive. Two other claimants said that they do not know how they would have managed if they had not had savings accounts. Three of the 11 had to postpone paying bills, and one claimant had to borrow money to cover living expenses.

THE DEPARTMENT'S STUDIES DO NOT MEASURE COMPLIANCE WITH THE LAW

According to the deputy director of the DI Branch, the law requires the department to issue first payments within 14 days of receiving all information necessary for examiners to determine claimants' eligibility for DI benefits. In addition, the deputy director stated that the department's studies of promptness are not a measure of the department's compliance with its interpretation of the law. For all claims paid during the weeks of the department's studies, the department measured promptness from the date that data from a claim was entered into the automated system and not from when all information necessary to determine eligibility had been received. Thus, the department did not exclude any claims from its study even if all information necessary to determine eligibility had not been received when the data was entered into the automated system. Also, the department did not exclude claim forms that were not properly completed.

The Legislative Counsel disagrees with the deputy director's interpretation of when the 14-day time period begins. The Legislative Counsel maintains that the law requires the department to pay claims within 14 days of receiving a properly completed claim form. The Legislative Counsel points out that the purpose of the 14-day requirement was to prevent unreasonable delays in the payment of DI benefits. According to the Legislative Counsel, the deputy director's interpretation of the law could allow the department to take as long as it wanted for even the simplest claim before the measurement of the 14-day period would even start.

Moreover, for two reasons, our tests did not measure the department's compliance with the law as the Legislative Counsel interprets it. First, we could not measure the department's compliance with the law because the field offices that we reviewed frequently did not record the date of receipt for claim forms. Therefore, we measured promptness from the date field office staff entered the data from a claim into the automated system, just as the department does during its promptness studies. According to the deputy director of the branch, the department's procedures require that claims should be entered on the day that they are received. However, two of the four field offices that we reviewed recorded sufficient information for us to determine that the staff entered some claims into the computer on a date later than the claims were received. Therefore, for these field offices, both the department's studies and our tests could underestimate the actual number of claims not paid promptly. For example, the

San Francisco field office had recorded the receipt date for 39 percent of the claims in our sample for April 1988. Calculating promptness based on the entry date indicated that the office did not pay 6.6 percent of claims within 14 days while using the receipt date when available indicated that the office did not pay 9 percent within 14 days. Second, because we wanted to duplicate the department's procedures for measuring promptness in our studies, we did not exclude from our tests any claim even if the claim form was not properly completed when the data was entered into the automated system.

REASONS WHY CLAIMS ARE NOT PAID PROMPTLY

Several factors have contributed to the delay of first payments. While one factor is beyond the department's control, other factors are not.

Some Claims Cannot Be Paid Promptly

The department cannot pay some claims promptly because claimants and third parties do not respond promptly to requests for information necessary to resolve eligibility questions. For example, a claimant receiving sick-leave pay is entitled to DI benefits if the sick-leave pay is less than the claimant's regular wages. According to the department's procedures, the claims examiner should obtain information from the claimant's employer about the amount of sick-leave pay the claimant is receiving before authorizing benefits because the

sick-leave pay plus the benefits must not exceed the claimant's regular pay. However, sometimes the department will not receive information from employers about sick-leave pay until after the 14 days have passed. For instance, for one of the late claims that we reviewed, documents in the claim file showed that the field office sent a request to the claimant's employer on April 5, 1988, for information about the amount of sick-leave pay the employer paid to the claimant; however, the employer had not responded by April 19, 1988, 14 days (10 working days) later. Documents in the claim file showed that, on April 20, 1988, a field office representative called the employer, who then provided the information, and the field office issued the first payment the next day.

Some Claims Are Delayed Unnecessarily

Our review also established that the department should have acted faster to obtain additional information necessary to issue first payments for some of the late claims in our sample. In one field office, we reviewed 10 of 34 late claims from our sample. Based on documents in the claim files, a department representative agreed that field office staff should have acted faster to obtain information for 5 of the 10 claims. For example, one claim entered into the automated system on April 1, 1988, indicated that the claimant received sick-leave pay. The field office sent a request to the employer to find out the amount of the sick-leave pay. Twenty days (14 working

days) later, on April 21, 1988, an examiner telephoned the employer because the employer had not yet provided the sick-leave information. However, according to a department representative, an examiner should have telephoned 10 working days after requesting the information.

In another field office that we reviewed, the department's study of promptness for October 1987 indicated that eligibility questions did not cause delays for 200 (35.8 percent) of the 558 late claims identified in the study. In addition, while we reviewed only 3 of the late claims from our sample of 67 late claims from that office, and while these 3 late claims each involved eligibility questions, a department representative agreed that documents in the claim files indicated that the office should have acted faster on 2 of them. Documents in the claim file showed that for one of these claims, which also involved sick leave, the necessary information was requested from the employer on February 4, 1988. When the employer did not respond, an examiner sent a second request 33 days (24 working days) later on March 9, 1988. The office received a response from the employer on April 2, 1988, 24 days after sending the second request. The field office issued the first payment on April 4, 1988, 60 days after the date of entry for the claim. According to DI procedures, an examiner should have telephoned the employer 10 working days after sending the first request.

In a report issued in December 1986, the Office of the Auditor General recommended that, during promptness studies, the department

should identify claims that field offices could have paid faster. At that time, the department was already identifying some reasons for late payments; however, it did not always identify claims that it could have paid faster. By identifying such claims, the department could correct the conditions that lead to delays. According to the deputy director of the branch, the department currently intends to require that field office staff determine whether staff could have acted faster to pay claims for all claims that the new computer system identifies took longer than 14 days to process.

Telephone Calls Divert Staff From Processing Claims

Some field offices receive numerous telephone calls that contribute to delays in issuing first payments by diverting staff from processing claims. According to a department study on incoming calls, field office staff answered 63,023 telephone calls during two weeks in November and December 1987. This study estimated that answering these calls required the equivalent of 41 full-time employees during the two weeks. According to another department report, the same staff members who process claims also answer most of the telephone calls. However, the department's incoming-call study also indicated that approximately only 13 percent of the calls to field offices contributed to paying claims by providing information necessary for establishing claimants' eligibility for benefits.

On March 23, 1988, using the information collected during the incoming-call study and other studies, a department work group produced a draft report recommending several measures to reduce the number of calls or to resolve some types of calls in a way that would not require staff time. For example, the work group recommended that the department ensure prompt payment of claims because the incoming-call study indicated that 62 percent of the calls were inquiries about when the caller would receive either a first payment or subsequent payment or about the status of a claim. The work group recommended that, to ensure promptness of payments, the department should use staff from the DI Branch to provide technical assistance and conduct reviews of field offices. According to the deputy director of the branch, before April 1987, the department periodically conducted technical assistance reviews of each field office; however, the department suspended these reviews to revise the review procedures so they would be more appropriate for procedures under the new automated system.

In addition to recommendations for improving promptness, the work group recommended that field offices send, upon receipt of a claim, an acknowledgment that informed claimants of the time to allow for claim processing before calling to inquire about their first benefit checks. Currently, the claim form does not inform claimants of the length of time field offices need for processing claims. The work group further recommended that the department establish a committee composed primarily of field office staff to recommend revisions that would make forms easier to understand. According to the work group's

study, 8 percent of calls came from callers who did not understand a request for information from the department. Furthermore, the report recommended that the department evaluate equipment that would allow claimants to obtain detailed information about the DI program from recorded messages. Fifteen percent of the calls to field offices were to obtain general information about the program.

Finally, the incoming-call study showed that 52 percent of the calls about when claimants would receive benefit payments involved payments subsequent to the first payment. However, according to the deputy director of the branch, the department has not assessed the promptness of its payments subsequent to the first payment since April 1985 because prior studies indicated that continuing claims were paid promptly.

As of December 16, 1988, the department had not completely implemented any of these recommendations. However, freeing staff from answering telephones would allow them time to perform other duties such as promptly processing claims. Using data from the department, we estimated that, for every 10 percent reduction in the number of calls answered that do not assist in paying claims, the department could free the equivalent of 4.2 full-time employees each year for other work. According to the deputy director of the branch, the department has begun implementing some of the recommendations and plans to completely implement all of them during 1989. The deputy director said that the department needed to assess the impact of the new automated system on

field office operations before completing all the recommendations. The deputy director added that the department has acquired and installed in some field offices equipment that automatically answers some callers with a recorded message and puts the calls on hold until a field office representative responds to the calls in the order that they are received. This equipment also produces reports showing the number of calls field offices receive each day as well as other management information.

CONCLUSION

The Employment Development Department has not always issued first payments promptly to all claimants for disability insurance benefits. Claimants can suffer financial difficulty when they do not receive benefits promptly. A number of factors have contributed to the department's delays in paying DI claims. The first factor, which is beyond the department's control and which can prohibit the department from issuing first payments within 14 days of receiving a properly completed claim form, is that claimants and third parties do not always respond promptly to requests for information necessary for the department to determine whether a claimant is eligible to be paid. Nevertheless, other factors are within the department's control. For example, we reviewed the actions of staff to obtain information and issue payments for 10 of 34 late claims in our sample at one field office. A

department representative agreed that documents in the claim files indicated that staff should have acted faster for 5 of the 10 claims. Also, numerous telephone calls to field offices reduce the staff time available for processing claims.

RECOMMENDATIONS

To ensure that it pays first payments for disability insurance benefits promptly, the Employment Development Department should take the following actions:

- Ensure that field office staff act promptly to obtain information necessary to determine claimants' eligibility for the DI program;

- For late claims, continue with plans to determine whether staff should have acted faster to pay them; and

- Complete implementation of measures to reduce the number of telephone calls to field offices.

IV

THE EMPLOYMENT DEVELOPMENT DEPARTMENT NEEDS TO AUDIT MORE EMPLOYERS

We reviewed the Employment Development Department's (department) performance from fiscal year 1984-85 to fiscal year 1987-88 and found that the department has been successful at identifying delinquent taxpayers since fiscal year 1984-85. However, it needs to increase the number of employers it is auditing because the number of staff hours devoted to performing audits and the number of audits performed have not kept pace with the growth in the number of employers and employees in the State during the same period. For example, the number of employers and employees increased by approximately 17 percent and 11 percent, respectively, during this period. However, the number of hours that tax auditors spent auditing and the number of audits that they performed decreased by approximately 8 percent and 7.4 percent, respectively.

The department could increase the amount of delinquent taxes that it identifies and the tax revenues that it collects if it increased the numbers of audits it performs. For example, based on department data and analysis by our statistical consultant, we estimate with 90 percent confidence that if the district offices had performed 20 percent more audits in fiscal year 1987-88, the department could have identified at least an additional $9.7 million in amounts owed to the State for that fiscal year. Also, based on our estimates and

department data, the department collects approximately 58 percent of the amounts owed to the State identified through audits in a fiscal year within nine months of the next fiscal year; therefore, the State could have received an additional $5.6 million in federal and state tax revenues as a result of the 20 percent increase in audits. Based on department data, we estimate that the cost to conduct these additional audits and collect the additional revenues is approximately $1.5 million. To estimate the level to which the district offices could successfully increase the number of audits, the department should estimate the benefits and costs for varying levels of audit effort. According to the deputy director of the Tax Branch, the department now has the ability, through the Tax Accounting System, to determine the dollar return for each dollar invested in the audit program. The department expects this information to be available in early 1990.

THE TAX BRANCH ADMINISTERS THE DEPARTMENT'S TAX COLLECTION PROCESS

The department's Tax Branch (branch) administers the coverage and financing provisions of the Unemployment Insurance (UI), the Disability Insurance (DI), and the Employment Training Tax programs and the Personal Income Tax withholding program. The UI program is supported by employer taxes and the DI program by employee taxes. In conjunction with its collection of these taxes, the branch also collects the Personal Income Tax and the Employment Training Tax. In addition to collecting these taxes, the branch also performs

accounting, auditing, enforcing, and public education activities as part of its responsibilities.

The branch consists of five divisions: Tax Support, Insurance Accounting, Tax Processing and Accounting, Central Collections, and Field Audit and Compliance. Of these five, the last three share the responsibility for collecting taxes from the State's employers. The Tax Processing and Accounting Division receives and accounts for all taxes that the branch collects from the employers. The Central Collections Division and the Field Audit and Compliance Division are responsible for collecting taxes that employers owe the State and either do not remit or remit incorrectly. The department refers to these taxes as delinquent taxes. The Field Audit and Compliance Division consists of 37 Employment Tax district offices (district offices) located throughout California that are each responsible for the collection activities in a specific geographic area.

In addition to collections, the district offices also register new employers, provide advice and assistance to the public, and audit employers' records. The department's Audit Procedure Handbook lists the following among the major goals of the audit program: to identify the correct amount of taxes due, to ensure employer compliance with the tax laws, to verify that employers are withholding the proper amount of Personal Income Tax from the wages of their employees, and to educate employers about their obligations and legal requirements.

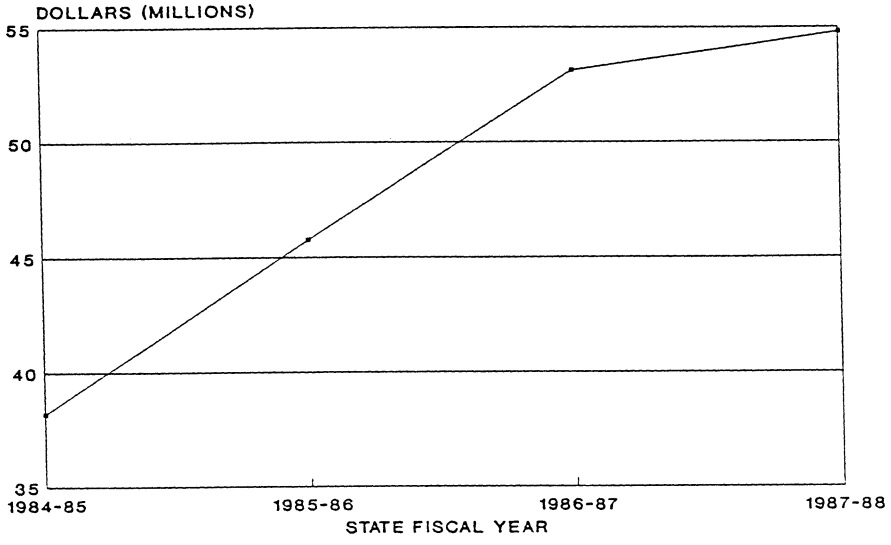
When an audit identifies a difference between the amount that an employer paid and the amount owed, the branch identifies this amount as a change in tax liability. Based on department data, we estimate that the net change in tax liability, that is, the amount employers owe to the State less the amount the State owes to employers, is on average 82.6 percent of the total change in tax liability. The deputy director of the branch stated that, for selecting the employers whom the district offices should audit, the branch's guidelines direct audits to those areas where it is possible to maximize compliance with state laws and where there appears to be potential for the recovery of taxes.

THE DEPARTMENT'S AUDIT EFFORTS HAVE BEEN PRODUCTIVE

Through their audits, the district offices have been successful in identifying changes in tax liability. In fiscal year 1984-85, the district offices identified over $38 million in changes in tax liability, which represented an estimated $31.5 million in additional taxes that employers owed to the State. For each year from fiscal year 1984-85 through fiscal year 1987-88, the district offices have increased from 3 percent to nearly 20 percent the amount of change in tax liability identified through audits. For example, as Chart 2 shows, in fiscal year 1987-88, the district offices identified approximately $55 million in changes in tax liability, or nearly 44 percent more in changes than they identified in fiscal year 1984-85.

CHART 2

TOTAL CHANGE IN TAX LIABILITY IDENTIFIED THROUGH DEPARTMENT AUDITS FISCAL YEAR 1984-85 THROUGH FISCAL YEAR 1987-88

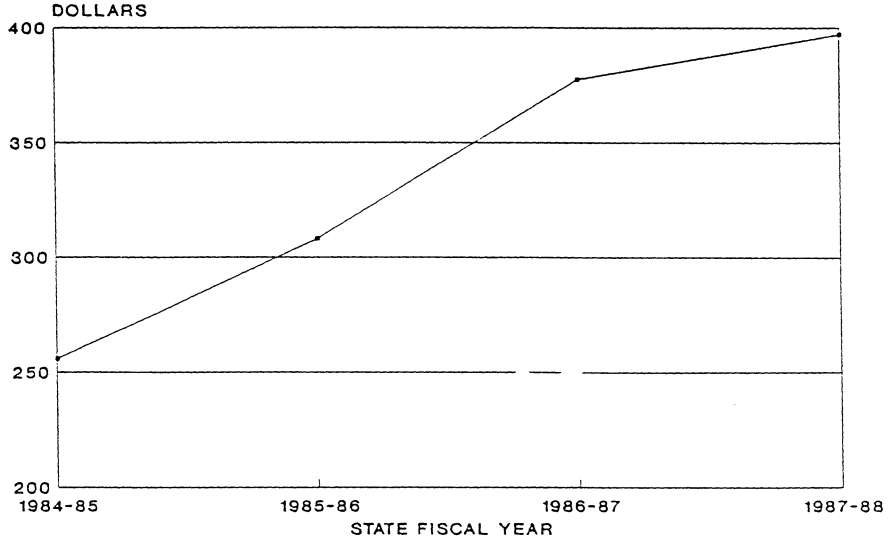


In addition to the increase in identifications of change in total tax liability, the district offices have also increased the average amount of change in tax liability identified for each hour used by a tax auditor on an audit. For example, as Chart 3 shows, in fiscal year 1984-85, the district offices identified an average of $256 in changes in tax liability for each hour that a tax auditor spent auditing. For each subsequent fiscal year, the district offices had from a 5 percent to a 22.5 percent annual increase in the amount of change in tax liability identified for each audit hour. In fiscal

year1987-88, the district offices identified an average of $397 in changes in tax liability for each of the approximately 138,000 hours used by tax auditors on audits, an increase of approximately 55 percent over the amount identified in fiscal year 1984-85.

CHART 3

AVERAGE AMOUNT OF CHANGE IN TAX LIABILITY PER DEPARTMENT AUDIT HOUR FISCAL YEAR 1984-85 THROUGH FISCAL YEAR 1987-88



According to the deputy director of the branch, the increase in the amount of tax liability identified per audit hour is due, in part, to inflation. To determine the effect of inflation, we adjusted the audit data for inflation using the California Consumer Price Index. We found that adjusting the data did reduce the increase in the

amount of change in tax liability identified for each hour of audit activity. However, the adjusted data showed that the district offices' change in tax liability per audit hour was still approximately 38 percent higher in fiscal year 1987-88 than in fiscal year 1984-85.

These figures show that inflation only partly explains the increase in the district offices' productivity. In a memorandum, the deputy director of the branch stated that changes in the management of the audit program also improved the district offices' productivity. For example, the deputy director stated that the Field Audit and Compliance Division issues a report on the performance of the district offices and individual employees. As a result, management as well as employees are more aware of how their performance compares with the performance of other district offices and employees. The deputy director stated that this information encourages the employees to improve their performance.

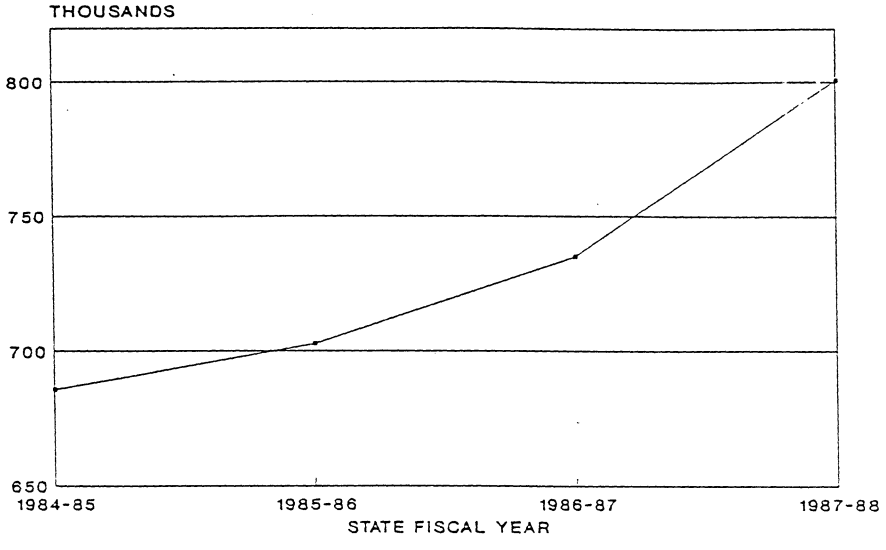
Other factors may also explain the increase in audit productivity. For example, during the same time period, the number of employees in the State increased. As a result, the total amount of taxes due would also increase, thereby increasing the potential for identifying more changes in tax liability.

INCREASE IN THE NUMBER OF EMPLOYERS AND EMPLOYEES IN THE STATE AND DECREASE IN THE NUMBER OF AUDIT HOURS AND AUDITS

Although the district offices' audits have been very productive, they have not kept pace with the increase in the number of employers and employees in the State. As Chart 4 shows, between fiscal year 1984-85 and fiscal year 1987-88, the number of employers in the State increased from 685,766 to 800,716, or by nearly 17 percent.

CHART 4

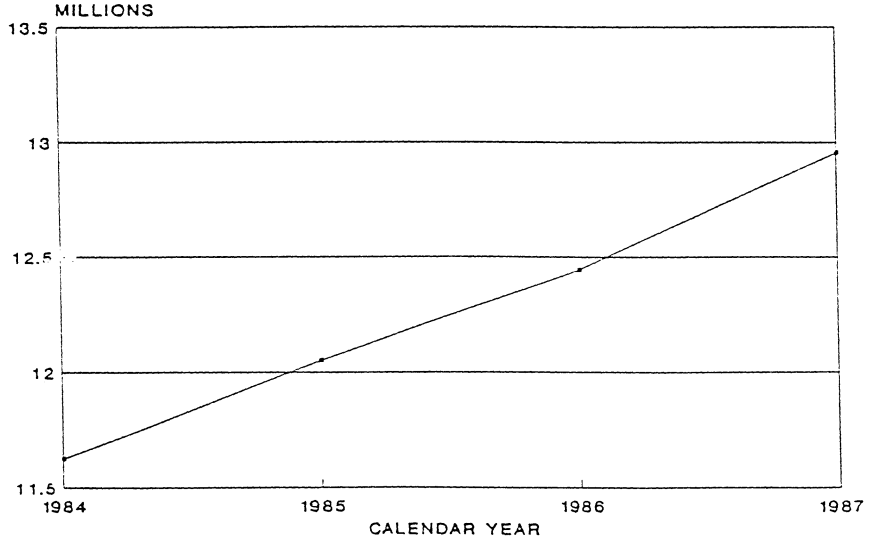
CHANGES IN THE NUMBER OF EMPLOYERS IN THE STATE
FISCAL YEAR 1984-85 THROUGH FISCAL YEAR 1987-88



In addition, as Chart 5 shows, during the same period, the number of employees in California increased from approximately 11.6 to approximately 12.9 million, or by more than 11 percent. Consequently, the department must ensure that a greater number of employers and employees comply with the State's employment tax laws.

CHART 5

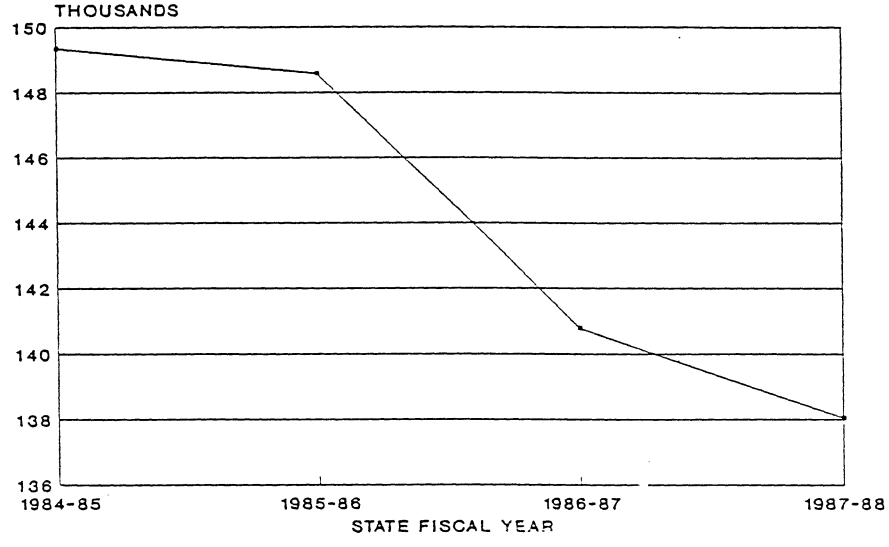
CHANGES IN THE NUMBER OF EMPLOYEES IN THE STATE CALENDAR YEAR 1984 THROUGH CALENDAR YEAR 1987



However, since fiscal year 1984-85, the number of hours that district offices have spent auditing employers has decreased. For example, as Chart 6 shows, the number of hours that the district offices spent auditing employers decreased from approximately 149,000 in fiscal year 1984-85 to 138,000 in fiscal year 1987-88, a reduction of nearly 8 percent.

CHART 6

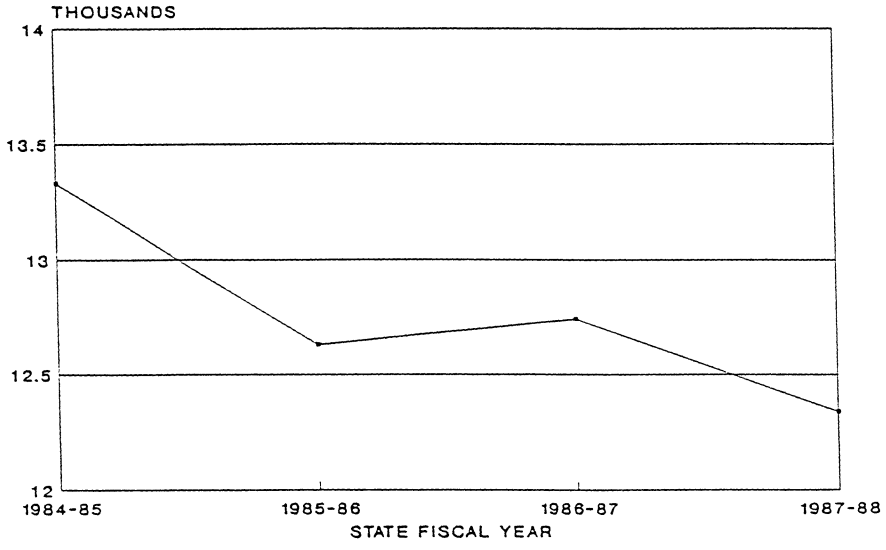
CHANGES IN THE NUMBER OF HOURS THE DEPARTMENT SPENDS ON AUDITS FISCAL YEAR 1984-85 THROUGH FISCAL YEAR 1987-88



In addition, the number of audits that the district offices performed decreased overall during the same period. Specifically, as Chart 7 shows, the number of audits decreased 7.4 percent from 13,331 in fiscal year 1984-85 to 12,344 in fiscal year 1987-88.

CHART 7

CHANGES IN THE NUMBER OF AUDITS THE DEPARTMENT PERFORMS
FISCAL YEAR 1984-85 THROUGH FISCAL YEAR 1987-88



The number of audit hours at the district offices has not maintained the same rate of growth as the number of employers and employees in the State for the following reasons. In October 1986, the department implemented the Tax Accounting System (TAS) as part of its plan to automate some of the audit and collection activities. In its plans, the department concluded that the new system could replace or reduce some of the tasks that the auditors and tax collectors in the district offices perform and, therefore, would reduce the number of staff required to perform these tasks. As a result of this prediction, the department submitted two budget change proposals to the Department of Finance that requested that 264 personnel years be eliminated from

the Tax Branch and that some of the funds for these positions be used to pay for the new system. (A personnel year is the equivalent of one person working full time for one year.) The deputy director of the branch stated that approximately 150 personnel years were removed from the audit and compliance programs by the TAS budget change proposal.

The branch's decision to eliminate these personnel years from the audit and compliance programs may have reduced the number of staff available to perform audits and may partly explain the decrease in the number of hours spent auditing and the number of audits. Another reason for the decrease was that the branch assigned some auditors, from October 1987 to July 1988, to its Workload Diversion Program. (See Chapter I, pages 32 to 33, for more information on this program.) The auditors worked approximately 23,200 hours on this program. These hours are equivalent to approximately 21 percent of the total number of audit hours spent in that time period.

THE DEPARTMENT NEEDS TO INCREASE ITS AUDIT EFFORTS

The department needs to increase the number of audits that it performs for two reasons. First, the number of audits that the department performs does not meet the federal government's goal. Second, by increasing its audit efforts, the department may be able to increase the amount of delinquent taxes that it identifies and ultimately collects.

The Department Needs To Comply With Federal Goals

The department does not comply with the federal government's goal regarding the number of employers that the State should audit every year. The federal Department of Labor's goal for the Unemployment Insurance program specifies that states should annually audit at least 4 percent of their employers. However, for each fiscal year since 1984-85, the district offices have consistently audited less than 2 percent of the active employers in California. In addition, the percentage of employers that the district offices audit has decreased each fiscal year. For example, in fiscal year 1984-85, the district offices audited 1.94 percent of the employers while, in fiscal year 1987-88, the district offices audited 1.54 percent of the employers and ranked 50th in this category in a comparison with 49 states, Puerto Rico, and the District of Columbia. From fiscal year 1984-85 through fiscal year 1987-88, the number of audits that the district offices performed decreased by over 7 percent.

The department's performance in its auditing activities affects the success of its tax collection program. For example, the department's Audit Procedure Handbook states that the purpose of auditing is to encourage voluntary compliance with the tax laws, as well as to verify that employers have complied with the tax laws. According to a memorandum from the branch's deputy director, an

aggressive audit program, with appropriate publicity, lets employers know that it is in their best interests to fully comply with the employer tax laws of the State.

The Department Could Increase the Amount of Delinquent Taxes That It Identifies and Collects

Other tax agencies in the State, including the Franchise Tax Board (FTB) and the Board of Equalization, annually estimate the net change in tax liability at varying levels of staff hours spent auditing. These agencies use this information to justify to the Legislature their requests for staff during the budget process. The Office of the Legislative Analyst stated that the Legislature's practice has been to fund the FTB's audit program at the level that is estimated to produce at least a $5 incremental increase in tax liability for each additional $1 in audit costs.

According to a memorandum from the deputy director of the branch, the branch only recently began tracking the benefits of its audits, that is, the amount of the change in tax liability identified through audits that it actually collects. Consequently, we could not estimate the benefit-to-cost ratio of the district offices' audit activities.

However, since the district offices audited less than 2 percent of the employers in fiscal year 1987-88, if they increased the number of audits they perform, they may be able to increase the amount of delinquent taxes they identify and ultimately collect. Based on a sample of audits that the department studied in fiscal year 1987-88, we estimate that the department collects approximately 58 percent of the net changes in tax liability identified in a fiscal year within nine months of the next fiscal year. Therefore, the department could increase tax revenues if it identified more tax liabilities through audits.

For example, based on department data and analysis by our statistical consultant, we estimate with 90 percent confidence that if the district offices had performed 20 percent more audits (2,456 additional audits) in fiscal year 1987-88, the branch could have identified at least an additional $9.7 million in net changes in tax liability for that fiscal year. This increase in the number of audits performed would have increased the percent of employers audited to 1.85 percent. Also, since the department collects approximately 58 percent of the net tax liabilities identified through audits, the State could have received an additional $5.6 million in federal and state tax revenues as a result of the additional 2,456 audits. Based on department data, we estimate that the cost to conduct these additional audits and collect the additional revenues is approximately $1.5 million. However, the district offices' benefit-to-cost ratio

would gradually decrease with the addition of more audits because the district offices first would attempt to audit those employers more likely to owe taxes. As they increased the number of employers they audited, the district offices would have to audit employers less likely to owe taxes. Gradually, the district offices' costs for the additional staff would approach the amount of additional tax liability being identified.

To estimate the level to which the district offices could successfully increase their audit activities, the branch should estimate the benefits and costs for varying levels of audit effort. According to the deputy director, the department now has the ability, through the TAS, to determine the dollar return for each dollar invested in the audit program. The department expects this information to be available in early 1990.

CORRECTIVE ACTION

The department has increased its audit efforts in fiscal year 1988-89. For example, the district offices spent more than 39,500 hours auditing in the first quarter of fiscal year 1988-89. This total represents the most hours spent on auditing in one quarter since the first quarter of fiscal year 1984-85. In addition, the district offices performed 3,642 audits in the first quarter of fiscal year 1988-89, an increase of approximately 25 percent over the number performed in the last quarter of fiscal year 1987-88. Furthermore,

the deputy director of the branch stated that, because of the increase in efficiency resulting from the TAS, the branch has been able to expand the audit program. Consequently, the Field Audit and Compliance Division is currently recruiting additional auditors.

CONCLUSION

The Employment Development Department's audits of employers have been successful but have not kept pace with the growth in the number of employers and employees in the State. As a result, the department needs to increase the number of audits that it performs. However, the department needs to estimate the benefit-to-cost ratio of its audit efforts to determine the level to which it can increase its efforts. The department expects to obtain this information through its new automation system by early 1990.

RECOMMENDATIONS

To increase the amount of delinquent taxes identified, the Employment Development Department should take the following actions:

- Identify the levels of costs and benefits that would accrue under varying levels of audit effort; and

- Use the information to obtain the staffing levels that most benefit the State.

V

THE EMPLOYMENT DEVELOPMENT DEPARTMENT DOES NOT HAVE A HIGH RATE OF SICK-LEAVE USAGE, WORK-RELATED DISABLING INJURIES, OR GRIEVANCES FILED

One of the purposes of our review was to determine whether employees in the field offices of the Employment Development Department (department) are subjected to excessive stress. A high rate of sick-leave usage, work-related disabling injuries, and grievances filed could be indicators of employees reacting to stress on the job. Compared with employees from all state departments and six other large state departments, employees of the department, in general, do not use excessive amounts of sick leave, suffer an excessive number of work-related disabling injuries, or file an excessive number of grievances. For example, department employees used an average of 8.6 days of sick leave per employee in fiscal year 1986-87 compared with an average of 8.5 days per employee for all state employees. Moreover, in the six field offices that showed the highest rates of sick-leave usage compared with other field offices, these high rates were attributable to only one or two employees at each of the offices. While we did not find a high rate of sick-leave usage, work-related disabling injuries, or grievances filed at the department, we did identify two areas related to personnel that could be strengthened. Currently, the department does not have statewide standards to evaluate employee job performance in the Unemployment Insurance (UI) and Disability Insurance (DI) programs. The development of statewide performance standards

would ensure a more consistent method of performance evaluation among field offices. The department is in the process of developing statewide performance standards for the UI program and plans to develop and implement statewide performance standards for the DI program once its new automated system is operating statewide. In addition, we found that one candidate from a sample of 64 candidates was persuaded to waive his interest in a position. As a result, another individual who would have otherwise been ineligible unfairly got the position. According to the deputy director of the Administration Branch, the department is revising one of its forms used to contact candidates to enable it to better detect incidents involving candidates who might have been persuaded to waive interest in positions.

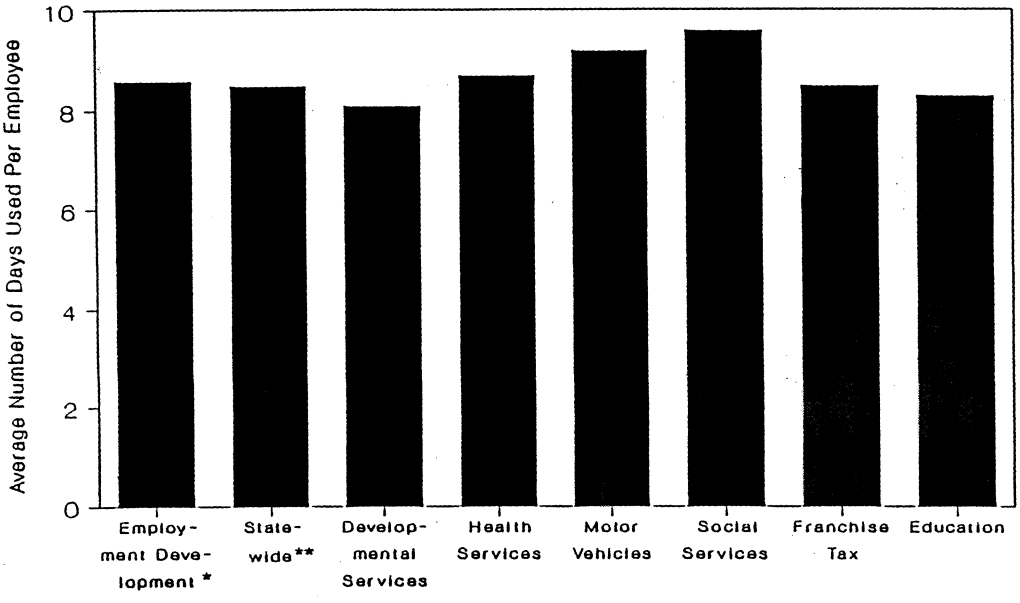
According to their job descriptions, some employees in the department's field offices interact extensively with individuals seeking UI or DI benefits. According to some researchers on stress, working in jobs that involve extensive interaction with people in a state of need generates special pressures and can cause burnout, a type of stress reaction in employees. Accident proneness, low employee morale, absenteeism, and physical ailments are among these stress reactions. Other reactions to stress can include lowered productivity, a deterioration of relationships with co-workers, and a tendency to complain.

SICK-LEAVE USAGE

Even though 55 percent of the department's employees work in the department's field offices, where, according to their job descriptions, they interact extensively with people in a state of need, department employees do not use excessively high amounts of sick leave. As Chart 8 shows, the department's employees used an average of 8.6 days of sick leave per employee in fiscal year 1986-87 compared with an average of 8.5 days per employee for all state employees. We also compared the department's sick-leave rate with the sick-leave rates for six other state departments that are also large. Some of these departments also deal with the public but are not usually required to interact extensively with people in a state of need. In fiscal year 1986-87, sick-leave rates in these six departments ranged from 8.1 days per employee at the Department of Developmental Services to 9.6 days at the Department of Social Services.

CHART 8

AVERAGE NUMBER OF DAYS OF SICK LEAVE USED PER EMPLOYEE AT THE EMPLOYMENT DEVELOPMENT DEPARTMENT, ALL STATE DEPARTMENTS, AND SIX SELECTED STATE DEPARTMENTS FISCAL YEAR 1986-87



Source: Unaudited data from the State of California Personnel Statistics compiled by the Department of Personnel Administration.

* The data reported for this department include statistics for full-time, part-time, and permanent-intermittent employees.

** These statewide data are based on employees entitled to sick-leave privileges in departments with 50 or more full-time civil service employees.

In addition, we reviewed sick-leave usage during fiscal year 1986-87 in each of the department's 291 work units, most of which are field offices, to identify any units with excessively high rates of sick-leave usage. For the six field offices in the department with the highest sick-leave rates, we examined individual attendance records for each employee. The annual rates ranged from 15.05 days at the office with the lowest rate to 25.87 days at the office with the highest rate. In each of the six field offices, only one or two employees were responsible for the high rates of sick-leave usage. For example, one employee at the Vallejo Employment Tax District Office used 108.6 days of the office's total of 148.5 days of sick leave for the year. The other employees in that field office averaged 8.3 days of sick leave for the year. At the Santa Ana West Job Service field office, two employees accounted for 191.8 days of the office's total of 445.1 days of sick leave for the year. The other employees in that field office averaged 7.9 days of sick leave for the year.

WORK-RELATED DISABLING INJURIES

In addition, department employees do not suffer an abnormally high number of work-related disabling injuries.[2] As Chart 9 shows, from calendar year 1984 through calendar year 1986, the department's rate of work-related disabling injuries per 100 employees was less than

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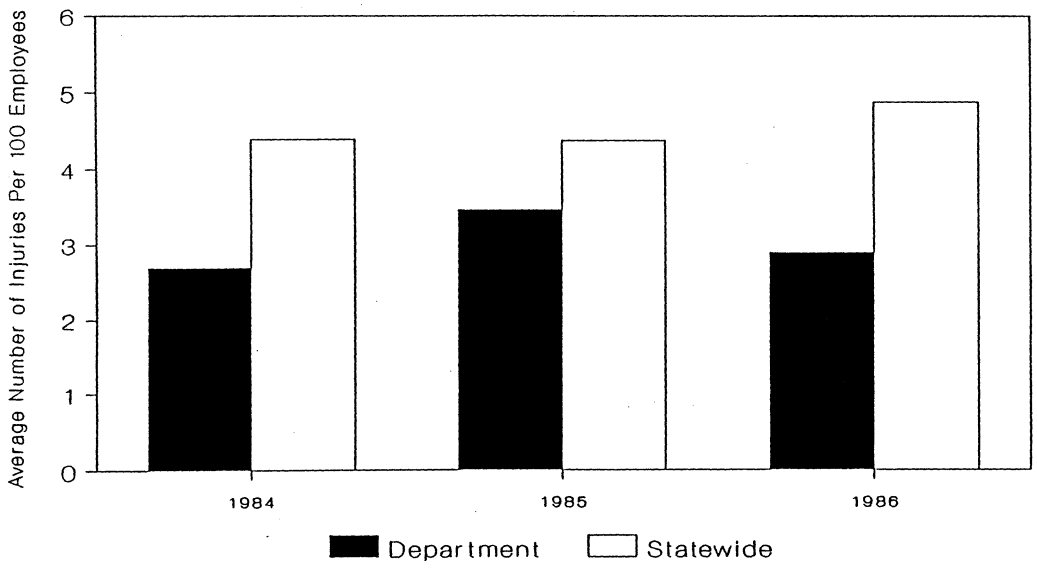
[2]A disabling injury is any injury that results in lost time from work beyond the date of injury.

the rate per employee for all state departments. The department's average rate for the three years was 3.0, and the average rate for all state departments was 4.5.

CHART 9

AVERAGE NUMBER OF WORK-RELATED DISABLING INJURIES PER 100 EMPLOYEES AT THE EMPLOYMENT DEVELOPMENT DEPARTMENT AND ALL STATE DEPARTMENTS CALENDAR YEAR 1984 THROUGH CALENDAR YEAR 1986



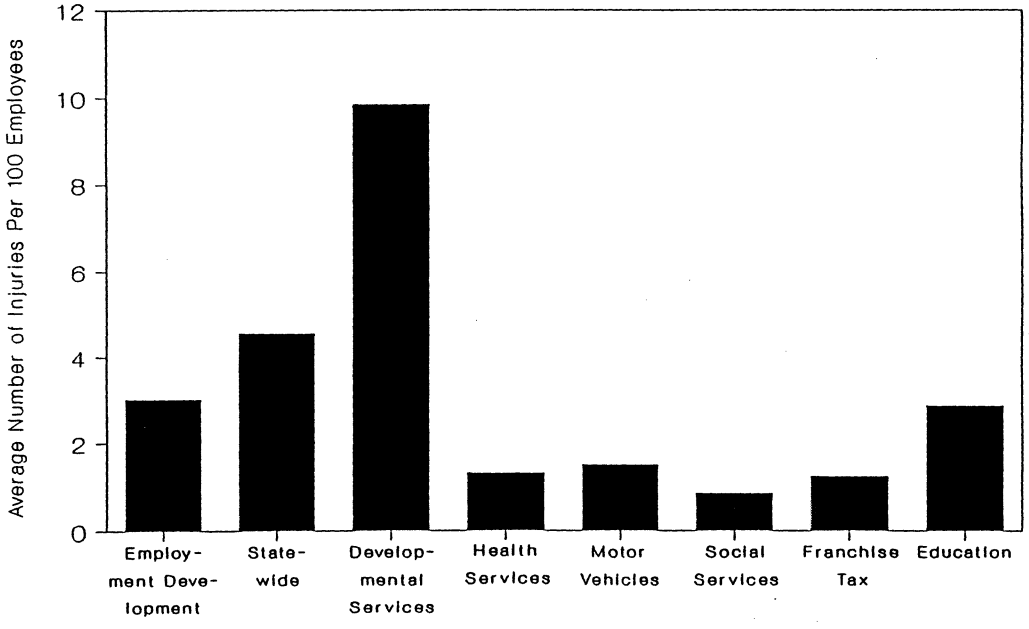
Source: Unaudited data from the Annual Reports of the California State Workers' Compensation and Safety Program, Department of General Services, calendar years 1985 and 1986.

We also compared the department's rate of work-related disabling injuries per 100 employees to the rates at the six other state departments that we reviewed. As Chart 10 shows, the average

rate for the six other departments ranged from 0.8 per 100 employees at the Department of Social Services to 9.8 at the Department of Developmental Services. The average rate for the six departments was 2.9.

CHART 10

AVERAGE NUMBER OF WORK-RELATED DISABLING INJURIES PER 100 EMPLOYEES AT THE EMPLOYMENT DEVELOPMENT DEPARTMENT, ALL STATE DEPARTMENTS, AND SIX SELECTED STATE DEPARTMENTS CALENDAR YEAR 1984 THROUGH CALENDAR YEAR 1986

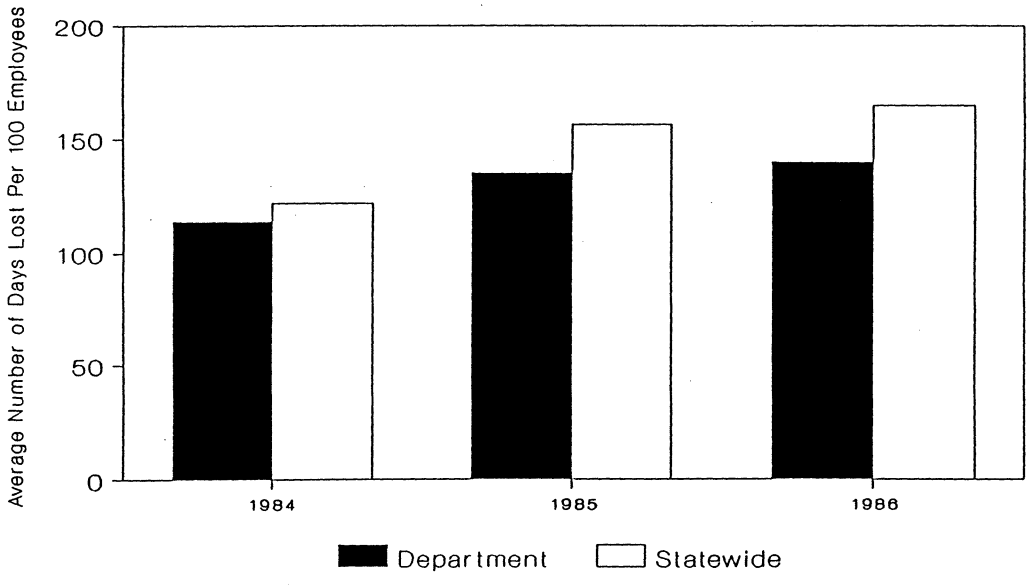


Source: Unaudited data from the Annual Reports of the California State Workers' Compensation and Safety Program, Department of General Services, calendar years 1985 and 1986.

Further, as Chart 11 shows, from calendar year 1984 through calendar year 1986, the department lost fewer work days per 100 employees for work-related disabling injuries than all state departments lost per 100 employees. Department employees lost an average of 129.7 days per 100 employees, and all state departments lost an average of 147.4 days per 100 employees.

CHART 11

AVERAGE NUMBER OF WORK DAYS LOST PER 100 EMPLOYEES FOR WORK-RELATED DISABLING INJURIES AT THE EMPLOYMENT DEVELOPMENT DEPARTMENT AND ALL STATE DEPARTMENTS CALENDAR YEAR 1984 THROUGH CALENDAR YEAR 1986

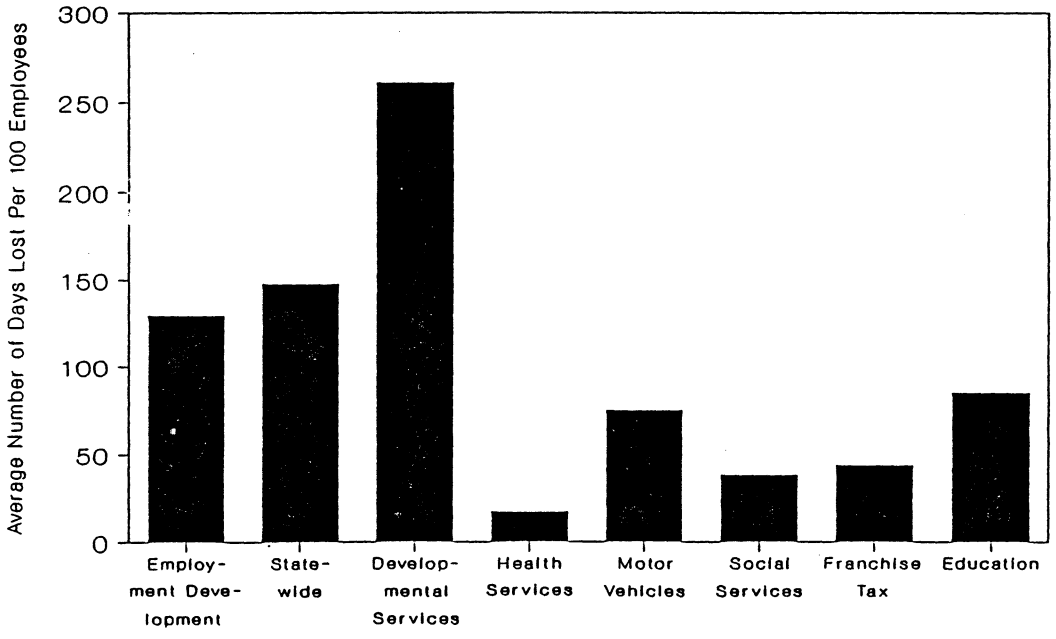


Source: Unaudited data from the Annual Reports of the California State Workers' Compensation and Safety Program, Department of General Services, calendar years 1985 and 1986.

Moreover, as Chart 12 shows, the average number of work days lost per 100 employees for work-related disabling injuries in the six other departments ranged from 16.9 days at the Department of Health Services to 260.7 days at the Department of Developmental Services. The average for the six departments was 86.3 days.

CHART 12

AVERAGE NUMBER OF WORK DAYS LOST PER 100 EMPLOYEES FOR WORK-RELATED DISABLING INJURIES AT THE EMPLOYMENT DEVELOPMENT DEPARTMENT, ALL STATE DEPARTMENTS, AND SIX SELECTED STATE DEPARTMENTS CALENDAR YEAR 1984 THROUGH CALENDAR YEAR 1986



Source: Unaudited data from the Annual Reports of the California State Workers' Compensation and Safety Program, Department of General Services, calendar years 1985 and 1986.

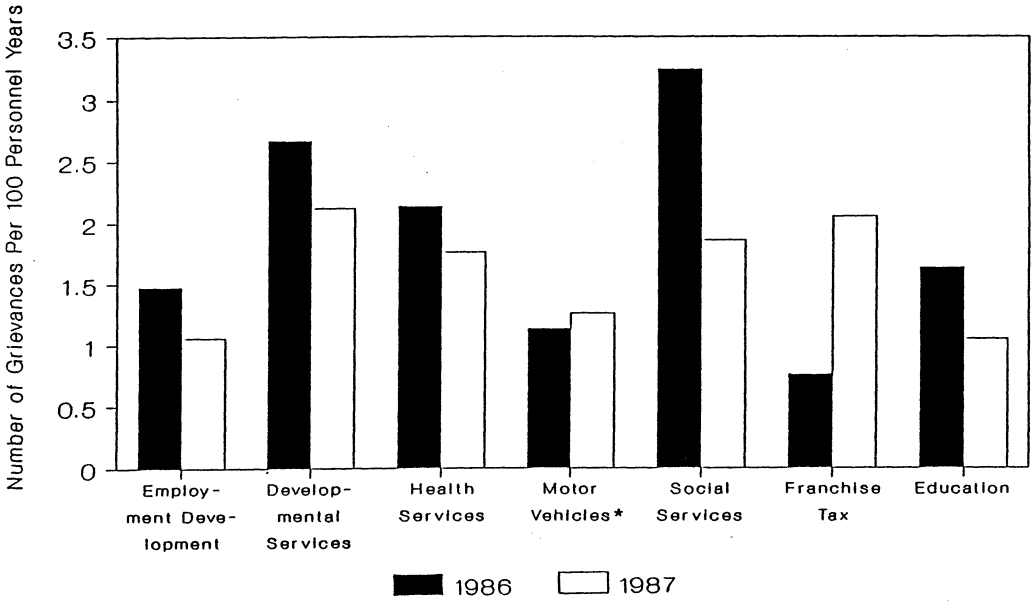
Finally, department employees do not appear to file an excessive number of workers' compensation disability claims for stress compared with employees of county government. According to a special report published in Spring 1988 by the County Supervisors Association of California, 11 percent of compensation cases for county government workers were based on stress. However, only 8.2 percent (83 of 1,011) of the workers' compensation disability claims filed by department employees in 1987 were for stress.

GRIEVANCES

Department employees do not file more grievances than employees in the six other large state departments. As Chart 13 shows, in calendar year 1986, department employees filed 1.5 grievances per 100 personnel years while rates ranged from approximately 0.8 to 3.2 at the six other state departments that we reviewed. The average for the six departments was 2.0. (A personnel year is the equivalent of one person working full time for one year.) In calendar year 1987, department employees filed 1.0 grievances per 100 personnel years while rates ranged from approximately 1.0 to 2.1 at the six other state departments. The average for the six departments was 1.8.

CHART 13

NUMBER OF GRIEVANCES FILED PER 100 PERSONNEL YEARS AT THE EMPLOYMENT DEVELOPMENT DEPARTMENT AND SIX SELECTED STATE DEPARTMENTS 1986 AND 1987



Note: The data for the Employment Development Department are audited; the data for all other departments are unaudited and supplied by the departments. The number of grievances is reported by calendar year; the rate per 100 personnel years is based on the actual personnel years for each department for fiscal year 1986-87.

* Data for the Department of Motor Vehicles are for grievances filed by employees only in the California State Employees' Association, Bargaining Unit 4.

PERSONNEL PRACTICES

While we did not find high rates of sick-leave usage, work-related disabling injuries, or grievances filed at the department, we did identify two areas related to personnel that could be strengthened.

The Department Does Not Have Statewide Performance Standards

The Government Code, Section 19992, requires the Department of Personnel Administration to encourage state agencies to establish standards of performance for each class of job position. Further, the Government Code, Section 19992, and union contracts with the State require such performance standards, insofar as practicable, to be based on the quantity and quality of work that the average person thoroughly trained and industriously engaged can turn out in a day. In addition, the Government Code, Section 19992.4, permits the Department of Personnel Administration to establish rules to reduce in class and compensation or remove from their positions those employees who do not meet performance standards.

Currently, the department does not have statewide standards to evaluate employee performance in the Unemployment Insurance (UI) and Disability Insurance (DI) programs. However, the department has decided that statewide standards are needed, and it has begun to

develop new standards. According to the deputy director of the Operations Branch, the standards for the UI program have varied because each field or district office developed its own standards over the years to reflect local conditions as numerous program changes were phased in. The UI Division is developing statewide standards for UI determinations interviewers, and the Operations Branch expects new statewide standards to be implemented by April 1989. In 1986, the DI Branch instructed field office managers to be flexible in evaluating employee productivity during the period of transition to the new DI Phase II automated system, which will change the way employees perform their work. The DI Branch instructed field office managers to compare individual employee productivity with that of the work unit when evaluating performance. The department intends to develop statewide standards after the new automated system is implemented in all DI field offices and staff are proficient in using the new system.

We reviewed the most recent performance evaluations for 41 employees at 15 UI and DI field offices that we visited. In our review of performance evaluations, we did not find any cases where employees received a performance evaluation that indicated that their performance did not meet expected standards. However, the development of statewide performance standards would ensure a more consistent method of performance evaluation among field offices.

An Employee Persuaded Candidates
To Waive Interest in a Position

We also found that a department employee unfairly persuaded an eligible candidate to waive his interest in a position. As stated in the California State Constitution, Article VII, Section 1, and the Government Code, Section 18500, the purpose of California's civil service system is to provide government appointments based on merit, as determined by competitive examinations. In addition, the Government Code, Section 19681, states that it is unlawful for any person to use unfair means to cause or attempt to cause any eligible candidate to waive a position.

According to the Government Code, Section 18937, the names of candidates who pass the competitive examinations are placed on a ranked employment list. All candidates with the same score are placed in the same rank. For certain classifications, candidates in the top three ranks on the list are eligible for a position. Eligible candidates may voluntarily waive their interest in a position. If everyone in a rank waives interest, successively lower ranks become eligible until three ranks are represented.

We reviewed 142 lists of candidates from which the department hired a candidate who was not in the top three ranks. We then contacted 64 individuals from 27 of those lists to determine whether they were persuaded to waive interest in positions. Four of 64

eligible candidates whom we contacted stated that they were encouraged to waive interest in positions. We were able to confirm the statements of two of these candidates through a special investigation conducted by the department on our behalf. These two candidates stated that a field office manager attempted to discourage them from seeking a position. One candidate waived his interest in the position on the basis of the manager's statements. The investigation found that the manager persuaded the job candidate to waive his interest in the position, thus, allowing the manager to hire a person who was in the sixth rank.

If an eligible person is encouraged to waive a position and complies with the request, individuals who would otherwise be ineligible for an appointment (based on merit) may unfairly get the position. Until the field office manager persuaded an eligible candidate to waive the position, the top three ranks containing interested candidates were ranks 1, 4, and 5, and the individual whom the department eventually appointed was from the sixth rank and, thus, was not eligible based on merit.

To detect similar incidents in the future, according to the deputy director of the Administrative Branch, the department is revising the follow-up forms used to confirm the results of telephone contacts with candidates. These revisions include adding the name and address of the section within the department to which the candidate is applying to permit the candidate to notify the department that the results are not correct. The revisions also include adding a statement

that "no one is to make requests or statements that can be considered as asking or instructing eligibles to go inactive or waive a position." In addition, the department has disciplined the field office manager who persuaded the candidate to waive his interest in the position.

CONCLUSION

Compared with employees from all state departments and employees of six other large state departments, employees of the Employment Development Department, in general, do not use excessive amounts of sick leave, suffer an excessive number of work-related disabling injuries, or file an excessive number of grievances. For example, department employees used an average of 8.6 days of sick leave per employee in fiscal year 1986-87 compared with an average of 8.5 days per employee for all state employees. Moreover, in the six field offices that showed the highest rates of sick-leave usage compared with other field offices, these high rates were attributable to only one or two employees at each of the offices.

However, we did identify two areas related to personnel that could be strengthened. Currently, the department does not have statewide standards to evaluate employee job performance in the Unemployment Insurance and Disability Insurance programs. The development of statewide performance standards

would ensure a more consistent method of performance evaluation among field offices. The department is in the process of developing statewide performance standards for the UI program and plans to develop and implement statewide performance standards for the DI program once its new automated system is operating statewide. In addition, we found that one candidate from a sample of 64 candidates was persuaded to waive his interest in a position. As a result, another individual who would have otherwise been ineligible unfairly got the position. According to the deputy director of the Administration Branch, the department is revising one of its forms used to contact candidates to enable it to better detect incidents involving candidates who might have been encouraged to waive interest in positions.

RECOMMENDATIONS

To strengthen its personnel practices, the Employment Development Department should take the following actions:

- Follow through with its plans to develop and implement statewide performance standards for the Unemployment Insurance and Disability Insurance programs; and

- Follow through with its plans to revise its follow-up forms to detect any incidents involving employees who encouraged eligible candidates to waive interest in a position.

We conducted this review under the authority vested in the Auditor General by Section 10500 et seq. of the California Government Code and according to generally accepted governmental auditing standards. We limited our review to those areas specified in the audit scope section of this report.

Respectfully submitted,

KURT R. SJOBERG
Acting Auditor General

Date: February 20, 1989

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EDD Serving the People of California

M E M O R A N D U M

To: Kurt R. Sjoberg, Acting Auditor General
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660 J Street, Suite 300
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Via: Mr. Clifford L. Allenby, Secretary
Health and Welfare Agency John Roman for 2/10/89

Date: February 10, 1989

File No.: 89:01:dcb

From: Employment Development Department

Subject: AUDIT REPORT P-752

Secretary Allenby has asked me to respond to your report, A Review of the Employment Development Department's Acquisition of New Automated Systems and Management of its Programs and Field Offices.

Overall, I am very pleased that your findings "found few weaknesses", especially in light of the comprehensive scope and length of this audit. I regret, however, that the audit process does not lend itself to reporting more fully on the many positive accomplishments that support your findings. This lack of recognition for the tremendous accomplishments that have been made--particularly in the area of automation--has a deleterious effect on department morale, and simply does not do justice to the contributions of the 12,000 employees who make up the Employment Development Department. My concern over this lack of balance, notwithstanding, we generally agree with the findings and the recommendations as presented in the report. In fact, significant progress has been made towards implementing most of these recommendations.

While we do concur with the recommendations, as presented in the report, I would be remiss if I failed to take issue with the perception created by the standards used by your consultant which led to their finding that EDD staff and management assigned to our automation projects were relatively inexperienced. Initially, we were inexperienced; that is why we engaged the services and expertise of Peat Marwick Main, Arthur Andersen, Deloitte Haskins and Sells, and others to help us to design, develop and implement one of the most ambitious and technically complex automation efforts ever successfully undertaken in either the public or private sector. The expertise and competence that these consultants brought to these efforts were essential, and among the best available in the country. Our project managers, programmers and analysts worked exhausting hours side by side with their consulting firm counterparts and gained invaluable experience in the process. As a result, I believe we have developed an expertise that is among the highest quality available anywhere in the public sector. Yet, in many instances, our people do

not meet the length of experience standards which your consultant states should be met when selecting staff for future major automation efforts. We feel strongly that quality of experience, individual aptitudes, and other such qualities must be considered in assessing the relative experience of our staff. I trust this perspective will be taken into consideration in any future review of our implementation of your recommendations that EDD use experienced project managers....to develop future automated systems.

In closing, I do want to take this opportunity to express my personal appreciation, and that of my staff, for the cooperation and the professionalism of your staff during the course of the audit. On our part, the audit was very difficult, very time consuming and had the effect of causing us to justify nearly everything we do in carrying out our responsibilities. At the same time, I appreciate how difficult it must have been for your staff to conduct such a thorough audit over an 18-month period. I believe the state has been well served by the professionalism exhibited by both our staffs.

K. R. KIDDOO
Director

OFFICE OF THE AUDITOR GENERAL

Findings Pertaining to the Employment Development Department's System Development Process

January 12, 1989

Arthur Young

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LIST OF EXHIBITS

I. INTRODUCTION

Arthur Young

A MEMBER OF ARTHUR YOUNG INTERNATIONAL

I. INTRODUCTION

This report contains the results of our review of the Employment Development Department's (EDD) process for development and implementation of information systems. The project was initiated at the request of the Office of the Auditor General (OAG) to address issues raised during the current EDD audit. Our findings are presented in the following sections:

- Project Scope and Objectives
- Methodology
- TAS Implementation Findings
- General Systems Development Methodology Findings
- Definitions.

II. PROJECT SCOPE AND OBJECTIVES

Arthur Young

A MEMBER OF ARTHUR YOUNG INTERNATIONAL

II. PROJECT SCOPE AND OBJECTIVES

The objective of the Employment Development Department (EDD) review was to assess the systems development methodology for the development and implementation of information systems. Specifically, the Arthur Young review team was to accomplish the following:

1. Determine whether the EDD's methodology for implementation of the Tax Accounting System was consistent with commonly accepted methods used for projects of similar size and complexity.

2. Determine whether the EDD had a formal plan for implementing TAS and whether it followed the plan.

3. Determine whether EDD has a methodology in place for the development and implementation of information systems, and if so, whether this methodology is consistent with commonly accepted methods and procedures.

4. Determine whether EDD should have a standard methodology for managing design, development and implementation of information systems.

Much of the information on which the findings are based, comes from the documentation and analysis already completed by the Office of the Auditor General.

III. METHODOLOGY

Arthur Young

A MEMBER OF ARTHUR YOUNG INTERNATIONAL

III. METHODOLOGY

The methodology used to conduct this project was designed to address the stated objectives within the limited time constraints of the OAG audit. The major tasks performed during our review included the following:

- A meeting was held with OAG audit team members to discuss audit findings to date, identify available sources of information, obtain list of contacts and phone numbers, and to select EDD individuals to be included in the interview process.

- To minimize redundant data gathering, the index of OAG workpapers was searched and relevant documents were selected and reviewed. As necessary throughout the project, the OAG workpapers were used as reference material. Additional documents were obtained from EDD staff as appropriate to support our findings. Some of the documents reviewed included:

  - Request for Proposals for the major development projects
  - Corresponding contractor proposals
  - Project contracts and contract amendments
  - Special Project Reports
  - Project work plans and status reports
  - Selected deliverables such as conceptual designs, detail designs, test plans, test scripts, conversion plans, etc.
  - EDD's Systems Development Process
  - Various internal project control procedures
  - Inventory of ADM 805's (system test errors)
  - List of IRFs (production errors and requests for change)
  - Other related reports

- Standards Manual and other departmental procedures related to systems development
- Functional descriptions of the EDD data processing organizations
- Various EDD memoranda

- Interviews were conducted with various EDD representatives in the Data Processing and Automation Administration Divisions. All information systems development project managers were included in the interview process. The purpose of the EDD interviews was to establish an understanding of the methods and procedures used during the major development projects.

- Supplemental interviews were held with support organizations such as the Information Systems Planning & Support Section, Integration Group, and Standards Committee. Additionally, to clarify certain testing and conversion issues involving the Tax Accounting System (TAS), a meeting was held with the Arthur Andersen TAS project manager.

- Using Arthur Young's Management Review of Data Processing methodology, evaluation criteria in which to analyze the systems development practices in use at EDD were identified. The evaluation criteria was divided into the three categories of organization, planning and process.

- For the TAS implementation review, our analysis focused on three key areas of concern: 1) Testing, 2) conversion, and 3) scope of work. To evaluate the testing and conversion components, an outline of a generally accepted industry guideline for approaching these activities was used for comparison purposes.

- The systems development methods used during the Tax Accounting System, Unemployment Insurance/Automated Benefit Accounting System, Disability Insurance Phase II and Job Service Automation projects were evaluated for each system development practice area identified earlier.

- For the TAS implementation evaluation, the contractor proposals and actual approach taken by EDD was compared against the industry guideline. Deficiencies in the process and resultant conditions were identified. It should be noted that different methodologies may refer to these testing steps with differing labels. This is evidenced in Arthur Andersen's methodology, METHOD1, which is consistent with this structure, though using different labels for the necessary steps.

- The preliminary results of the analysis were reviewed with both OAG and EDD representatives. Follow-up meetings were held as necessary to confirm, clarify or further discuss individual findings.

IV. TAS IMPLEMENTATION FINDINGS

Arthur Young

A MEMBER OF ARTHUR YOUNG INTERNATIONAL

IV. TAS IMPLEMENTATION FINDINGS

The results of the review have been presented in two sections. This section includes our findings regarding EDD's methodology for implementation of the Tax Accounting System (TAS). The following section presents information regarding EDD's current methodology for the development and implementation of information systems.

As noted earlier, the TAS review focused on implementation issues. The three areas of concern were testing, conversion and scope of work. The two findings resulting from the review are summarized as follows:

- EDD failed to identify and correct many errors in the TAS data files prior to conversion causing a significant impact to production processing
- TAS was not adequately tested prior to implementation.

The following pages include a more detailed description of each of these findings.

FINDING

The EDD failed to identify or resolve many conversion related problems prior to production file conversion resulting in the need for EDD to allocate substantial resources after implementation to effect resolution.

CRITERIA

A data file conversion methodology addresses a complete step-by step approach to defining current data, defining future data, and defining the method of transforming the first to the latter. In prudent conversion guidelines or methodologies, this includes the following specific activities:

- A programmed audit of all (100%) of the source data
- Analysis and development of purification rules
- User review of these rules
- Test conversion of the production files at full (100%) volume
- Problem resolution
- Re-execution of test and analysis
- Final production file conversion.

CONDITION

The Employment Development Department jointly agreed with Arthur Andersen project management to deviate from the methodology proposed by Arthur Andersen in the data file conversion of the Tax Accounting System (TAS). This deviation resulted in the delay of resolution of conversion related problems to the post-implementation period. The deviation consisted of the elimination of several key components of data conversion.

Table 1, below, presents an overview of the comparison performed.

Table 1

GUIDELINE	PROPOSED BY ARTHUR ANDERSEN	UTILIZED IN TAS
1. Programmed Audit of 100% of Source Data	Yes	No
2. Analysis and Development of Purification Rules	Yes	Yes
3. User Review of Rules	Yes	Yes
4. Test Conversion - 100% of Data Volume	Yes	No
5. Problem Resolution	Yes	Partial
6. Re-execution of Test and Analysis	Yes	No
7. Production File Conversion	Yes	Yes

Where, in fact the Arthur Andersen proposed workplan followed the prudent methodology, EDD and Arthur Andersen agreed to not follow this in performing the TAS implementation. Based on available documentation provided by EDD, the TAS project did not perform the following:

- Programmed Audit of 100% of Source Data
- Test Conversion of All Files Using 100% of Data Volume
- Problem Resolution Prior to Conversion
- Re-Execution of Test and Analysis.

Programmed Audit of 100% of Source Data

A full pre-test file audit would be evidenced by design and execution of programs written to audit each and every source data file. The resulting report would present:

- File identification
- For each file identification:
  - Contents definition by range of data values
  - Counts of valid fields
  - Counts of fields with bad data
  - Relationship rules to other fields on the same or different files and counts of positive/negative matches.

There is no documented evidence that this was either planned, or performed. Although some fields were tested, those tested included employer names and descriptive data. Limited testing was performed on financial data.

The effect of not performing this task was that either many fields containing incorrect data were carried forward to new files, or that data that should have been converted to a new format were not. Our review of the subsample IRFs for conversion related discrepancies substantiate this finding.

Test Conversion of All Files Using 100% of Data Volume

A conversion test is the process of converting all of the old files to the new files, analyzing any errors that occur, and taking steps to correct these errors so that a successful production conversion takes place.

In our review of the conversion test cycles, it was determined that tests were not performed for more than a 5% sample relative to each source file. Many of these test conversions were for pre-selected employer identifications. EDD management believed that conversion testing included 100 percent of non-monetary data, and 20 percent of monetary data.

The effect of not performing a test conversion using 100 percent of data volume is that purifications rules, associated with problem data that should have been discovered in the programmed audit of the source data were not identified or corrected. This again meant that incorrect or problem data were converted to the new files.

Furthermore, pre-selecting employer identifications for testing purposes would bias the sample and not guarantee that a truly representative sample of cases were tested. Our review of a selected sample of IRFs for conversion related discrepancies substantiate this finding.

Problem Resolution

Existing documentation indicates that some portion, if not all, of those errors detected in early sample-based testing of the conversion process were resolved. In comparison, many errors detected during the final conversion were left for later resolution. This finally occurred later in a production environment, when resolution is more costly, and disruptive to operations.

Re-Execution of Test and Analysis

As many problems identified during the conversion process were not addressed at that time, this task was completely bypassed. This resulted in a direct pass-through of all conversion errors into the production environment where they directly affected EDD daily operations.

As mentioned, when the conversion was performed, many of the resulting errors were not resolved prior to implementation. EDD and Arthur Andersen made this decision based upon the assumption that it was not feasible to address a significant number of the identified problems. The reasons given by Arthur Andersen and EDD for not performing a full volume test conversion or correcting conversion errors include:

- High data center cost for running the conversion
- Lack of available staff to research and resolve the problems identified.

Arthur Andersen and EDD assessed that the incidence of errors identified during conversion testing justified moving forward with implementation and development of plans to correct errors in the post-implementation production environment. EDD later performed a statistical sampling of all post-implementation problem incidents. Conversion related errors accounted for approximately seven percent of the total. The number of IRFS reporting conversion errors was significant for a system the size of TAS.

RECOMMENDATION

The department should, as planned, develop and adhere to detailed conversion procedures founded on the guidelines presented above. Data conversion teams have been established which are separate from programming, testing, or quality assurance. These teams should be subject to the same review and audit process development teams are subject to. EDD should follow prudent conversion methodologies.

FINDING

The EDD failed to sufficiently test the Tax Accounting System (TAS) prior to implementation likely resulting in the need to correct these problems after system implementation in order to effect resolution.

CRITERIA

A testing methodology addresses a complete step-by-step approach to verifying the accuracy of computer programs at increasingly higher levels of system assembly. In all prudent testing methodologies or guidelines, this includes the following specific activities:

- Independent testing organization:
  A separately staffed unit, reporting outside the authority of the programming manager
- Secured libraries:
  Separate system volume residence for programs in a development, test, or production status
- Controlled program migration:
  Specific procedures and authorization process whereby a program can be transferred from one controlled library to another
- Unit test:
  Testing of a single program, generally by the programmer
- Module test:
  Testing of a small group of programs, generally by the programmer
- Functional test:
  Testing of a major system component, generally by a separate organization capable of dedicating time to the manufacture of test data
- Integration test:
  Testing of the entire system, including interfaces, to ensure it will operate as planned once placed into production. This test should determine if major flaws in the programs or the systems performance exist, and is usually conducted by a separate organization in conjunction with the data center operations staff
- User Acceptance test:
  Testing of the entire system by the users of the system, with their own independent test base
- Stress test:
  Testing of transaction-heavy components of the system at volumes equal to or greater than anticipated in production to determine the failure point
- Pilot test:
  This could include a parallel test or phased implementation of the system generally performed for the implementation of large complex systems
- Test planning:
  This would include scheduling of each test type, responsibilities for performance, responsibilities for preparation of test conditions, procedures for controlling each test environment, procedures for resolving and correcting discrepancies, and preparation and maintenance of a historical record of events.

CONDITION

The Employment Development Department jointly agreed with Arthur Andersen project management to deviate from the proposed procedures in the performance of testing. This elimination of key test functions, and particularly the conscious decision to not perform a pilot test appears to have been the likely cause for the high volume of problem incidents in production. The number of IRFs reporting functional programming and production problems was significant for a system the size of TAS.

As a result of a recent sampling of IRFs (production discrepancy and problem statements) performed by EDD, those errors that required programming correction constituted 28 percent of the sample. Assuming a lack of bias in the sample, this percentage can be applied to the 2,544 IRFs logged for TAS by May 1987. Many of these problems could have been detected and resolved in a test environment.

Resolution of these program errors in production is generally more costly and disruptive to operations. The decision to not perform a pilot was made by management based upon the assumption that performance of these tests was not viable.

Table 2, below, presents an overview of the comparison performed between a general prudent test guideline, Arthur Andersen's proposed methodology and the actual methodology used by the EDD.

Table 2

GUIDELINE	PROPOSED BY ARTHUR ANDERSEN	UTILIZED IN TAS
1. Independent Testing Organization	Yes	Yes
2. Secured Libraries	Yes	Yes
3. Controlled Program Migration	Yes	Partially
4. Unit Test	Yes	Yes
5. Module Test	Yes	Yes
6. Functional Test	Yes	No*
7. Integration Test	Yes	Yes**
8. User Acceptance Test	Yes	Yes
9. Stress Test	Yes	Yes
10. Pilot Test	Yes	No
11. Test Planning	Yes	Yes

* Combined with user acceptance test.
** Not thoroughly performed, as described below

Based upon available documentation, the TAS project did not perform pilot testing. Additionally, as communicated by EDD management, some test functions were not as vigorously tested as EDD would have desired because of the perceived need to meet the scheduled implementation date. This resulted in less than thorough testing, and in combining functional and user acceptance testing.

There is insufficient documentation available to assess thoroughness of testing in general. Considering the high volume of programming related errors experienced in production (28 percent of the sample size, as stated above) it is our opinion that testing was not thorough.

Controlled Program Migration

Program migration to production should be controlled by the computer operations staff, migration between test and development should be controlled by a group other than that performing development. As described by EDD, migration was generally performed by the development staff, though migration procedures installed by Arthur Andersen were followed.

Functional Test

Functional test was combined with user acceptance test. Though this resulted in the testing process being expedited, it eliminated a level of quality review that would have been desirable.

Integration Test

As described by EDD, this test was initially performed in its entirety in a model environment. Subsequently, data file naming conventions were changed. The system was not tested after this substantial change was made. Additionally, EDD conveyed that once programs and Job Control Language (JCL) were moved to production libraries, only a portion of these were subjected to JCL testing. Though testing procedures were followed, that they were not consistently performed could likely have resulted in the evidenced production errors experienced after implementation. As a result of the recent sampling of IRFs performed by EDD, those errors that were production errors constituted 15 percent of the sample.

Pilot Test

As stated above, the decision to not perform a pilot test (parallel or phased implementation) was a conscious decision made early in the development effort.

The purpose of performing a pilot includes:

- Allowing the opportunity to revert to prior processing in the case of major problems
- Use the prior system as a benchmark to assess accuracy or correctness of new system
- Minimize the impact of major change and allow for gradual adaptation
- Detect and resolve serious problems before the problem becomes unresolvable without major expense.

As a pilot was not performed, limited safeguards were available to TAS immediately after implementation. This likely resulted in substantial expense to resolve problems which could have been corrected in a test or pilot environment, minimizing the impact on production operations.

The decision to not perform a pilot test occurred early in the development effort, in approximately December, 1985. This decision was made for three reasons:

- Perceived inability to accurately assess and compare old system outputs with the new system
- Extensive resource requirements necessary to perform a parallel test
- Perceived non-viability of technically performing a pilot implementation.

Since implementation of TAS, the EDD has taken steps to implement an independent test organization and documented testing methodology. What the EDD has done is to organize in such a way that there is now an organization charged with testing responsibility. That organization, though in the process, has yet to develop rigorous written procedures in this area. Specifically, areas not yet documented include:

- Detailed preparation of test criteria
- Control over software changes during testing
- Coordination of user acceptance test
- Production level integration testing and development of criteria
- Pilot test policies
- Stress testing.

RECOMMENDATION

The department should develop and define written policies and procedures in respect to testing standards which have as a key objective system quality. Procedures are to be written to be consistent with this policy and to ensure it is adhered to. Steps have already been taken to accomplish this, both in reorganizations and the focusing on the development of procedures and standards. EDD should follow prudent testing methodologies.

V. GENERAL SYSTEMS DEVELOPMENT METHODOLOGY FINDINGS

Arthur Young

A MEMBER OF ARTHUR YOUNG INTERNATIONAL

V. GENERAL SYSTEMS DEVELOPMENT METHODOLOGY FINDINGS

This section presents the results of the review of EDD's current systems development methodology. The results presented are based on interviews and documentation reviews of the Tax Accounting System, Unemployment Insurance/Automated Benefit Accounting System, Disability Insurance Phase II and Job Service Automation projects.

Each project was assessed for selected application development factors. These factors are representative of proper practices which should occur at some level during the systems development process. EDD was evaluated on each of the factors based on practices which typically end in good systems development results. These factors where categorized into organization, planning or process related issues.

The specific findings were summarized and evaluated as shown in **Exhibit I,** on the following page. The evaluation indicators are to be interpreted as follows:

- ++ **Exceeded general industry practices**
- \+ **Met industry practices**
- \- **Needs improvement.**

The findings presented represent the current systems development practices at EDD.

SUMMARY EVALUATION

		OVERALL
ORGANIZATION	User Representation	++
	Full-Time Project Management	+
	Dedicated Project Teams	+
	Independent Quality Assurance Group	-
	Separate Acceptance Test Group	+
	Entry Level Training Program	++
	Staff Skill Level	-
	Project Management Experience	-
PLANNING	Project Estimation Techniques	-
	Published Project Plan to Everyone	+
	Periodic Status Reports	++
	Regular Status Meetings	+
	Project Management System	-
PROCESS	In-Process Quality Audits	-
	Documentation Standards	+
	User Complaint Logs Published	+
	EDD SDM in Place(1)	-
	SDM Followed(2)	+
	Structured Analysis Required	+
	Structured Design Required	+
	Structured Programming Required	+

(1) The systems development methodology (SDM) in place at EDD is out-of-date and not being used on current projects.

(2) EDD has opted to use the respective contractor's methodology for those projects reviewed.

The specific findings are detailed on the following pages. In summary, the key findings of the study include:

Areas Needing Improvement

- EDD's Structured Development Process is out-of-date and currently not being utilized.
- For the projects reviewed, EDD staff and management assigned to the project were relatively inexperienced.
- EDD lacks an adequate automated project tracking system.
- EDD lacks formal, documented quality assurance procedures.
- EDD needs to improve its project estimation techniques.

Positive Findings

- Many forms of project reporting exist which ensure communication of project responsibilities and status.
- EDD's project teams are well organized and include a significant amount of user representation.
- EDD has made significant strides to improve the organization of its the data processing resources.
- EDD has implemented, and enforces, many standards for developing its information systems including documentation, program, and structured analysis and design standards.

FINDING

The Employment Development Department's systems development methodology, the Structured Development Process (SDP), is out-of-date and does not appear to be in use on any current EDD projects. The EDD used the respective contractor's methodology on those projects reviewed.

CRITERIA

A system development methodology provides a formal approach to the definition, analysis, design, construction, implementation and maintenance of information systems. The benefits of using a methodology generally include the following:

- Improved communication through required user involvement
- Improved product quality through the use of standards and formal reviews
- Decreased development costs when staff are trained in the use of the procedures
- Improved project control by defining work units at a level of detail which provides project management with a means to monitor progress against the overall plan
- Reduced maintenance costs as a result of structured techniques.

Typical problems which arise due to the lack of a systems development methodology include schedule delays, unanticipated cost overruns, low-quality products, poor system performance and excessive maintenance soon after implementation.

CONDITION

The EDD currently has in place a systems development methodology. However, the SDP has not been kept current as new technology and development techniques have evolved. The EDD's methodology is not designed for development of on-line data base systems such as those currently under development. As noted by OAG, the last revision to the SDP was dated June 15, 1984. Also, according to the EDD project managers interviewed, there were no known projects utilizing the EDD's SDP.

However, it does appear as if for each of the projects reviewed, the structured systems development methodology of the contractor was used by both contractor and EDD staff. The use of these methodologies supplanted the need to use the EDD's SDP. The drawback of this approach is that EDD staff must be trained on the use of these methodologies. As EDD staff move on to other projects, they must be re-trained on a new methodology if another contractor is involved. This approach is not in the best long-term interest of the State. As EDD assumes a greater role in the development process, it would be best to be less dependent on contractor tools and techniques.

The EDD recognizes the need for a systems development methodology, and is currently planning to develop or acquire one for their own use as a Department standard.

RECOMMENDATION

EDD should move forward with its plan to implement a formal systems development methodology. The EDD should evaluate whether to update the current methodology or to acquire one from an outside source. Contractor methodologies should conform to the EDD's guidelines. The use of adopted supporting tools and standards should be required. This methodology should be integrated with an active management approach.

FINDING

For each of the projects reviewed, the EDD staff and management assigned to the project were relatively inexperienced.

CRITERIA

A major portion of the expenses associated with systems development are typically directly related to personnel. Systems development project teams should be comprised of adequate technical and managerial resources commensurate with the complexity and size of the development effort. The skills necessary to accomplish the project tasks should be inventoried, and the project staff should be selected based on their relative match to the skill requirements. For major development efforts of complex online systems, managers experienced in similar efforts should be selected to lead the project. It is generally desirable to staff projects with managers having at least six years systems development experience, and programmer/analysts with an average of three to four years.

CONDITION

The data processing experience of both management and staff assigned to the major development projects reviewed was relatively low. The average number of years experience of the staff assigned to the JSA and UI/ABAS projects averaged less than one year according to the managers of the respective projects. For DI phase II seven of the ten programmers assigned had less than six months experience. None of the staff assigned to the four projects reviewed had prior experience developing IDMS systems, the data base management system selected for use at EDD. Four of the five systems development project managers did not have a data processing background. None of the project managers had experience managing a large systems development project. Currently, EDD has limited management and staff resources experienced in IDMS systems development. EDD does not have enough experienced resources to manage and develop large complex computer systems.

The difficulty arising from this situation is that project managers do not have a foundation on which to estimate project work efforts, assess technical quality of work products, or to effectively monitor contractor performance. EDD recognized the need for experienced staff, and therefore opted to contract for professional services. Without the appropriate in-house expertise, projects may deliver poorly designed products, and experience unnecessary cost overruns and schedule delays due to poor planning and resource allocation. Several contract amendments were required to obtain additional contractor resources to perform work originally intended to be completed by EDD staff. For example, the Job Service Automation project required a contract amendment to procure contractor services to assist with the data base design. The DI phase II project had two contact amendments to obtain additional programming support and post-implementation support due to the lack of trained EDD resources. Also, the TAS project required a contract amendment to acquire additional contractor resources to assist with program maintenance and to train EDD staff in maintenance and support procedures.

RECOMMENDATION

Currently, EDD has staff with some experience with IDMS systems development projects, actions should be taken to retain and continue to develop these skilled resources. EDD should staff future major development efforts with experienced project managers. Staff should include a complement of experienced and entry level programmers and analysts.

FINDING

EDD needs to replace its current project tracking system with an automated tool to improve the efficiency and effectiveness of monitoring and controlling project activities.

CRITERIA

Systems development projects should be planned and monitored in a sufficient and appropriately rigorous manner. The level of detail at which planning and monitoring takes place should be a function of the size, complexity, risk and importance to the organization of the project which is being planned. For projects of the size and complexity of those reviewed at EDD, an automated, easy-to-use project tracking system would increase the project managers' efficiency and effectiveness in planning and controlling projects.

At a minimum the automated project tracking system should provide the following:

- Information regarding actual versus planned time schedules, staffing, productivity, and budget
- Graphic capability such as Gantt or PERT/CPM
- Individual work definitions
- Time and cost data
- Variance analysis of plan versus actual
- Custom reporting capabilities
- Standard detailed and summary reports
- Automatic scheduling based on work definition.

CONDITION

In lieu of an automated project tracking system, EDD has implemented across all projects reviewed a spreadsheet based tracking system. This system provides information regarding task assignments, actual versus planned schedules, and budget hours in the form of planned versus actual. At least one of the projects (JSA) has supplemented this system with programs to extract and summarize information for management purposes.

Although the current method does provide the project manager with a means to track individual activities, the system lacks many of the requirements listed above. The current tracking system does not provide summary information, graphic capability, or custom reporting capability. The EDD project managers are unable to assess whether an individual is over or under committed from the current standard project reports. Additionally, without CPM capability, it is difficult for the project manager to assess whether or not a delay in one activity will affect the overall project schedule. These deficiencies may limit the project managers ability to recognize and respond to resource or scheduling problems on a timely basis.

RECOMMENDATION

The EDD should acquire an automated project tracking system. Similar to the current system, a model plan should be developed which could be used as a baseline for projects to work from. The project manager and selected staff should be trained in use of the tool

and required to use it. EDD should build formal procedures around this tool to ensure transmission of exception and summary data to the project manager and other review organizations. This recommendation should be reviewed in conjunction with the EDD's plan to implement a systems development methodology.

FINDING

EDD lacks formal, documented quality assurance procedures to ensure that all system development work products are accurate, complete and appropriate. Procedures should address quality assurance over products produced during each phase of systems development from system definition through migration to production.

CRITERIA

Quality assurance is an important process which must be considered during each phase of development throughout the project. Quality assurance ensures that both the work processes and products developed are of high quality. The fundamental process of assuring quality includes:

- Determining what needs to be done to satisfy both the technical and quality requirements of the work assignment before it has begun
- Monitoring the work performed during the assignment to ensure that quality standards are being satisfied
- Reviewing the final work products to ensure the desired quality was attained
- Reviewing the movement of these products between environments.

The quality assurance process has three general attributes. First, it ensures that the systems analysis and design accurately reflects all information gathered, and are consistent within the scope of the project. Secondly, all objectives of the work effort have been met, and lastly, are appropriate keeping in mind the project's overall objectives. Lack of comprehensive quality assurance procedures may result in delivery of incomplete or inaccurate work products. Maintenance and problem resolution for systems of poor quality tend to be costly and time consuming.

Quality assurance, although a management function, should be shared by the individual performing the work, peers, the project manager and the approving authority within the organization.

CONDITION

Clearly various forms of quality assurance are taking place on all the EDD projects reviewed. All project managers feel accountable for the quality of their products. Each of them have instigated internal procedures such as program walk-throughs for review purposes. Additionally, many development and programming standards exist which deliverable products are reviewed for conformance. The users assigned to the project teams also provide ongoing quality assurance as deemed necessary by the project manager.

There are also several organizations external to the project team which are involved in the quality assurance process. The Unified User Liaison Network coordinates and conducts a review and sign-off of all contractual deliverables prior to being presented to the Automation Review Committee for final approval. The Production Services within the Data Processing Division reviews and approves all batch applications for production. The Integration Group, in the Automation Administration Division, performs interface testing for online applications prior to production turnover. The recently submitted reorganization proposes consolidation, with expanded responsibility, of these last two units in the Software and Production Section of the Data Processing Division.

Although the EDD has these quality assurance mechanisms in place, the effectiveness of the process is questionable due to the lack of procedures. The quality assurance efforts are fragmented with specific responsibilities unclear and executed on an informal basis. Additionally the Integration Group, as a relatively new organization, has not established its full defined role as yet.

One of the most critical areas requiring comprehensive quality assurance is the production environment. To properly control the operation of this environment and change to this environment, detailed procedures are required to ensure controlled migration of programs and data. One deficiency noted during the review process, was that after systems are tested by the Integration Test Group they are turned back over to the project team rather than migrated directly to production. Procedures do not exist to ensure further changes are not made without the appropriate review. EDD indicated that they are in the process of documenting and changing this process.

RECOMMENDATION

The EDD should develop and document its quality assurance program. As quality assurance is typically an integral part of the system development process, this recommendation should be included with the EDD's plan of implementing a systems development methodology.

The quality assurance function should be centralized into a single unit separate from applications development, reporting to as senior a level of management as possible. Quality assurance should have the authority to "fail" tests, conversions or product transfers to production. The Production Readiness Group in the proposed organization appears to fill this role.

FINDING

Project development estimates for each of the projects reviewed significantly underestimated actual systems development costs.

CRITERIA

Estimation is not only used by executive management and the State's control agencies to determine whether or not to undertake a systems development, but also by project managers who are responsible planning specific work assignments and identifying problems during the course of the project. The estimation should answer, within a certain variance, the questions of:

- What resources are necessary to perform a project?
- How much will it cost?
- How long should the project last?

A formal estimation process consists of three components: (1) A project work model, or sample work plan, to assist in identifying the work to be performed, (2) a historical data base of information which provides quantitative empirical data regarding how much effort is required to perform similar work, and (3) a method for customizing the project work model and historical data base to develop reliable estimates for the particular project.

CONDITION

During the development process for the projects reviewed, a documented, formal estimation process did not exist. Since the EDD had limited experience performing similar projects, there did not exist a foundation from which to base estimates. Without a reasonable, historical based estimation process, projects may experience unplanned cost overruns, schedule delays, and inadequate staff resource commitments. Several of the projects reviewed had contract amendments for work which was originally planned for EDD staff, or which was not included in the initial plan.

EDD has made progress towards implementation of an estimation process based on quantitative data. A document has been produced which includes estimates based on actual performance for many system development activities.

RECOMMENDATION

The EDD should continue to develop its estimation procedures. It should also evaluate the use of automated estimation tools in conjunction with its plan to acquire a systems development methodology.

POSITIVE FINDINGS

In addition to the seven findings noted in the prior section, many positive observations were made regarding progress achieved in the last couple of years to improve the overall effectiveness of the systems development process at EDD. The following are the most notable of these findings:

Extensive Project Reporting

The EDD currently has methods in place to report its project activities effectively to management. Many forms of communication regarding project responsibilities and status have been implemented. Of the projects reviewed, project plans were generally produced and distributed weekly, detail status reports weekly (from the vendor), and management status reports monthly. There are also various status meetings held to discuss and resolve project issues. In addition to project team meetings, the Automation Review Committee meets weekly, and the Automation Policy Group meets as necessary to resolve major issues such as a change in scope or contract amendment.

Project Organization

There were several positive aspects to the way EDD has organized its project teams. Each project team was comprised of a significant amount of user representation. The responsibility for creating user deliverables, such as training material and user documentation, rested with these user representatives. Each project team had dedicated responsibility for one systems development effort, and was staffed with a full-time project manager. There were also two external entities which provided additional support to the team, a transition team and the Unified User Liaison Network. These groups performed varying levels of deliverable review and quality assurance.

Data Processing Organization

EDD has made significant strides in establishing organizational responsibility for various systems development functions as evidenced by the formation of the Automation Administration Division (AAD). An advantage of AAD is that all development projects are under one organization. This change has significantly improved communication

across projects. There are also two key units within the organization targeted at improving systems development. The Information Systems Planning and Support Section is currently developing a plan to implement a structured systems development methodology. The Integration Group (Production Readiness Group) is chartered with performing in-process quality assurance reviews and testing new applications prior to acceptance into production.

Development Standards

To ensure product consistency and quality, and to improve the efficiency of the systems development process, EDD has developed and implemented many development standards. Documentation and programming standards are in place, and design and analysis standards are currently under review. Currently all projects are expected to conform to these standards. The Standards Committed is responsible for ensuring the standards are maintained and approves all deviations to EDD standards.

VI. DEFINITIONS

1. Systems Development Methodology

An organized, documented set of guidelines intended to assist systems development staff through each and every task associated with planning, designing, developing, installing and maintaining data processing software.

2. Quality Assurance

The process by which products (deliverables) emanating from a systems development group are subjected to review based upon predefined criteria in order to find them acceptable or not. Quality is generally defined as the degree to which all predefined criteria are met.

3. Production

The environment an "operational" system resides in. From this environment, the organization's business activities are performed.

4. Test

The process by which a developed system is evaluated to measure its degree of completeness, or to identify errors/problems still inherent in the software. This is performed in an environment that is separated from production - to eliminate impact on users, and separate from development - to eliminate direct access by programmers so as to ensure security of the software. Testing is performed in a "test" environment.

5. Development

The process of designing and programming data processing software. This occurs in a "development" environment.

6. Environment

In the context of this study, unique and secure system libraries, resident on physically separate direct access storage locations, each requiring different security access to use.

7. Pilot

Pilot test is a production level test which allows the system to be installed in production with enhanced tracking, auditing, and the ability to revert back to the old system, should problems be determined to be severe enough. "Pilot" implies an environment that is not considered full production, either because of the enhanced monitoring, reduced volume, or revertibility in place.

Pilots are generally of two kinds:

- Parallel
- Phased.

Parallel pilots require the continued operation of the old system, or a part of it, concurrently with the new system. The old systems outputs are used to validate the accuracy of the new system.

Phased pilots implement the system in separate discrete components or subsets of data, to more easily control or react to unanticipated problems.

8. System Test Problems

Unanticipated results in the execution of a program or programs prior to implementation in production. This occurs in a highly structured environment which predefines tests and results.

9. Problem Incidents

A method by which employees of the EDD record potential errors, unanticipated products, difficulties or necessary changes to a system after implementation and during production.

10. Purification Rules

A methodology which identifies for each file and data element, the logic for editing and transforming that data for use on the newly created file.

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