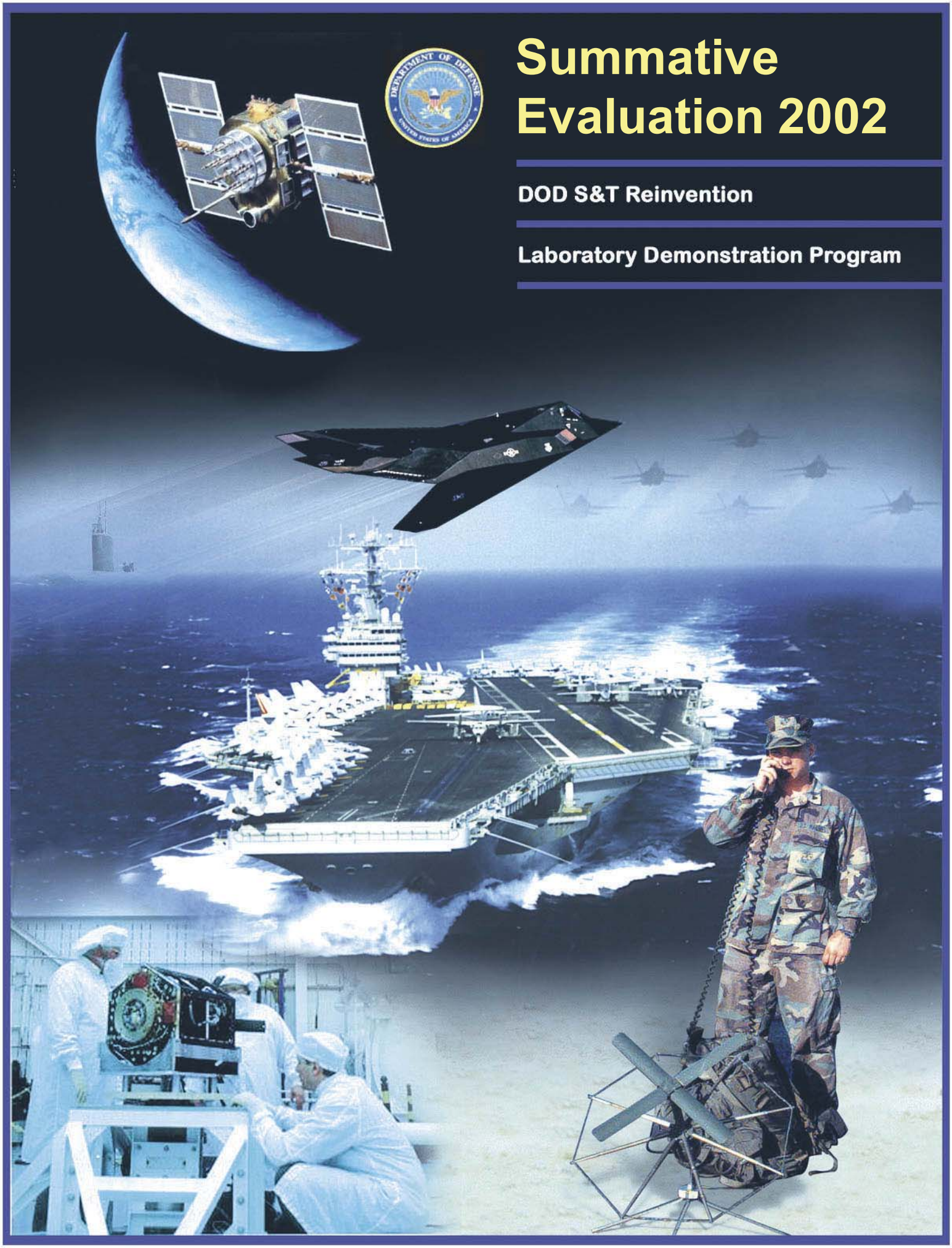
Summative Evaluation 2002

DOD S&T Reinvention

Laboratory Demonstration Program



2002 Summative Evaluation
DoD S&T Reinvention Laboratory Demonstration Program

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EXECUTIVE SUMMARY

The DoD S&T Reinvention Laboratory Demonstration Program, modeled after the first Navy Demonstration Project in "China Lake" and San Diego, was authorized by the National Defense Authorization Act for Fiscal Year 1995 and amended by the 2000 Defense Authorization Act. The amendment removes the shared OPM authority over the demonstration and gives sole authority to the Secretary of Defense. The project is open-ended and has no limits on the number of employees to be covered. The program was designed to achieve the following objectives:

- Improve the effectiveness of DoD laboratories through a more flexible, responsive personnel system
- Increase line management authority over human resource (HR) management
- Recruit, develop, motivate and retain a high quality workforce
- Adjust workforce levels to meet strategic program and organizational needs.

Another unstated objective was to permit the laboratories to test a variety of broad-banding and pay-for-performance systems. The labs implemented the following interventions:

- Broadbanded pay systems and simplified classification
- Pay for performance, including contribution-based pay
- Recruitment and staffing changes: categorical rating, extended probationary periods, distinguished scholastic achievement appointments, modified term appointments, and voluntary emeritus corps
- Enhanced training and development, critical skills training and sabbaticals.

Past experiences with demonstration projects show that the acceptance of new programs is higher when the interventions are designed locally to fit the organization's mission and culture. The new systems provided the labs with greater flexibility to design mission-responsive human resource management (HRM) systems. Results of the interventions are detailed below.

Between 1997 and 2001, eight of the twelve labs in the program implemented their projects in two waves (Wave 1: 1997 and 1998; and Wave 2: 1999) covering about 25,000 employees. A ninth lab began its demonstration project in May 2002. It took the labs an average of two years and two months to obtain project approval and proceed to implementation. The projects were implemented in a turbulent environment and were negatively affected by downsizing, major reorganizations and regionalization of HR services in DoD. Based on the data collected through 2001, the above objectives were partially met. Not all labs were equally successful in implementing their programs and gaining employee support. Success was determined as much by the design and structure of the new HRM systems as the way they were implemented and managed. Critical success factors include effective performance management practices, good communication by managers, and procedural justice. These result in trust in management

and employee and union support. As expected, the Wave 1 labs have generally progressed further than the Wave 2 labs.

Laboratory Effectiveness
There has been a limited but positive impact of the demonstration on laboratory effectiveness. The impact was most positive on human capital management, perceived use of innovative practices, streamlined classification, compensation and performance management processes. Research productivity increased significantly in one of the labs.

Line Management Authority and Demonstration Project Support
The demonstration program has had the strongest impact on management authority to determine employees' pay and classification, as well as authority to hire employees with the right skills. Overall support for the demonstration projects continues to rise and has reached 55% in the Wave 1 labs (support ranges from 39% to 65%). None of the labs have yet reached the 66% approval benchmark set by previous projects, which typically takes more than 5 years.

Recruitment, Motivation and Retention of a High Quality Workforce
To date, the demonstration project has had only a moderate, positive impact on recruitment and retention. This may be due to limited hiring and a very competitive job market during the period of this evaluation. However, the flexibility to pay higher starting salaries has been helpful and the labs are retaining more of their top performers. There has also been a positive effect of the demonstration on motivation and willingness to work harder since the implementation of pay for performance.

Classification, Broadbanding and Pay for Performance
The labs were most successful in implementing an integrated approach to job classification, compensation and performance management. Broadbanding schemes in the different labs have been designed to fit the career paths in each of the labs. Pay for performance, or contribution-based pay, was implemented to change the culture from one of entitlement, where pay is primarily based on longevity, to one where performance matters and determines pay increases. The labs have successfully addressed a serious problem identified in OPM's recently published White Paper, "A Fresh Start for Federal Pay: The Case for Modernization" (OPM, 2002). The report highlights the inability of the current pay system to reward individual achievement and results.

The impact of broadbanding and pay for performance on salary cost has been minimal. Our results show differences amounting to not much more than a step increase, when compared to pay progression under the General Schedule system. So far differences in broadbanding design have not affected cost, but pay pool funding does. Annual percentages below two percent of payroll tended to result in slower pay progression compared to the General Schedule system.

Staffing
Unlike the integrated classification, compensation and performance management interventions, which involved totally redesigned and automated processes, changes in the

staffing area were implemented without any process reengineering. For this reason, and due to intervening variables (such as the mandated downsizing and hiring freezes), the interventions had minimal effects and, with a few exceptions, did not significantly improve staffing timeliness or applicant quality. Nevertheless, managers in the demonstration labs were more satisfied with the quality of applicants and preferred categorical rating of candidates to the usual "rule of three." One lab mentioned an increase in diversity as a result. Categorical rating had no negative impact on the hiring of veterans.

Modified Reduction-in-Force

In order to facilitate mandated reductions, reduction-in-force (RIF) regulations have been modified to better match the demonstration career paths and banding schemes. Despite large-scale downsizing in the DoD labs, few employees have been separated through RIFs and the new RIF procedures were not fully tested. Voluntary retirements and separation incentives, as well as retirements and resignations in lieu of involuntary actions, have been more common. These have reduced the organizational turmoil resulting from large-scale RIFs.

Adverse Impact Analyses

There were no consistent differences across labs and occupational groups in rating distributions and pay progression by race, gender or other non-performance factors. But scattered disparate ratings by race were found both before and after implementation, indicating that this effect was not due to the demonstration. Employee perceptions of the fairness of adverse actions or adequacy of procedures for reconsidering performance ratings have not changed significantly under the demonstration project.

Criteria for Effective Pay-for-Performance Systems

Implementing pay for performance in the public sector involves a major change in culture. The success of the new pay systems has been evaluated against seven criteria cited by compensation expert Ed Lawler as prerequisites for effective pay-for-performance systems. Two of the demonstration projects, the Army's Aviation and Missile Research Development and Engineering Center (AMRDEC) and the Air Force Research Lab (AFRL) have met most of the seven criteria (AFRL met five and AMRDEC met six). Two historic demonstration projects, the original Navy Demonstration Project and the NIST Demonstration met six of the seven criteria and were made permanent by Congress.

The Role of Pay in Recruitment and Retention

While adequate pay is important to attract quality candidates, employees in the DoD labs remain in their jobs for different reasons, including job challenge, satisfaction with management, and learning and development opportunities. Developmental opportunities can enhance retention of younger employees, especially in view of the large number of baby boomers that are expected to retire in the near future.

Union Role
Labor unions as representatives of their bargaining units have to be consulted prior to implementation of a demonstration project because it involves changes in negotiated bargaining unit agreements. The most effective approach has been to involve unions early and establish effective partnerships to gain their support. In the absence of union support, some of the labs have implemented their projects for non-bargaining unit employees only. To date, 29% of demonstration employees are in a bargaining unit. Unions tend to be skeptical of pay-for-performance systems because they require trust in management to administer the systems fairly. Our data show that, in general, trust levels have not been adversely affected by the pay-for-performance programs and that as trust levels increase, support for the demonstration project increases as well.

Managers play a critical role in the success of the demonstration projects and those managers who communicate honestly and effectively are most likely to gain trust and demonstration project support. Unions, on the other hand, need to be open and willing to experiment with new pay-for-performance systems and give the demonstration projects time to prove themselves.

One of the labs, AMRDEC, which has the highest demonstration project support (65%) and trust levels (71%) of all participating labs, provides a good example of a project that has worked successfully with its union. After reviewing the recent external evaluation results, the Executive Board of AFGE Local 1858 approved a 5-year extension of the demonstration project.

RECOMMENDATIONS

The following recommendations are made to maximize the effectiveness and fairness of the demonstration projects:

(1) Ensure management accountability for fair and effective operation of pay-for-performance systems and continue the use of finite merit pay budgets to ensure cost control.
(2) Provide ongoing training in demonstration procedures, compensation and performance management, and interpersonal communication.
(3) Continue to monitor any potential adverse effects.
(4) Continue to track the cost of broadbanding compared to the General Schedule system.
(5) Redesign staffing processes and implement best practices to maximize the effectiveness of staffing interventions.
(6) Evaluate staffing interventions not fully tested.
(7) Continue a streamlined evaluation.

Finally, each lab needs to review its own results to determine where it falls short of benchmarks set by previous demonstration projects, or levels of effectiveness identified in this evaluation report. Some of the labs are well on their way to building high-performance organizations by changing their culture. In addition, it has to be recognized that managers play a critical role in the motivation and retention of employees. Selecting

managers with strong interpersonal and communication skills will contribute significantly to the success of the demonstration projects and organizational effectiveness in general.

EXECUTIVE REPORT AND RECOMMENDATIONS

The DoD S&T Reinvention Laboratory Demonstration Program

The DoD S&T Reinvention Laboratory Demonstration Program was authorized by Section 342 of the National Defense Authorization Act for Fiscal Year 1995 and amended by the 2000 Defense Authorization Act. Section 1114 removes the shared OPM authority over the demonstration and gives sole authority to the Secretary of Defense to implement more flexible personnel systems modeled after the successful Navy Demonstration Project in "China Lake" and San Diego, California, implemented in 1980. The project is open-ended and has no limits on the number of employees to be covered. The DoD S&T Reinvention Laboratory Demonstration Program was established to achieve the following objectives:

- Improve the effectiveness of DoD laboratories through a more flexible, responsive personnel system
- Increase line management authority over human resource (HR) management
- Recruit, develop, motivate and retain a high quality workforce
- Adjust workforce levels to meet strategic program and organizational needs.

Another unstated objective was to permit the laboratories to test a variety of broad-banding and pay-for-performance systems.

The project originally was to cover approximately 50,000 employees in 24 DoD laboratories. Three laboratories decided not to participate due to resource constraints or lack of support from their unions, and a fourth laboratory was merged into one of the existing labs. The remaining 20 labs consolidated into 12 laboratories. As of May, 2002, about 25,000 S&T employees in the first nine laboratories had been converted to the demonstration program, with about 14,000 employees remaining as a potential demonstration population in the three non-implemented labs. The labs are listed below in order of implementation:

1. Air Force Research Laboratory (AFRL): March 1997
2. Aviation and Missile Research, Development and Engineering Center AMRDEC: September 1997
3. Army Research Laboratory (ARL): June 1998
4. Army Medical Research and Materiel Command (MRMC): June 1998
5. Naval Surface Warfare Centers (NSWC): August 1998 – November 1999
6. Engineering Research and Development Center (ERDC): September 1998 – October 1999
7. Naval Research Laboratory (NRL): September 1999
8. Naval Undersea Warfare Centers (NUWC): September 1999 – July 2001
9. Army Communications Electronics Command (CECOM): May 2002
10. Tank-Automotive and Armaments Command (TACOM)
11. Army Soldier Biological and Chemical Command (SBCCOM)
12. Army Simulation, Training, and Instrumentation Command (STRICOM).

After a slow and difficult, phased implementation process – which included a lengthy review process and obtaining union agreement where bargaining unit employees were involved – only one lab, AFRL, will have completed a 5-year test (due to lags in data collection our data analyses cover four years). The seven remaining implemented labs covered by this evaluation will have participated from two to four years (our data cover one to three years). Currently, 29% of the participants in the DoD Laboratory Demonstration Program are bargaining unit employees and 71% are non-bargaining unit employees and managers. For the nine labs that have implemented their projects, it took an average of two years and two months to obtain project approval and proceed to implementation.

The demonstration program was implemented in a turbulent environment. Intervening variables that have negatively affected the project include mandated workforce reductions, reorganizations, the job market, a booming economy during the years covered by this evaluation, and the regionalization of HR services in DoD.

The labs implemented the following interventions:

- Broadbanded pay systems and simplified job classification
- Pay for performance, including contribution-based pay
- Recruitment and staffing changes: categorical rating, extended probationary periods, distinguished scholastic achievement appointments, modified term appointments and voluntary emeritus corps
- Enhanced training and development, critical skills training and sabbaticals.

To make reporting more manageable, we have divided the labs into two waves: those implemented in 1997 and 1998, referred to as Wave 1; and those implemented in 1999, referred to as Wave 2. The remaining labs are referred to as non-implemented and include CECOM which implemented in May 2002. When possible, data are also reported for three comparison groups: (1) workforce data drawn from similar science organizations in OPM's governmentwide Central Personnel Data File (CPDF), (2) survey and workforce data from the non-implemented labs, and (3) the original "China Lake" or Navy Demonstration Project, which serves as a benchmark for some measures. The results for the interventions are summarized below and organized by demonstration project objectives.

RESULTS

Under Chapter 47, 5 USC, a demonstration project is expected to run and be evaluated for a five-year period. If this standard is applied to the first two waves of labs, the evaluation covers a period of testing that was about 40% complete in 2001 (60% to 80% for the Wave 1 labs, and 20% to 40% for the Wave 2 labs). The first two waves of labs have partially met the above four objectives set by DoD. Not all labs were equally successful in implementing their programs and gaining employee support. Success was determined as much by the design and structure of the new HRM systems as the way they were implemented and managed. This report identifies critical success factors, including effective performance management practices, good communication, and procedural

justice. These factors result in trust and employee and union support. As expected, the Wave 1 labs have generally progressed further than the Wave 2 labs.

Past experiences with demonstration projects show that the acceptance of new programs is higher when the interventions are designed locally to fit the organization's mission and culture. The new systems provided the labs with greater flexibility to design mission-responsive human resource management (HRM) systems. Results of the interventions are detailed below.

Demonstration Project Support

Overall support for the demonstration projects continues to rise and has reached 55% in the Wave 1 labs, with support in individual labs ranging from 39% to 65%. None of the labs have reached the 66% approval benchmark set by previous demonstration projects. In the original "China Lake" project, it took more than five years to gain the support of two thirds of the employees. Support for this and another historic pay-for-performance project, NIST (National Institute of Standards and Technology), leveled off at around 66% to 70% after five to six years.

Although the demonstration projects place additional burdens on managers, they now have more authority over HR and like it better than the General Schedule (GS) system. Management support of the project is significantly higher than employee support and ranges from a low of 39% to a high of 83%, compared to 34% and 63%, respectively for non-supervisors. For managers, the most significant change is increased authority over HR and increased supervisory discretion, while employees are mostly affected by the new pay-for-performance systems.

When asked what they liked best about the demonstration project, managers most frequently mentioned flexibility and the ability to reward high performers. Employees liked the ability to advance faster than under the GS system and the fact that there were incentives to do a good job. One employee stated that "the old system was a clock."

Demonstration project support was highly correlated with effective and fair performance management and procedural justice. Labs with positive labor-management relations also enjoyed higher demonstration project support.

Laboratory Effectiveness

The first objective of the demonstration program was to improve the effectiveness of the laboratories through a more flexible, responsive personnel system. Metrics that were examined include the following: (1) strategic orientation; (2) management of the workforce; (3) efficiency of and satisfaction with personnel processes; (4) cross-functional coordination and teamwork; (5) laboratory quality; and (6) customer orientation and customer satisfaction.

There has been a limited but positive impact of the demonstration on laboratory effectiveness (see Chapter 2). A limited impact is expected given the multivariate nature

of factors influencing laboratory effectiveness, the many intervening variables that had a negative impact during the past five years, and the fact that the interventions were limited to only one area, human capital management. Many other factors, such as strategic planning, funding, selection of research projects, cross-functional coordination, cooperative research and development agreements with industry and academia, technology transfer, and economic conditions all contribute to laboratory effectiveness. The demonstration project has had a positive impact on workforce motivation, streamlined personnel processes, and increased research productivity in at least one of the labs.

Strategic Orientation

Employees in both the Wave 1 and Wave 2 labs and non-implemented labs reported increases in strategic orientation in the annual employee surveys. Perceptions of innovative practices in the labs also increased, but there were no significant differences between demonstration and non-implemented labs.

Human Capital Management

To measure management of the R&D workforce, we examined workforce motivation, workforce quality, satisfaction with management, and communication.

Motivation. Since 1999, there has been a small, statistically significant increase in willingness to work harder at the demonstration labs but not at the non-implemented labs. Job challenge increased significantly for both demonstration and non-demonstration labs, but is highest in the demonstration labs. Job satisfaction has been high in the DoD labs since 1996 and is now highest in the Wave 1 demonstration labs.

Workforce Quality. There have been increases of three to four percent in the number of employees with advanced degrees in the Wave 1 and 2 labs between 1996 and 2000. In contrast, the percentage of employees with advanced degrees declined by about two percent in the non-implemented labs.

Satisfaction with Management. There were slight, statistically significant increases in satisfaction with supervision in both demonstration and non-demonstration labs, but in 2001 satisfaction with management was lowest in Wave 2 implemented labs. This suggests that managers there are still adjusting to their new roles in compensation and performance management.

Communication. Communication was found to be a high-impact managerial competency that affected a wide range of human resource and organizational climate factors, notably satisfaction with performance management and supervision, as well as trust, which is essential to acceptance of pay-for-performance systems. None of the labs scored high on communication but all improved over time. Wave 1 labs improved the most, but there was no statistically significant difference between demonstration and non-implemented labs in 2001.

Personnel Processes

We examined classification timeliness, number of position descriptions, hiring timeliness, and satisfaction with HR services using personnel office, survey data, and focus group interviews.

Efficiency of Personnel Processes. The demonstration projects have shown significant improvements in classification timeliness. The length and number of position descriptions have been significantly reduced through redesign and automation. Since none of the hiring processes were redesigned or streamlined, there has been no consistent improvement in hiring timeliness and managers across the labs continue to complain about this problem.

Satisfaction with HR Services. We found that satisfaction with HR services tends to diminish with distance from the servicing center. Centralization and downsizing of HR staff in DoD has resulted in a shortage of HR staff who understand both the GS and demonstration systems and this made it more difficult for some of the demonstration labs to receive the customized services they need. The labs that were most satisfied with their HR services tended to have adequately staffed, on-site HR offices that understood their missions, were responsive to their needs, and made efforts to educate and improve communication with regional HR service centers.

Cross-Functional Coordination and Teamwork

Interviews with laboratory managers indicate that there is increasing coordination of research among the services and within the labs. Both cross-functional coordination and teamwork have improved in the demonstration and non-implemented labs. There was no discernible demonstration effect.

Laboratory Quality

There are many factors beyond the demonstration interventions that influence laboratory quality. Laboratory quality includes workforce quality (mentioned above) and was further assessed by the following metrics: number of annual patents, number of post-doctoral students, average annual patent income, and number of refereed publications. Generally, there were no strong positive trends in laboratory quality in either implemented or non-implemented labs. However, in at least one of the labs, ARL, research productivity increased significantly, resulting in a remarkable rise in refereed publications.

Customer Orientation and Satisfaction

Longitudinal customer satisfaction survey results were provided by a limited number of labs but did not show any increases attributable to the demonstration project. Responses to a survey item about the customer orientation of laboratory employees show increases in both implemented and non-implemented labs during the past five years, but there was no trend attributable to the demonstration project.

Line Management Authority over Human Resource Management

The second objective of the demonstration program was to increase line management authority over human resource management, primarily by delegating compensation and classification decisions to managers.

Managers report that the demonstration has had the most impact on their authority to determine employees' pay and on job classification. Perceived managerial authority to hire and to promote has increased across all labs, implemented and non-implemented. Although the pay-for-performance systems give managers better tools to identify poor performers and limit their pay increases, both demonstration and non-demonstration supervisors still view their authority to remove employees as limited.

Overall, the labs were most successful in implementing an integrated approach to job classification, compensation and performance management. Pay for performance, or contribution-based pay, was implemented to change the lab's culture from one of entitlement, where pay is primarily based on longevity, to one where performance matters and determines pay increases. This culture change has been accomplished most successfully in the Wave 1 labs and represents an important achievement. The labs have addressed a serious problem identified in OPM's recently published White Paper, "A Fresh Start for Federal Pay: The Case for Modernization" (OPM, 2002). The report highlights the inability of the current pay system to reward individual achievement and results. Past experience has shown that organizational cultures are slow to change, but the Wave 2 labs are showing similar trends as the Wave 1 labs and, over time, are expected to accomplish the culture change successfully.

Simplified Classification

Broadbanding facilitates the implementation of simplified, generic classification standards and the use of abbreviated job descriptions to streamline the classification process, reducing the amount of time and paper work spent on classification. Authority for classification is delegated to management, usually two levels above the manager classifying the job. Automated classification systems have been developed to assist managers in administering the position classification authority. Expected outcomes of the streamlined classification system include improved personnel processes and timeliness, increased management authority, and increased satisfaction with personnel services and processes.

Training for Supervisors. About two thirds of supervisors in the demonstration labs report that they have received adequate training to administer the demonstration pay system and classification authority that they had been given. In focus groups they indicated that they had learned the most from using the demonstration authorities, but some managers expressed the need for additional training. New managers expressed the greatest need for training because they had missed the extensive pre-demonstration training sessions.

Automated Classification Systems. When asked if it was easy to classify jobs using an automated system, supervisors in Wave 1 and Wave 2 labs reported significantly higher agreement than those in non-implemented labs.

Satisfaction with Classification. Among those supervisors to whom classification authority has been delegated, satisfaction with the classification process ranges from 59% to 62% and was significantly higher than for supervisors without delegated authority.

Classification Timeliness. As expected, classification timeliness improved substantially across most demonstration labs, indicating a strong positive effect of the demonstration project.

Length and Number of Position Descriptions. The demonstration labs have reduced the length of job descriptions, often by more than half. The number of position descriptions has been decreased even more dramatically.

A More Responsive, Flexible System. There was little difference between implemented and non-implemented labs in the flexibility to reassign employees within the lab, in part due to the need to consider the priority placement program.

Compensation and Broadbanding

The laboratories implemented a variety of different broadbanding systems designed to fit the career paths in each of the labs. Banding reduces the standard 15 General Schedule grades into a series of three to five bands for a given career path or occupational group. With some variation, all the labs created similar career paths for their projects, i.e., professional, administrative, technical and clerical support. The grades comprising the bands for a given career path vary across the demonstration projects.

The design of the banding schemes, the method for determining progression through a band, or movement between bands, all have cost and management implications.
To date, costs have been controlled in all the labs through finite salary increase budgets. Salary increases attributable to broadbanding and pay for performance amount to little more than the equivalent of a step increase. Although the labs used many different banding schemes, there is no indication that one scheme is more or less costly than another, because promotion policies still influence movement between bands. In some cases, where bands included higher grades (14 and 15), promotions from the lower band have been less common than under the GS system. Each banding system was designed to fit a particular laboratory's needs, and it appears that a variety of different systems can work effectively, as long as overall budget control is exercised. Pay pool funding below two percent of payroll tended to result in slower pay progression compared to the GS system.

Senior Scientific/Technical Manager Positions
An innovative feature of the demonstration is the provision of 40 DoD-wide Senior Scientific Technical Manager (SSTM) positions for preeminent bench scientists with some supervisory responsibility who do not fit the executive classification criteria. A grand total of 40 Pay Band V positions have been authorized within the entire Department of Defense for the DoD labs; 12 of these have been allocated to NRL, 16 to the Army, and 8 to the Naval Warfare Centers. This authority is an important retention tool for top quality scientists and engineers.

Supervisory Adjustments and Differentials
We found that, although supervisors generally have higher salaries than non-supervisors, some labs offer supervisory adjustments or differentials to compensate first-line supervisors who are in the same bands as non-supervisory senior experts. Although supervisors at the labs generally are not satisfied with these pay differentials as adequate compensation for the additional supervisory responsibilities, the number of dissatisfied supervisors declined over time.

Cost of Conversion from the General Schedule to Broadbanding
Conversion of employees under the General Schedule into a broadbanding system is implemented with the assurance that the employee's initial place within the band system does not result in any loss of pay. When "China Lake" converted their employees to banding, they used a base pay increase "buy-in" method to compensate for potential loss of step increases and career ladder promotions. This method was estimated to cost 2.5% of payroll. Subsequent demonstration projects chose less costly conversion methods – e.g. compensating for loss of upcoming step increases but not career-ladder promotions (estimated cost about two percent of payroll) or compensating for upcoming step increases as a lump sum rather than a salary increase (estimated one-time cost of one to two percent of payroll).

Following "China Lake", all labs in this project "bought in" upcoming step increases with base pay increases, often as a result of union negotiations. This resulted in an increased payroll cost of one to two percent upon conversion.

Performance Bonuses
Under the demonstration pay-for-performance systems, most of the labs have the flexibility to give employees bonuses in addition to or in lieu of base pay increases. Mixing base pay and bonus payouts is a cost-effective way of managing overall salary growth. Funding for bonuses ranges from less than 1% to 1.5%, or in some cases 2%, of payroll. The range of bonuses did not differ significantly between implemented and non-implemented labs, although one of the labs, NRL, has a unique feature in the form of distinguished contribution awards that were limited to about 30 employees per year and ranged from a minimum of $10,089 to a maximum of $21,471.

Pay Progression and Payroll Costs
Longitudinal salary analyses were conducted by tracking mean salaries of employees over time. Between 1996 and 2000, the average salary of scientists and engineers increased the equivalent of two to four steps in the Wave 1 labs, one to two steps in Wave

two labs, and zero to one steps in the non-implemented labs, compared to about 2.5 steps in the GS comparison group in CPDF (see Table 4.6, Chapter 4). The increase attributable to broadbanding ranges from zero to less than 2 steps, depending on the lab.

High-Grade Distribution
In general, the percentage of employees in high grades/bands increased from 1996 to 2000 in each wave and in the CPDF comparison group. Among the demonstration labs, those in Wave 1 showed the greatest average increase, but in some cases those increases were less than in the CPDF comparison group. Costs have been controlled by limiting pay increases of average or low performers or those identified as over-compensated in the contribution-based pay systems.

Advancement Opportunity and Dual Career Ladder
Satisfaction with advancement increased from 1996 to 2001 for all labs at the same rate. There was no demonstration effect. More than half of the employees in the demonstration labs agreed that they did not have to become a supervisor in order to receive more pay, acknowledging that there was a dual career ladder. Agreement was significantly lower in the non-implemented labs.

Understanding Pay Decisions
There were only slight differences between the waves on understanding how pay decisions are made. Due to extensive training and orientation efforts, Wave 1 employees had a better understanding of pay decisions under their new systems than did comparison group employees of the General Schedule system.

Perceived Fairness and Procedural Justice
The perceived fairness of pay progression under broadbanding generally increased from 1996 to 2001, with a drop around the time of implementation. This drop is primarily due to an increase in the number of undecided responses, rather than increased dissatisfaction.

The perception that pay is administered fairly increased slightly across years, at a proportional amount for all waves, with a slight decrease immediately after demonstration implementation. There is no significant difference between Wave 1 labs and non-implemented labs, indicating that there was no negative impact of pay for performance.

Individual Equity
The perceived link between pay and performance has increased significantly in all implemented labs. Similarly, the link between pay and contribution to mission increased substantially in Wave 1 labs but remained low in non-implemented labs.

External and Internal Pay Equity
We did not find the expected increase in perceived external pay equity as a result of greater flexibility in pay setting. The perception that other employers in the same area pay more than the government increased from 1996 to 2001. This was due to a booming economy at the time, and this negative trend was the same for implemented and non-implemented labs. Similarly, the perception that pay differentials in the laboratories fairly represent real differences in levels of responsibility and job difficulty, internal equity,

rose slightly across both implemented and non-implemented labs, showing no demonstration effect. Overall, both internal and external equity were low.

Pay Satisfaction

Satisfaction with pay increased significantly from 1996 to 2001 in both implemented and non-implemented labs. However, overall pay satisfaction was highest in the Wave 1 labs.

Performance Management

The new pay-for-performance systems are intended to shift the organizational culture from one of entitlement, where pay increases are based on longevity, to a culture of merit, where pay increases depend on performance or contribution to mission accomplishment. Several variations of pay-for-performance systems are being tested. There are also variations in what pay is "at risk." Pay pool funding comes from money that would have been spent for within-grade or quality step increases and promotions. For some of the labs, the general increase is part of the merit pay pool and at risk, i.e., has to be earned; in other labs it is guaranteed, as is the case under the current General Schedule system. In most labs, performance ratings are linked to pay points, ranging from zero to two or zero to four, depending on performance. The AFRL and NRL use dollar amounts or percentages corresponding to contribution scores in their payouts.

AFRL

The Air Force Research Laboratory is testing a Contribution-based Compensation System (CCS) that integrates classification and performance appraisal by assessing the contribution of an employee to the mission of the organization on the same factors that are used for classification. Each employee's contribution scores are compared to expected scores corresponding to the individual's current compensation. Pay decisions are based on whether the individual is deemed to be over- or under-compensated or at about the right level of compensation. This system allows younger, high performing employees to move up in pay much faster than under the GS system. High performers who are determined to be under-compensated can also be promoted into a higher-level band as a result of their performance, without the need for competitive promotion procedures. To date, this system has also resulted in two voluntary pay reductions of over-compensated employees to avoid performance-based actions.

ARMY

The Army Wave 1 laboratories evaluate overall performance on four to six levels, using generic rating factors. The scores are summed and averaged after performance weights have been applied to determine the overall performance score. Employees scoring above a set minimum are eligible for performance awards and the general increase. They are awarded payout "shares," the value of which varies depending on the performance scores given within that individual's pay pool. Lenient rating distributions would result in lower payout shares per person and vice versa.

NAVSEA

The Naval Sea Systems Command Warfare Centers (NAVSEA) implemented a two-level rating system (acceptable and unacceptable), called the Performance Development System, for all employees under the demonstration. Performance goals and expectations

are set by the employee and the supervisor. Only "acceptable" employees are eligible for incentive pay.

NRL

The Naval Research Lab's Contribution-based Compensation System (CCS), modeled on the AFRL system, also uses an integrated approach to classification and performance management. Basic pay adjustments are based on a comparison of an individual's contribution score to current pay, to determine if the individual is properly compensated, under-compensated, or over-compensated. In addition, NRL supervisors make a separate determination as to whether or not employee performance is acceptable; this determination is made solely to provide a basis for correction of unacceptable performance.

Supervisory Panel Review

To increase the consistency of performance ratings within laboratories and to increase employee perceptions of the fairness of ratings, all performance ratings by first-line supervisors undergo a second-level review. In most of the demonstration labs, final pay determinations are made at the management level after this review. In some of the labs, the final payout decision rests with pay pool managers after this review.

Performance Rating Trends

Most, but not all of the labs under pay for performance have made more rigorous performance distinctions and have less lenient rating distributions than before the demonstration was implemented. Ultimately, pay distinctions are made in the pay points or percentage pay increases awarded to employees.

Fairness

Among Wave 1 labs, perceived fairness of ratings dropped after demonstration implementation, mostly as a result of the culture change, and then rose again as employees and supervisors adjusted to a system that ties pay directly to ratings. Analyses by race indicate lower levels of perceived fairness for minorities than for whites, both before and after implementation of pay for performance.

Demonstration employees are less certain about the fairness of weights assigned to their performance elements, as indicated in both surveys and focus groups. There was also a feeling across the demonstration labs that supervisors who want to can still "game" the system. And, across all labs, there has been little change in the perception that there are adequate procedures in place to have their performance rating reconsidered if necessary. The demonstration project has not had any negative impact in this respect.

Perceptions of Rating Labels

Four of the Army labs implemented performance rating systems using letter grades (A, B, C, U or F) that employees found objectionable. Two of the labs changed to adjective labels (e.g., superior, exceptional, satisfactory and failure) while the other two labs kept their letter grade designations.

Trust and Communication
A key factor in the acceptance of pay-for-performance systems is trust in management. Unless employees perceive that there is procedural justice and that the system is administered fairly, they will not develop the trust levels needed to support it and will not be motivated by it. Trust levels have been tracked in annual employee attitude surveys and are slightly higher in the Wave 1 labs than Wave 2 and non-implemented labs. However, there is significant variation within the Wave 1 and Wave 2 labs.

Another important factor in the success of performance appraisal systems, and pay-for-performance systems in particular, is communication. The survey results show that managers vary in their ability to communicate expectations, provide feedback and make effective performance distinctions. Communication was also correlated with trust, indicating that managers, who communicated well, tended to earn higher trust levels from their employees.

Effects of Performance and other Factors on Pay Progression
As expected, regression analyses show that performance is becoming an increasingly important predictor of pay over time in the demonstration labs but remains a minor factor under the General Schedule system in the CPDF comparison group. Data for the longest running demonstration project, AFRL, indicate the strongest effect. This effect was actually stronger than the performance effect found in the original "China Lake" demonstration using similar regression analyses.

Adverse Impact Analyses
There were no consistent differences in rating distributions by race or gender across labs and occupational groups, but scattered disparate ratings by race were found both before and after implementation, indicating that this effect was not due to the demonstration. When differences occurred, they generally reflected lower ratings among Blacks, Hispanics, or Asians. In a few cases, race was found to have a negligible, although statistically significant, effect on pay progression – in both directions, negative and positive. No definitive conclusions can be reached with present data to determine whether factors other than performance accounted for these differences.

Grievance activity was found to rise somewhat after implementation of the pay-for-performance systems and has tended to level off in subsequent years. Employee perceptions of the fairness of adverse actions or adequacy of procedures for reconsidering performance ratings have not changed under the demonstration project. However, there is a continuing perception gap between minority and non-minority employees regarding fair treatment and advancement opportunities. This perception gap has actually narrowed in both the Wave 1 and Wave 2 labs, while remaining unchanged in the non-implemented labs.

Lawler's Criteria for Successful Pay-for-Performance Systems

Implementing pay-for-performance systems in the public sector involves a major change in culture. Lawler (1981) spelled out seven criteria for successful pay-for-performance systems: (1) significant rewards can be tied to performance, (2) information is communicated about how rewards are given, (3) supervisors are willing to explain and

support the reward system, (4) rewards can vary widely depending on performance, (5) meaningful performance appraisal sessions can take place, (6) performance can be objectively and inclusively measured, or (7) high levels of trust can be developed between supervisors and subordinates. We examined the demonstration projects for these criteria. The results indicate that two of the Wave 1 labs are close to meeting most of the criteria, six for AMRDEC and five for AFRL, while the remaining labs currently meet three or four. Where the labs fell short, the issues were mostly insufficient communication about the pay-for-performance system and inadequate performance feedback.

Recruitment and Retention

A third objective of the demonstration program was to recruit and retain a high quality workforce. Workforce quality was examined earlier as part of laboratory effectiveness. To assess the effect of the demonstration on recruitment and retention, we measured offer/acceptance ratios, starting salaries, and turnover by performance.

Offer/Acceptance Ratios

Unfortunately, data limitations make it impossible to confirm any improvement in offer/acceptance ratios. When they were available, the data did not indicate any statistically significant improvement as a result of the demonstration. However, focus group interviews at some of the labs suggest the demonstration has improved the timeliness with which the labs make offers of employment to candidates.

Starting Salaries

Although small numbers of new hires made it impossible to draw conclusions about other occupations, starting salaries for Scientists and Engineers are highest in Wave 1 labs and higher in Wave 2 than in non-implemented labs. Managers in the focus groups confirmed that higher salaries made it easier to attract qualified candidates.

Turnover by Performance

It was expected that the demonstration program would facilitate retention of the highest-performing, most critical employees and turnover of poorer-performing employees, especially among mission-critical scientists and engineers. Due to the differences in rating distributions, ranging from two to five levels, it was difficult to make reliable comparisons using turnover data. As part of the original evaluation plan, a new methodology for measuring turnover by criticality to mission called “Starturn” was tested. For research purposes only, supervisors were asked to make confidential ratings of the “criticality to the mission” of their scientists and engineers on a scale of 1 to 10. Although this methodology was used by only a few of the labs, where the numbers of “criticality” ratings were large enough to be meaningful, turnover was significantly lower among highly rated employees and higher among employees with lower ratings. This effect is attributable to the demonstration pay-for-performance systems.

The Role of Pay in Recruitment and Retention
While adequate pay is important to attract quality candidates, employees in the DoD labs remain in their jobs for different reasons, including job challenge, satisfaction with management, and learning and development opportunities.

Staffing

The demonstration plans included a variety of recruitment and staffing changes intended to improve the quality of new hires and speed up the hiring process. These included distinguished scholastic achievement appointments, modified term appointments, lab-based examining, extended probationary periods, categorical rating of job candidates, and a voluntary emeritus corps.

Interventions in the staffing area have had a less significant impact. This was due in part to intervening variables, such as the mandated downsizing and hiring freezes, which have been in place during most of the period of this evaluation and prevented a full test of the interventions. In contrast to the integrated classification, compensation and performance management interventions, which involved totally reengineered processes and new automated HR tools, the staffing changes were implemented in a system that, with a few exceptions, operated largely unchanged. Without streamlined processes or application of best practices, the interventions had minimal effects and did not significantly improve staffing timeliness or applicant quality.

Despite the above limitations, managers in the demonstration labs were more satisfied with the quality of applicants and preferred categorical rating of candidates to the usual "rule of three" because it provides them with a much larger pool of applicants from which to choose.

Categorical Rating
Several of the labs have adopted categorical rating for selection in place of the previous "rule of three." Under categorical rating, all qualified candidates are grouped into one of three categories: basically qualified, highly qualified, or superior. With limited exceptions, veterans' preference points are added in before assignment to a category, and 10-point disability preference eligibles "float" to the top of the group that is certified. Where categorical rating has been used, managers were very positive about the results. Generally, those who had used the system felt that it had improved hiring timeliness (supported by timeliness data) and that it provided a larger pool of qualified candidates. One of the labs noted that the new system also had some benefit in adding diversity to the lower grade levels. Another lab mentioned that categorical rating had "streamlined the process," that it was "more flexible than the old system," and that it was the "best component of the demo." There was no significant difference in the percentage of veterans hired under categorical rating and the "rule of three." This intervention was also tested in the USDA demonstration project and found to result in the hiring of comparable or higher percentages of veterans when compared to hiring under the "rule of three."

Modified Term Appointments
Many labs adopted 5-year term appointments that allow lab directors to extend term appointments to six years (compared to four years permitted under Title 5) and, to

convert term appointments to career-conditional status. Although we found that the labs that implemented this provision actually reduced the number of term appointments in the past five years due to mandated reductions, focus groups indicated that the authority gave them needed flexibility when there was a slowdown in hiring for permanent positions. This intervention needs to be further tested in an environment without hiring freezes.

Extended Probationary Period

Probationary periods have been extended from one year to two or three years for scientists and engineers at several of the labs (and for other career paths at a few labs) to give supervisors more time to evaluate performance and allow new researchers more time to "prove" themselves. Although virtually all terminations have occurred within the first year, supervisors are pleased with the flexibility, and so far we have found no negative effect on employees. It has not been possible to evaluate this flexibility fully because this demonstration has been implemented during a time of limited hiring, when supervisors were reluctant to let employees go.

This intervention was tested in a previous demonstration project with the National Institute of Standards and Technology (NIST). At NIST, it took managers several years to take advantage of the longer probationary period. While no involuntary separations were found in analyses of the workforce data, focus groups with managers revealed that they encouraged employees to leave if they did not work out. These separations then showed up as voluntary turnover in the workforce data.

Distinguished Scholastic Achievement Appointment Authority

Many of the demonstration labs feature a distinguished scholastic achievement appointment authority (not to be confused with the Outstanding Scholar Program) designed to increase the quality of new hires and improve hiring timeliness. This authority allows the labs to hire applicants with a GPA of 3.5 or higher in specific fields of study at a higher salary level than normally would be possible.

Among those that used this authority, several managers had not found it useful but at least one lab considered it their "primary recruiting tool." Neither quality of new hires nor hiring timeliness showed a consistent pattern across the labs. Unfortunately, not all the labs provided data on the use of this authority.

Voluntary Scientist Emeritus Corps

One of the most interesting interventions allows lab directors to offer retired or separated employees voluntary, unpaid positions to help the lab retain valuable technical expertise and experienced mentors. It also gives older employees the opportunity to continue with challenging work at their own pace while drawing retirement pay. Although the numbers are small, as one might expect, the three labs using this authority are very pleased with the program.

Direct-Hire Authority for Non-Citizens

Only one lab, NRL, implemented this authority which allows hiring non-citizens if there are no qualified U.S. citizens in the applicant pool. Although the numbers actually hired under this authority were in single digits, focus group respondents perceived a trend of increased hiring of non-citizens.

Overall Satisfaction with Staffing and Recruitment
Satisfaction with staffing and recruitment was examined with a series of survey items across time and in focus groups. Satisfaction with the hiring process increased steadily but there was little or no demonstration effect.

A noteworthy finding was a strong correlation between perceived staffing fairness and quality of new hires. While governmentwide surveys often show low percentages of employees agreeing that competition for jobs is fair and open, the quality of those hired or promoted can significantly improve this perception.

Flexibility to Reduce the Workforce
When supervisors were asked about the flexibility to reduce the workforce (using modified term appointments), survey data suggest that the longer they are under the demonstration, the less likely they are to feel that they have the flexibility they need. This may be due to the fact that the use of modified term appointments was limited by hiring freezes. Nevertheless, this is a flexibility that is desired by many agencies and likely to prove useful in the future.

Staffing Timeliness
Hiring timeliness was a problem before and has not been substantially improved by the demonstration project, mostly because none of the existing processes were redesigned and streamlined when the demonstration flexibilities were implemented. Virtually every focus group, at every lab, complained about "time to hire," and survey data confirm this.

Perceived Quality of New Candidates
Although measures of quality such as college GPA, number of publications, highest degree achieved, and professional society memberships did not indicate consistent increases in quality of new hires over time, survey responses indicate that perceptions of new hire quality have become increasingly positive in the Wave 1 labs. Satisfaction with new hires and the perception that "this organization is able to attract high-quality candidates," increased in Wave 1 labs and was higher than in Wave 2 or non-implemented labs. Supervisor perceptions of new hires were also more positive among Wave 1 than among Wave 2 or non-implemented labs.

Training and Development

The demonstration labs have implemented a variety of programs to promote frequency of use of sabbaticals, and revised training regulations to support further education and encourage new ideas/technology through professional development. Data on the use of these interventions are too limited to show any particular pattern. Survey data indicate that a majority of employees at all the labs, including non-implemented labs tend to be satisfied with their opportunities for training and believe their training has been adequate. And although use of sabbaticals has recently increased at a few of the labs and focus group comments are positive, use of this authority remains limited, probably due to staff shortages. However, in view of the expected large number of retirements of baby boomers, continuing to provide training and development opportunities to younger staff can serve as an important recruitment and retention tool.

Modified Reduction-in-Force

A fourth objective of the demonstration program was to adjust workforce levels to meet strategic program and organizational needs. In order to facilitate mandated reductions, reduction-in-force (RIF) regulations have been modified to better match the career paths and banding schemes. Also, different formulas are used for crediting additional years based on performance. Despite the large-scale workforce reductions in the DoD labs, few employees have been separated through RIFs. In general, RIF is an unpleasant and disruptive process and voluntary retirements and separation incentives, as well as retirements and resignations in lieu of involuntary actions, have been more common and have reduced the organizational turmoil resulting from large-scale RIFs.

Union Role

Labor unions as representatives of their bargaining units have to be consulted prior to implementation of a demonstration project because it involves changes in negotiated bargaining unit agreements. The most effective approach has been to involve unions early and establish effective partnerships to gain their support. In the absence of union support, some of the labs have implemented their projects for non-bargaining unit employees only. To date, 29% of demonstration employees are in a bargaining unit. Unions tend to be skeptical of pay-for-performance systems because they require trust in management to administer the systems fairly. Our data show that, in general, trust levels have not been adversely affected by the pay-for-performance programs and that as trust levels increase, support for the demonstration program increases as well. Unions need to be open and willing to experiment with new pay-for-performance systems and give the demonstration projects time to prove themselves.

One of the labs, AMRDEC, which has the highest demonstration project support of all the participating labs (65%) and highest trust levels (71%), provides a good example. After reviewing the recent external evaluation results, the Executive Board of AFGE Local 1858 approved a 5-year extension of the demonstration project.

Organizational Culture

Our evaluation revealed a number of factors that have a positive impact on demonstration project support. The most important factor predicting demonstration project support was performance management, including the following aspects: satisfaction with advancement and pay, satisfaction with the appraisal process, procedural justice, and perception of a pay-performance link. Several organizational climate or culture variables were also correlated with demonstration project support. These are some of the same factors that characterize high-performance organizations: communication, satisfaction with management, trust, and labor management relations. Managers play a critical role in the success of the demonstration projects, and those managers who communicate honestly and effectively are most likely to gain demonstration project support.

Recommendations

Based on the data collected through 2001, the main objectives of the demonstration programs were met to varying degrees by the participating labs. There is evidence of improved laboratory effectiveness and increased line management authority over human resource management. Recruitment, development, motivation and retention of a high quality workforce have been enhanced by the demonstration interventions, and workforce levels have been reduced, as mandated. As expected, the Wave 1 labs have generally progressed further than the Wave 2 labs.

Although the results of this summative evaluation have been aggregated by wave, it needs to be recognized that there are significant differences between the labs in each of the two waves evaluated. The longest running labs tend to show the most positive results, but this does not hold true for all measures. We propose seven recommendations to ensure that the demonstration projects maximize effectiveness and fairness.

1. Ensure management accountability for effective operation of the pay-for-performance systems. Cost control can be exercised most effectively through finite merit pay budgets. But managers also have to be held accountable for using their delegated HR authorities fairly and effectively. Leading private-sector companies with pay-for-performance systems administer employee surveys to track the fairness and effectiveness of their systems. Brief surveys can be employed for this purpose to track key items related to fairness, procedural justice and trust over time.

2. Provide ongoing training in the demonstration project for new supervisors and additional training for managers in compensation and performance management. Communication is a critical aspect of an effective performance management system, and managers need to spend more time coaching employees by explaining what is expected, and providing ongoing feedback on their performance throughout the year. Feedback needs to address what employees do well, providing positive reinforcement of successful performance, and candidly addressing areas where improvement is needed.

3. Continue to monitor any adverse effects and procedural justice issues related to the implementation of pay for performance. Where improvements are needed and problems are identified, actions must be taken. For instance, the factors on which employees are rated and the weights assigned to these factors are not always viewed as fair or as reflecting the most important aspects of an employee's job. This issue was raised in focus groups and is supported by the survey results. Employees could be asked to volunteer for action planning groups to make recommendations to management.

4. Continue to track the cost of broadbanding. Cost control can be most effectively exercised through the use of finite merit pay and bonus budgets. Labs, such as the Naval Warfare Centers and NRL are industrially funded and have built-in budget discipline.

5. Examine and redesign staffing processes (a) to ensure that managers understand their roles in the recruitment process and to encourage management involvement, and (b) so that the most effective recruitment processes are used for the timely hiring of quality candidates. Best practices should be identified, shared and followed. Labs looking for better ways to select high-quality candidates may want to use competency-based qualifications currently being pilot-tested by OPM.

6. Continue to evaluate those staffing and recruitment interventions that were not fully tested due to limited hiring, i.e., categorical rating of candidates, modified term appointments and distinguished scholastic achievement appointments.

7. Continue a streamlined evaluation. Although we do not recommend that the external evaluation continue at the same level of detail as in the past five years, there should be continued evaluation of the issues cited above.

Each lab also needs to review its own results to determine where it falls short of benchmarks set by previous demonstration projects or levels of effectiveness suggested in this evaluation report.

Finally, it is important to remember that pay is not the only recruitment and retention tool. While pay is important in attracting qualified candidates, employees remain for different reasons, including the challenge of the work, competent management, opportunities to learn and develop, and to be part of an organization with an important mission. Some of the labs are well on the way to building high-performance organizations by changing their culture. Managers play an important role in determining the climate and culture of an organization and in the motivation and retention of employees. As the labs implement succession planning for the current wave of expected retirements in the management ranks, they should focus on the selection and development of managers with strong interpersonal competencies, especially communication skills, in addition to technical credibility.

CHAPTER 1. INTRODUCTION

Purpose

The Department of Defense (DoD) Science and Technology (S&T) Reinvention Laboratory Demonstration Program was authorized by Section 342 of the National Defense Authorization Act for Fiscal Year 1995 (Public Law 103-337). The legislation gave the Secretary of Defense the authority to implement more flexible personnel systems modeled after the successful Navy Demonstration Project in China Lake and San Diego, California.

This summative evaluation is the third in a series of formal evaluation reports on the DoD S&T Laboratory Demonstration Program and is based on data collected from 1996 through 2001. The first report issued in 1998 covered the status of the demonstration program and documented baseline data. A second report covering the implementation of the program through 2000 was issued in 2001. The present summative evaluation report covers results from the laboratories that implemented their demonstration projects in two waves: 1997 and 1998, referred to as Wave 1, and 1999, referred to as Wave 2. This report also provides an update on the status of implementation of the third wave of laboratories that have not yet implemented their programs.

Although the projects are open-ended according to the authorizing legislation the Director of Defense Research & Engineering, with the concurrence of DoD's Office of Civilian Personnel Policy and the U.S. Office of Personnel Management (OPM), decided on a five-year evaluation of the program before making decisions on whether individual laboratory demonstration projects should continue, be modified, or be terminated. OPM's Personnel Resources & Development Center was tasked with the external evaluation, based on a Memorandum of Understanding signed in March 1996, which expired September 30, 2001. For further background on the demonstration program, see the note at the end of this chapter.

The original evaluation plan did not anticipate the length of time it took to implement the demonstration projects (the average time to implement for the first eight laboratories was two years and two months). As of this writing, only one lab, AFRL, will have completed a five-year test (our data analyses cover four years), and the remaining laboratories covered by this evaluation will have participated from two to four years (our data cover one to three years). Therefore, this summative evaluation covers an overall implementation status that can be described as 40% complete, although the implemented laboratories will have reached 60% completion at the time of this report.

Program Objectives

The purpose of the S&T Reinvention Laboratory Demonstration Program was to improve the effectiveness of the DoD laboratories through a more flexible and responsive personnel system. The demonstration program was part of DoD's Laboratory Quality

Improvement Program (LQIP). There have been countless reviews of DoD's laboratories during the past two decades. Recommendations from these reviews include the need to streamline the laboratories to support changing missions and to provide the high-quality, cost-effective agile systems needed by DoD.

Personnel demonstration projects provide relief from outdated, one-size-fits all, restrictive personnel laws and regulations. By obtaining waivers of existing laws and regulations, agencies can test more flexible, mission-responsive systems. The DoD S&T Reinvention Laboratory Demonstration program is designed to achieve the following objectives:

- Improve the effectiveness of DoD laboratories through a more flexible, responsive personnel system
- Increase line management authority over human resource management
- Recruit, develop, motivate and retain a high quality workforce
- Adjust workforce levels to meet strategic program and organizational needs.

Personnel system changes have been implemented in the Wave 1 laboratories in all areas of human resource management: accession, requirements, development and sustainment.

The demonstration projects include the following interventions:

- Broadband pay systems
- Simplified job classification
- Pay for performance, including contribution based-pay
- Recruitment and staffing changes (e.g., extended probationary period, categorical rating of candidates, distinguished scholastic achievement appointments, modified term appointments, and voluntary emeritus corps)
- Enhanced training and development, critical skills training and sabbaticals.

Union Role

Labor unions were consulted prior to implementation of a demonstration project because the demonstration projects require changes in the negotiated bargaining unit agreements. Some union locals have been involved in demonstration project planning and have lent their support, while others are opposed to the new systems and have decided not to participate. Bargaining unit employees cannot be covered by a demonstration project without agreement of the unions.

In the absence of union agreement, some organizations have proceeded to implement the project for non-bargaining unit employees only. In some laboratories, unions agreed to test the interventions for a certain number of years and management has to renegotiate continuation with the unions. In one case, the union unilaterally decided to withdraw from the demonstration project after the agreement expired, without consulting affected employees (Hanscom AFB). Currently, 29% of the participants in the DoD Laboratory Demonstration Program are bargaining unit employees and 71% are non-bargaining unit

employees and managers; see Table A-1 in Appendix A. Bargaining unit participation ranges from none (NRL) to 85% (AMRDEC).

Table 1.1 shows the participating laboratories, the dates of project implementation, and the size of the demonstration workforce covered. As of May, 2002, about 25,506 S&T laboratory employees have been converted to the demonstration program with about 13,200 remaining as a potential demonstration population in the non-implemented laboratories (TACOM, SBCCOM and STRICOM).

Table 1.1: Demonstration Project Participants

Laboratory		**Estimated Workforce Covered***	**Implementation Date**
Wave 1			
Air Force Research Laboratory (AFRL)	Wright Laboratory Rome Laboratory Phillips Laboratory Armstrong Laboratory	2367*	March 2, 1997
Aviation and Missile Command (AMCOM)	Aviation and Missile Research, Development and Engineering Center (AMRDEC)	2162	September 28, 1997
ARL	Army Research Laboratory	1893	June 7, 1998
MRMC	Army Medical Research and Materiel Command	907	June 7, 1998
Naval Surface Warfare Center (NSWC)	1. Dahlgren, 2. Indian Head, 3. Carderock, 4. Crane, 5. Port Hueneme and 6. Corona Divisions	9215	1: August 1998 2: October 1998 3. November 1998 4. July 1999 5. September 1999 6. November 1999
Wave 2			
Engineering Research and Development Center (ERDC)	Army Waterways Experiment Station (WES)	1496	September 13, 1998
	Army Construction Engineering Research Center (CERL)		October 1, 1999
	Army Cold Regions Research and Engineering Laboratory (CRREL)		
	Army Topographic Engineering Center (TEC)		
NRL	Naval Research Laboratory	2691	September 26,1999
Naval Undersea Warfare Center (NUWC)	Newport Division	2038	September 1999

Table 1.1: Demonstration Project Participants			
Laboratory		**Estimated Workforce Covered***	**Implementation Date**
Wave 3			
NUWC	Keyport Division	312	July 2001
CECOM	Army Communications Electronics Command	881	May 19, 2002
Tank-automotive and Armaments Command (TACOM)	Army Armaments RDEC	2405	First Federal Register Notice issued 11/16/01
	Army Tank Automotive RDEC	3269	
	Other TACOM	5762	
SBCCOM	Army Soldier Biochemical	1348	Plan in draft
STRICOM	Army Simulation, Training, and Instrumentation Command	425	No plan

Data Source: Data provided by laboratories as of May 2002
* The AFRL "Estimated Workforce Covered" figure includes only scientists and engineers.

The participating laboratories have undergone a number of reorganizations and consolidations since their demonstration projects were developed. There are now a total of 12 laboratories participating in the demonstration program; prior to consolidation the number was 20. The Army Waterways Experiment Station (WES) laboratory began as a Wave 1 laboratory but after merging with three other Army Corps of Engineers laboratories into ERDC, was analyzed as part of Wave 2 because the other labs implemented a year later. Three of the 12 laboratories have not yet implemented their projects but TACOM has issued its first Federal Register notice.

Evaluation Methodology

Appendix B describes the methods and models used in the evaluation of the demonstration program. We used three evaluation models: the Evaluation Context Model, the Model of R&D Performance, and the Intervention Impact Model. The Evaluation Context Model described the intervening variables that are likely to affect the expected outcomes of this project detailed in the Intervention Impact Model. The demonstration program was implemented in a turbulent environment and intervening variables that have affected the project include mandated workforce reductions, reorganizations, the job market, state of the economy, and the regionalization of HR services. The major expected project outcomes were labeled as Intended Intermediate Outcomes in the Evaluation Context Model and include improved human resource management (HRM) systems, increased management authority, improved management of the R&D workforce and increased workforce quality. The Intended Ultimate Outcomes were improved laboratory effectiveness, mission accomplishment and customer satisfaction.

Given the many factors that influence laboratory effectiveness, no direct causal link can be postulated between the HR interventions implemented in the demonstration program and ultimate outcomes. Nevertheless, it was hypothesized that a more flexible personnel system would improve laboratory effectiveness. The Model of R&D Performance described the four major components that result in laboratory effectiveness: planning (strategic focus), management of the R&D workforce (the main focus of the demonstration program), cross-functional coordination, and product success. The Intervention Impact model defined the interventions, expected effects, measures, and data sources, and it was the roadmap for our analyses of specific interventions tested in this demonstration program.

This demonstration project used a variety of comparison groups to evaluate results. The cost of broadbanding was tracked over time for each type of banding system and then compared to non-implemented laboratories and a comparable group of research organizations in OPM's Civilian Personnel Data File that are operating under Title 5 and the General Schedule (GS) system. Employee attitudes toward the interventions were also compared by contrasting implemented with non-implemented laboratories and using the original 'China Lake' demonstration laboratories as a benchmark comparison group. The original two Navy laboratories participated in the first two of four surveys administered to laboratory employees between 1996 and 2001 and also conducted 10 surveys during the 14-year course of their demonstration project evaluation from 1979 to 1993.

Support for the Demonstration Project: Survey Results

Historic data for past demonstration projects show that support grows slowly over time and that it takes at least five years to gain the support of two thirds of the participating employees. Typically, support levels off at this point. Support for the demonstration project has been negatively affected by some of the intervening variables, especially reorganizations and regionalization of HR services. Table 1.2 below displays the survey results for the S&T Lab Demo and includes the original two "China Lake" laboratories as a benchmark. The margin of error is less than ± 2 percent. At the time of the 2001 survey, the Wave 1 laboratories had been under the demonstration for three to four years and the Wave 2 laboratories for two years. None of the laboratories have reached the two-thirds benchmark but, as expected, support is highest among Wave 1 laboratories. Figures A-1 and A-2 in Appendix A show the historic data for demonstration project support in the original Navy Demonstration Project and current support for the DoD S&T Reinvention Laboratory Demonstration Program. Demonstration project support was analyzed by examining separate categories of employees: supervisors and non-supervisors, different occupational groups, minorities and whites, and employees reporting cooperative or non-cooperative labor management relations. Significant differences were found between all these groups. Demonstration project support is highest among supervisors, whites, and scientists and engineers. Demonstration project support was also higher when labor relations are reported as cooperative.

Support by Supervisors and Non-Supervisors
Supervisors showed significantly higher support levels than non-supervisors. This was expected because the demonstration project delegated more HR authority to managers. Figure A-3 shows the results for all implemented laboratories. Although the demonstration project placed additional burdens on managers (e.g., pay for performance takes considerable effort), they liked it better than the old system. In focus groups, managers often stated that the demonstration system was more helpful than the GS system in accomplishing their missions. When asked what they liked best, they most frequently mentioned the increased flexibility and ability to reward high performers.

Support by Occupational Group
Among occupational groups, professionals (scientists and engineers) showed the strongest support, followed by clerical, administrative, and technical staff.

Labor Management Relations and Demonstration Support
Further analyses by type of labor management relations indicate that demonstration project support is significantly higher when labor relations are reported as cooperative. Conversely, opposition is also significantly higher when labor relations are viewed as non-cooperative, with 42% opposed in a non-cooperative climate and 24% in a cooperative climate. On-site interviews and focus groups revealed that in organizations where labor relations were uncooperative, unions felt they were left uninformed about changes in the demonstration, which reinforced mistrust of management. Where labor relations were more cooperative, unions tended to view themselves as equal partners with management in the demonstration project.

Support by Minorities
The data were also analyzed by comparing the responses of whites and minority employees. The results in Table 1.2 show that support for the demonstration program is significantly lower among minorities than whites. These perception gaps have been found on other issues (e.g., perceived advancement opportunities and fair treatment in general) and will be explored further in this evaluation.

Table 1.2: Demonstration Project Support by Various Groups
No. 22: I'm in favor of the demonstration project

Group	Year	Yes	No	Not Sure	Total
Wave 1	1996	**34.4%**	20.9%	44.6%	100%
Wave 1	2001	**55.2%**	22.5%	22.3%	100%
Wave 2	1996	**39.3%**	11.8%	48.9%	100%
Wave 2	2001	**42.1%**	28%	29.9%	100%
Non-Implemented	1996	**27.1%**	12.6%	60.2%	100%
Non-	2001	**30.3%**	30.1%	39.7%	100%

Table 1.2: Demonstration Project Support by Various Groups No. 22: I'm in favor of the demonstration project					
Group	**Year**	**Yes**	**No**	**Not Sure**	**Total**
Implemented					
"China Lake"	1979	**29%**			100%
"China Lake"	1998	**70.5%**	13.3%	16.2%	100%
By Supervisors vs. Non-Supervisors					
		Yes	**No**	**Not Sure**	
Wave 1 Supervisors	2001	**74.7%**	12.5%	12.8%	100%
Wave 1 Non-Sups.	2001	**52.1%**	24.1%	23.8%	100%
"China Lake" Supervisors	1998	**79.4%**	12.4%	8.2%	100%
"China Lake" Non-Sups.	1998	**68.6%**	13.2%	18.2%	100%
By Wave 1 Occupational Groups					
		Yes	**No**	**Not Sure**	
Professional	2001	**57.3%**	20.9%	21.8%	100%
Admin	2001	**48.7%**	27.4%	23.9%	100%
Technical	2001	**45.4%**	31.7%	22.9%	100%
Clerical	2001	**50.7%**	20.5%	28.8%	100%
By Labor-Management Relations: Cooperative, Not Cooperative No. 117: Management and labor unions work cooperatively on mutual problems (agree…disagree)					
		Yes	**No**	**Not Sure**	
Cooperative (agree to # 117)	2001	**46.6%**	23.5%	30%	100%
Not Cooperative (disagree to #117)	2001	**35.7%**	41.9%	22.3%	100%
By Minority Status					
Wave 1		**Yes**	**No**	**Not Sure**	
Minority	1996	29.2	21.7	49.1	
Minority	2001	**44.2**	30.8	25.1	
White	1996	34.7	21.4	43.9	
White	2001	**57.1**	21.1	21.8	
"China Lake"					
Minority	1998	**59%**	18%	24%	
White	1998	**74%**	12%	14%	

Note: Wave 1= AFRL, AMRDEC, ARL, NSWC

Predictors of Demonstration Project Support
Regression analyses were conducted to determine what predicts demonstration support. Since pay for performance was the most important change for employees, it was not surprising that the strongest predictor was satisfaction with performance management (see Table I-1 in Appendix I). A closer analysis of survey scales (groups of related items) and their intercorrelations revealed the following top 10 statistically significant correlates of demonstration project support:

1. Advancement satisfaction
2. Procedural justice
3. Performance appraisal satisfaction
4. Pay satisfaction
5. Pay-performance link
6. Satisfaction with rewards and recognition
7. Performance communication
8. General communication
9. Labor management relations
10. Classification satisfaction

The complete correlation matrix for 35 survey scales and key items related to performance management, human resource administration, organizational climate, and job satisfaction can be found in Table I-2, Appendix I. The items contained in the survey scales are listed in Table B-8, Appendix B.

Laboratory Differences
Since performance management and organizational climate variables predicted demonstration project support, further analyses were conducted comparing the individual Wave 1 (AFRL, AMRDEC, ARL and MRMC) and Wave 2 laboratories (NSWC, ERDC, NRL and NUWC-Keyport) on their results in performance management, human resource administration, organizational climate, and job satisfaction and commitment. Table I-3 shows the mean scale scores and rankings by favorability in the four areas. Differences in means and ranks were not always statistically significant, and analysis of variance (ANOVA) results indicate which lab or lab(s) differ from each other, see Tables I-4 to I-8.

Performance Management. In the area of satisfaction with performance management, three laboratories were ranked highest: AMRDEC (65% demo support) ranked No. 1, followed by NRL (48%) and AFRL (60%). Statistically, there was no difference between the three laboratories. It is noteworthy that NRL, which is a Wave 2 lab and still lower in overall demonstration project support, ranks relatively high on satisfaction with performance management. MRMC and NSWC occupy ranks four and five, and ARL, ERDC and NUWC are all tied for sixth place. Except for ARL, they are Wave 2 laboratories and expected to take more time for employees to experience the demonstration project to reach higher satisfaction levels.

These analyses, as well as additional analyses discussed in Chapter 2, indicated that where demonstration project support was strong, employees tend to be more satisfied with performance management, organizational climate and their jobs. The way to improve demonstration project support is to focus on the diagnostic survey items contained in the scale dimensions that have low scores and implement improvements.

Implementation Cost

This demonstration project required significant investments in time and resources. These were one-time costs and were the cost of innovation. While the laboratories used their own staff for project development, many laboratories contracted for support in developing software for the new classification and pay-for-performance systems. Training prior to implementation was conducted by project employees and sometimes involved outside contractors and development of videos. Another cost involved internal evaluation activities in addition to the external evaluation costs. All project costs are shown in Tables 1.3a to 1.3c.

Training costs varied from $30,000 to $279,000 while the cost of automation ranged from less than $100,000 to more than $1,000,000. Internal evaluation activities were generally performed by project staff and if contracted out were about $150,000 per year. The 5-year external evaluation cost was shared by the laboratories and ranged from an annual cost of $14,000 (small lab) to $42,000 (large lab) in the first year, and $16,000 to $85,000, respectively, in the final year.

Table 1.3 A
Project Implementation Costs: Training

	FY95	FY96	FY97	FY98	FY99	FY00	FY01
AFRL	$170K	$120K	$580K				
AMRDEC Aviation			$33K	$16K			
AMRDEC Missile		$6K	$99K	$12K			
ARL		$10	$20K				
MRMC			$99K	$19K	$19K	$19K	$19K
ERDC		$97K	$19K				
NSWC			$192K				
NRL				$67.9K	$160.3K		
NUWC				$192 K			

Table 1.3 B **Project Implementation Costs: Automation**								
	FY95	FY96	FY97	FY98	FY99	FY00	FY01	FY02
AFRL		$150K	$240K	$170K	$292K	$175K	$180K	$180K
AMRDEC Aviation			$6K	$1K				
MRDEC Missile		$80K	$10K					
ARL			$100K					
MRMC		$80K	$10K	$10K	$10K	$10K	$10K	
ERDC		$80K	$10K					
NSWC				$100K	$100K			
NRL				$862K	$450K			
NUWC					$100K	$100K		

Table 1.3 C **Project Implementation Costs: Internal Evaluation**								
	FY95	FY96	FY97	FY98	FY99	FY00	FY01	FY02
AFRL	$20 K	$150 K	$200 K	$275 K	$334 K	$366 K	$350 K	$350K
AMRDEC Aviation								
MRDEC Missile								
ARL								
MRMC								
ERDC								
NSWC								
NRL								
NUWC								

Chapter 1 Endnote

Background
The S&T Reinvention Laboratory Demonstration Program was authorized by Section 342 of the National Defense Authorization Act for Fiscal Year 1995 (Public Law 103-337). It enabled DoD's Research Development Test and Evaluation (RDT&E) laboratories to obtain waivers of personnel laws and regulations and to conduct demonstration projects "generally similar in nature to the 'China Lake' demonstration project." The Navy's demonstration project in "China Lake" (Naval Air Warfare Center Weapons Division, formerly Naval Weapons Center) and San Diego (Space and Naval Warfare Systems Center, formerly Naval Ocean Systems Center), California, was initiated in 1980 and was made permanent by Congress in 1994.

"China Lake" was the first personnel management demonstration project to experiment with broadbanding (consolidation of GS grades into broad bands) and pay for performance. The law authorizing the S&T Reinvention Laboratory Demonstration Program follows the requirements of Title 5 USC Chapter 47 demonstration projects, but it differs from Chapter 47 in two respects: (1) following PL 106-398, Sec. 1114, sole authority over the project was given to the Secretary of Defense, removing the requirement for joint approval by the Director of the U.S. Office of Personnel Management (OPM); and (2) there are no limitations on the number of employees and duration of the project, or the number of projects that can be in effect at any one time. In other words, the projects can continue indefinitely.

CHAPTER 2. LABORATORY EFFECTIVENESS

The first stated goal for the S&T Reinvention Laboratory Demonstration Program was to improve the effectiveness of DoD laboratories through a more flexible, responsive personnel system. This chapter will review the general results for this objective by referring to the Model of R&D Organizational Performance in Appendix B, Figure B-2. The model shows four components that make up an effective R&D Function: Strategic Planning, Management of the R&D Workforce, Cross-Functional Coordination and Product Success.

The demonstration project with its HR interventions is only one of the many factors that influence laboratory effectiveness and intervenes in only one of the four effectiveness components, management of the R&D workforce. Metrics that were examined include the following: (1) strategic planning, which is the first prerequisite of an effective R&D function, (2) management of the workforce: workforce motivation, workforce quality, supervision, communication, (3) efficiency of personnel processes that were changed under the demonstration project, and satisfaction with HR services, (4) cross-functional coordination and teamwork, (5) laboratory quality based on available data for patents, patent income, publications, post-docs, professional society memberships, and (6) product success including customer orientation and customer satisfaction surveys from a sub-set of laboratories.

Strategic Planning

One of the requirements of the Government Performance and Results Act (GPRA) is development of an agency strategic plan that lays out goals and performance measures against which agencies are evaluated and, ultimately, funded by Congress. Strategic planning involves external awareness of the environment, formulation of a vision and mission, goals and strategies to implement the vision and carry out the mission, and new product ideas that will drive the selection of R&D projects. During on-site interviews with the Wave 1 laboratories in the summer of 2001, laboratory management was asked about strategic planning initiatives. The employee attitude survey used in the evaluation also includes items related to strategic planning.

All the Navy laboratories, NSWC, NUWC and NRL, are industrially funded, while the Air Force Research Laboratory is primarily funded through appropriations. The Army laboratories operate under a varying mix of appropriated and reimbursable funding. Most of the laboratories did not have their own strategic plans and referred to the overall DoD plan. The Navy laboratories indicated that it was harder to be strategic because their work was driven by the demands of their customers. In general, 58% to 60% of respondents to the 2001 survey reported that their organization establishes strategic plans that help guide program decisions. Appendix C, Table C-1 shows results of survey item scales measuring strategic planning and innovation, i.e., use of innovative practices. A list of the items included in each scale and the reliability coefficients for each scale can be found in Table B-8, Appendix B. Results are listed by wave of implementation for the laboratories and times of implementation in Table 1.1 of Chapter 1.

There were no differences in trends between the implemented and non-implemented laboratories in strategic orientation but statistically significant improvements for Wave 1 and non-implemented laboratories. There is a trend of increasing innovation in both implemented and non-implemented laboratories, but no trend attributable to the demonstration project (see Table C-1).

Management of the R&D Workforce

The impact of the demonstration project is expected to affect this component of laboratory effectiveness the most. We examined employee motivation, workforce management, communication systems, and personnel processes. The demonstration project has given managers more flexibility in hiring, i.e., setting starting salaries anywhere in a band. Broadbanding and pay-for-performance offer greater pay potential to high performers. As a result, the laboratories should be able to attract a higher quality of employee, reward their high performers more and improve or separate poor performers, which in turn should increase laboratory quality. Both workforce quality and laboratory quality will be addressed in a later section examining the impact of specific demonstration interventions.

Workforce Motivation and Job Satisfaction

The pay-for-performance systems are designed to motivate employees to improve their performance by offering higher rewards. Table C-2 shows responses to a survey item asking about level of effort employees are willing to expend. There has been a small, statistically significant increase since 1999 in the demonstration laboratories, and in 2001, Wave 1 laboratories reported the highest willingness to work harder, 79%, compared to 75% in Wave 2 and non-implemented laboratories.

Scientists and engineers who work for the federal government tend to be intrinsically motivated by the challenge of the work. Job challenge increased significantly for both demonstration and non-demonstration laboratories, but job challenge is highest in the demonstration laboratories. Similarly, job satisfaction has been high in the DoD laboratories since 1996 and is now highest in the Wave 1 demonstration laboratories (see Tables C-3 and C-4). The survey results indicate increased motivation among employees under pay for performance and increased job satisfaction for all groups.

Job satisfaction and organizational commitment are strongly related to retention and, to a lesser degree, demonstration project support. Appendix A, Table A-3 ranked the laboratories on these and other morale dimensions. Three of the laboratories ranked highest: MRMC, NRL and AMRDEC, followed by ERDC, AFRL and NSWC, and finally ARL and NUWC. Two of the three top-ranked laboratories are in Wave 1, but factors in addition to the demonstration account for these differences.

Workforce Quality

Workforce quality was examined by analyzing the percentage of scientists and engineers with advanced degrees (see Table C-5). There has been a slight increase in the percentage of employees with advanced degrees, rising from 51% in 1996 to 54% in 2000 in Wave 1

laboratories, and from 53% to 57% in the Wave 2 laboratories. There was a decrease from 36% to 34%in the non-implemented laboratories. Laboratory quality, which covers outcomes related to workforce quality, includes a broader range of metrics and is analyzed in a later section.

Satisfaction with Supervision

While the demonstration project provides managers with more flexible HR tools, unless these new authorities are used fairly and managed well, the demonstration projects are unlikely to maximize the potential desired impact on employee performance and motivation. Under the pay-for-performance systems, greater demands are made on managers to communicate expectations, set goals, provide feedback, and evaluate performance. Satisfaction with supervision increased slightly in both demonstration and non-demonstration laboratories, but in 2001 was lowest in Wave 2 laboratories. Since Wave 2 laboratories implemented more recently, this suggests that managers are still adjusting to their new roles in compensation and performance management (see Table C-6). A comparison of supervisors and non-supervisors also reveals that supervisors in Wave 1 are more satisfied with their management than Wave 2 supervisors.

Communication

Our analyses of the 2001 survey data, confirmed by focus group results, show that the ability to communicate well is a high-impact managerial competency. Communication by management was significantly correlated with more variables than any of the factors examined here. Intercorrelations of all the survey scales related to performance management, human resources, climate and job satisfaction revealed 15 high (r=.50 to .68), statistically significant correlations with communication by management (see Appendix I, Table I-2). The correlates with communication, in order of magnitude were as follows:

1. Performance Communication
2. Satisfaction with Supervision
3. Satisfaction with Rewards and Recognition
4. Procedural justice
5. Trust
6. Strategic orientation
7. Performance appraisal satisfaction
8. Customer orientation
9. Cross-functional coordination
10. Organizational commitment
11. Flexibility
12. Innovation
13. Pay-performance link
14. Advancement satisfaction
15. Pay satisfaction.

Further down in magnitude, but still highly significant, were labor management relations, customer orientation, and diversity/fair treatment. These results confirm the importance of selecting supervisors not just based on their technical competence, but their ability to

communicate well and honestly. This competency has a broad impact on organizational effectiveness, demonstration project support, and employee retention. None of the laboratories scored high on communication but improved over time. Wave 1 laboratories improved the most, but there was no statistically significant difference between demonstration and non-implemented laboratories in 2001 (see Table C-7).

Organizational Climate

Climate (which includes variables such as communication, satisfaction with supervision, strategic orientation, innovation and customer orientation) affects organizational effectiveness as well as demonstration project support. Table I-3 ranked the laboratories on these and other climate dimensions. Five of the laboratories had statistically similar climate scores: AMRDEC, MRMC, NRL, AFRL and NSWC. They were followed by ERDC and NUWC, and then ARL. Most of the Wave 1 laboratories were ranked higher than the Wave 2 laboratories, but these differences cannot be attributed to the demonstration project.

Personnel Processes

The demonstration projects have streamlined the classification and compensation system through broadbanding, reducing paper-work involved in classification and promotions, and reducing the number and length of position descriptions. Position descriptions have been automated and shortened significantly; and the number of PDs has been reduced as well (see Table C-8). The data cited here are analyzed in more detail in Chapters 4 and 5.

Satisfaction with HR Services

Since the demonstration program was implemented, DoD components have regionalized their personnel processing operations. In the past, their own personnel offices serviced demonstration projects. This is no longer the case and although advisory staff is still on site in most locations, personnel actions are processed centrally. Since demonstration projects require specialized knowledge of the demonstration processes and new operating procedures, there have been many problems associated with the servicing of the demos. These have been exacerbated by the ongoing conversion from the legacy system to the modern system. Survey results show that satisfaction with HR services tends to diminish with distance from the servicing center (see Table C-9). Overall, the Navy laboratories are most satisfied and the Army laboratories are least satisfied.

Table I-3 ranked the Wave 1 and 2 laboratories on a variety of dimensions related to human resource administration. The following five laboratories scored highest: NRL, AFRL, NUWC-Keyport, MRMC, AMRDEC (with no statistically significant difference between the 5 laboratories), followed by NSWC and ERDC (not significantly different), and ARL. The first two laboratories, NRL and AFRL, made significant investments in HR automation and all five top-rated laboratories also had strong HR capabilities on-site.

Cross-Functional Coordination

The third component of an effective R&D organization is cross-functional coordination. Interviews with laboratory managers indicate that there is increasing coordination of research among the services. Innovation and technology transfer are facilitated by

cooperative research and development agreements (CRADAs) with university and industry partners that are used extensively. Survey results show that cross-functional coordination has improved in all three laboratory groups but slightly more in Wave 1 laboratories than Wave 2 and non-implemented laboratories (see Table C-10).

Teamwork

Teamwork is another important factor in organizational effectiveness, especially in research organizations. Pay-for-performance systems are often viewed as increasing competition among employees for limited financial rewards and are believed to have a negative impact on teamwork. In fact some employees commented in focus groups that they work in teams, yet have to write up their accomplishments as individuals. Nevertheless, the survey results show that teamwork has actually improved in both the demonstration and non-demonstration laboratories (see Table C-11). There has been no negative effect of the demonstration pay-for-performance systems. In fact, Wave 1 laboratories showed the greatest improvement in teamwork.

Laboratory Quality

The demonstration project interventions are expected to contribute to increased laboratory quality. As our model of R&D Performance, Figure B-2, illustrates, there are many other factors that influence laboratory quality, thus no direct causal link can be postulated. Due to the downsizing that has occurred in the DoD laboratories during the past 5 years, hiring in the laboratories has been limited, while the private-sector economy was booming and offered higher pay. These intervening variables diminished the potential impact the demonstration project may have had on improving laboratory quality.

The following indicators of laboratory quality were examined: number of annual patents, average patent income, number of post-docs, percentage of professionals with professional society memberships, number of annual refereed publications. It was not possible to obtain these measures from all the laboratories. The results for a subset of the laboratories are shown in Tables C-12 to C-16. There are no overall trends in the data collected to date. One of the laboratories, ARL, showed a significant increase in refereed publications as a direct result of the new performance management system that included publications as a performance element. Several of the laboratories, NSWC Dahlgren, MRMC, and NUWC Newport showed increases in annual patents, but given the time lag involved in patent grants, it is not clear whether the effect can be ascribed to the demonstration project. Due to the hiring limitations, the number of post-docs dropped overall. Data on professional society memberships were too limited to draw any conclusions.

The annual survey also included an item asking about organizational improvements as a result of the demonstration project (see Table C-17). There is increasing agreement in Wave 1 and Wave 2 laboratories that there has been a positive impact. The non-implemented laboratories remain skeptical.

Product Success

Customer perceptions (sponsors and end-users) are the most important indicator of product success. Several of the laboratories administer their own customer satisfaction surveys to help them improve their performance. The Navy laboratories point to the income and repeat business from their customers as an effective indicator of their performance. Table C-15 shows that all laboratory employees report having increased customer orientation, but there is no trend attributable to the demonstration project. Actual customer satisfaction survey results can be found in Table C-18. Results were available from 5 laboratories and reveal increases for 2 laboratories, and no significant change for the other laboratories.

Summary

There is evidence from several of the indicators that the S&T Reinvention Laboratory Demonstration Program has had a modest positive impact in improving laboratory effectiveness (see Table 2.1). Employee motivation has increased significantly in the Wave 1 laboratories, and there has been an increase in workforce quality, as measured by the percentage of employees with graduate degrees. Personnel processes have been streamlined, and in at least one demonstration laboratory research productivity has increased. Demonstration employees also report a positive impact of their projects on organizational effectiveness. However, on many of the measures, improvements could not be attributed to the demonstration. This would be expected, given the multivariate nature of factors influencing laboratory effectiveness, the many negative intervening variables that had an impact during the past 5 years, and the fact that the interventions were limited to only one area, human resource management. Stronger effects are expected in terms of intermediate results regarding laboratory effectiveness, i.e., the impact of the HR interventions, which will be discussed in Chapter 3 and 4.

Table 2.1
Summary of Results on Indicators for Laboratory Effectiveness

Indicators	**Statistical Trend/ Change**	**Demonstration Effect***
1. Strategic Planning:		
- Strategic Orientation	Positive	No
- Innovation	Positive	No
2. Management of Workforce:		
- Motivation	Positive	Yes
- Job Challenge	Positive	No
- Job Satisfaction	Positive	No
- Satisfaction with Supervision	Positive	No
- Communication	Positive	No
- Workforce Quality (Graduate degrees)	Positive	Yes
3. Personnel Processes:		
HR Efficiency		
- PD # and length	Positive	Yes

Table 2.1 **Summary of Results on Indicators for Laboratory Effectiveness**		
Indicators	**Statistical Trend/ Change**	**Demonstration Effect***
- Classification timeliness - Hiring timeliness - HR Customer Satisfaction	Positive Mixed Negative	Yes No No
4. Cross-Functional Coordination	Positive	No
5. Teamwork	Positive	No
6. Laboratory Quality - number of post-docs - professional society memberships - refereed publications - patents - average patent income	Mixed Negative No trend Positive (1 laboratory) Mixed Limited data	No No No Yes Cannot be determined No
7. Product Success - Customer Orientation - Customer Satisfaction	 Positive Mixed	 No No
8. Perceived Demo Impact on Organizational Performance	Positive	Yes

* A demonstration effect is noted when a trend is statistically significant, specific to the demonstration laboratories and can be attributed to demonstration interventions.

CHAPTER 3. LINE MANAGEMENT AUTHORITY OVER HUMAN RESOURCE MANAGEMENT

The second objective of the demonstration program was to increase line management authority over human resource management, primarily by delegating compensation and classification decisions to managers. Since managers under the Title 5 personnel system have limited authority in these areas, training managers to assume these responsibilities is critical.

Training Adequacy

The demonstration project delegates significant HR authority to managers. However, downsizing and hiring freezes have limited exercise of this authority. Survey results show that in 2001, surprisingly, Wave 2 managers showed the highest level of perceived training adequacy with 74% indicating they had been adequately trained, compared to 68% for Wave 1 (see Appendix D, Table D-1). However, there is still room for improvement since 80% "China Lake" managers reported adequate training.

Focus group results indicate that training was generally adequate and at times even viewed as overwhelming in terms of the amount of information. Written documentation and training manuals were considered valuable references. But training was not always provided "just in time," due to unavoidable delays in implementation for some of the labs. Some managers suggested that training for the performance appraisal process should have been held closer to evaluation time. Other managers wanted more training in the hiring process, and some needed to know more about the appraisal and payout processes. Most admitted that while the theoretical training was good, the hands-on experience taught them the most and that they were improving their understanding of the system over time. There was concern that training for new managers was not always adequate. Many managers also expressed a need for training in coaching employees and giving feedback. In fact, employees in focus groups frequently mentioned the need for better training of managers in this area.

Managerial Authority

Survey results show that the demonstration has had the most impact on authority to determine employees' pay and over job classification (see Table D-2). Authority to hire people with the right skills when needed also increased significantly for Wave 1 and Wave 2 labs following implementation of the demonstration project while remaining unchanged in the non-implemented labs until 2001, when it increased suddenly, probably after the lifting of hiring freezes. Authority to promote employees has not been affected by the demonstration project, and authority to remove poor performers is still viewed as limited by both demonstration and non-demonstration supervisors. Demonstration project managers now have the ability to send a more direct message to low performing employees by denying or limiting pay increases; but apparently managers do not feel fully empowered to remove poor performers.

Trust and Perceived Fairness

The most significant change in the demonstration projects is the implementation of pay-for-performance systems. As a result, pay progression is no longer based on tenure and automatic for 99% of employees who receive satisfactory performance ratings but based on their performance. Results of the various pay-for-performance systems will be discussed in detail in Chapter 4. Since pay is now determined by supervisory ratings, pay for performance can only be effective in motivating higher performance if employees trust their supervisors to be fair in administering the new system.

The annual surveys included an item asking employees whether they have trust and confidence in their supervisor. The results show increasing trust over time in all three lab groups, with the highest trust level, 66%, in Wave 1 labs (see Table D-3). In fact the Wave 1 labs exceed the "China Lake" benchmark. However, when analyzed by supervisory and minority status, the results are less positive. Trust levels tend to be about 10% lower among non-supervisors than supervisors (see Table D-4).

Trust is also about 10% lower among minorities, as shown by the data in Table D-5. This table also shows that the rise in trust levels from 1996 to 2001 was limited to white employees. Since trust remained statistically unchanged for minorities in both demonstration and non-demonstration labs, it has not been adversely affected by the demonstration system. Tables G-8 and G-8a (Appendix G) show trust levels for all labs.

Perceived Fairness of Performance Ratings

Under the demonstration projects, performance and pay ratings are directly tied to pay. The survey results indicate that perceived fairness of ratings tend to drop after demonstration implementation and then rises again (see Table D-6). Analyses by race indicate lower levels of perceived fairness regarding performance ratings in demonstration and non-demonstration labs and a similar decrease following implementation of pay for performance (see Table D-7).

Summary

Demonstration project managers report increased authority to determine employee pay, influence job classification, and authority to hire. Due to hiring freezes and downsizing in DoD, the impact on authority to hire was less dramatic, and no increase was found in ability to remove poor performers. The increased authority to determine employee pay has not had a negative impact on employee trust levels. However, non-supervisory employees and minority employees showed lower trust levels before and after implementation of the demonstration project. Nevertheless, there was no decline in trust as a result of the demonstration projects.

Perceived fairness of performance ratings was lower for minorities than whites and declined more for minorities than whites following implementation of pay for performance. The survey results are summarized in Table 3.1. Appendix D contains

tables with more detailed survey results by individual lab. These results and their relationship to pay progression are further analyzed in Chapter 4.

Table 3.1 Summary Results for Delegated Managerial HR Authority

Indicators	**Statistical Trend/Change**	**Demonstration Effect**
Authority to Hire	Positive	Yes
Authority to Promote	Positive	No
Authority to Remove Poor Performers	no change	No
Authority to determine pay	Positive	Yes
Classification Authority	Positive	Yes
Trust in Management by Non-Supervisors	Positive	No negative effect
Trust in Management by Minorities	No change	No negative effect
Perceived Rating Fairness	Significant decrease after implementation	Temporary negative effect

CHAPTER 4. AN INTEGRATED APPROACH TO CLASSIFICATION, COMPENSATION, AND PERFORMANCE MANAGEMENT

This chapter will review results for the main interventions, broadbanding, simplified classification, and pay for performance or pay for contribution. All laboratories implemented an integrated approach to classification, compensation and performance management, and streamlined and automated associated processes. Issues specifically related to classification will be discussed first.

Simplified Classification

Broadbanding facilitates the implementation of simplified, generic classification standards and the use of abbreviated job descriptions. The objective of implementing the new classification system is to simplify the classification process by issuing fewer qualification standards, thus reducing the amount of time and paper work spent on classification. Under the demonstration, authority for classification is delegated to management, usually two levels above the individual classifying the position.

Participating laboratories have maintained the occupational series of the GS classification system under the simplified system. However, laboratories have allocated the series into three or four occupational or career paths: professional (scientific and engineering), administrative, technical, and support. Some laboratories combine technical and business support. Laboratories continue to use OPM classification standards to identify the title and series of each demonstration position. New standardized position descriptors have been developed to assist managers in administering the position classification authority that has been delegated to them.

To a large degree, the increased simplification is a result of the application of automated classification systems within the participating laboratories. In addition, laboratories are also achieving increased simplification through the use of benchmark position descriptions. Classification authority is generally delegated from the laboratory director to subordinate managers at one or two levels above the position to be classified.

The Evaluation Context Model (Appendix B, Figure B-1) postulates that three of the intended intermediate outcomes of the demonstration program are improved human resource management systems, increased management authority, and increased customer satisfaction with personnel services and processes. Improvements are expected in areas that relate to these outcomes. The Intervention Impact Model (Table B-7) details the specific expected effects of the simplified classification system.

Training for Supervisors. The demonstration project can be a double-edged sword for management. While increasing their authority to manage employees, the demonstration project brings new demands and challenges. Adequate training is essential for these managers and supervisors to perform their jobs effectively.

> **Findings.** When supervisors were asked to indicate whether they had been adequately trained to administer the demonstration pay system, 75% of Wave 1 supervisors who

indicated that they had been given classification authority reported that they had been adequately trained. For Wave 2 laboratories, 61% of supervisors indicating that they had been given classification authority reported that they had been adequately trained (see Table E-8).

Although many employees and managers indicated in focus groups that they are pleased with the improvements made under the new, simplified classification system, and some managers said "they save a tremendous amount of time," other managers reported that the position descriptions are too vague. They also voiced concerns that the simplified position descriptions make it difficult to attract highly specialized applicants. These managers may not be fully aware of what the system offers and how it can be used. This kind of confusion was reported earlier in our Implementation Report.

Automated Classification Systems. The laboratories have implemented a variety of different automated systems to assist supervisors in job classification. These automated systems support the delegated classification authority.

Findings. When asked if it is easy to classify jobs using an automated system, supervisors in Wave 1 and Wave 2 laboratories reported a slightly higher level of agreement in 2001 (33% and 36% respectively) than did non-implemented laboratories (24%) (see Table E-9).

Classification Timeliness

The streamlined classification systems are expected to improve classification timeliness. We have defined classification timeliness as the number of days from receipt of a SF-52 request in the personnel office to the date the classification action is approved.

Findings. Classification timeliness did improve across most laboratories and overall was reduced by three weeks (see Table E-1). When laboratory supervisors were asked about classification timeliness in 2001, 49% of Wave 1 supervisors and 38% of Wave 2 supervisors reported that the process takes too long, compared to 62% for non-implemented laboratories (see Table E-2). These findings indicate that while classification does not take as long as before, there is room for improvement.

AMRDEC and ERDC provide good examples. At AMRDEC, time to classify positions was reduced from 23 days prior to the demonstration to 2.5 days after implementation. At ERDC, the time was reduced from 3 days prior to the demonstration to 15 minutes after implementation.

Length of Position Descriptions. A second factor that is expected to show improvement at laboratories under the demo is position description length. The average length of position descriptions was determined by examining the average number of pages based on a sample of at least 30 position descriptions.

Findings. The demonstration laboratories have reduced the length of position descriptions. NRL provides a good example. [1] Two years after implementation, NRL has

reported a reduction of position description length from seven pages to three (see Table E-3).

Reduced Number of Position Descriptions. Another expected result under a simplified classification system is a decrease in the number of position descriptions that a laboratory must produce. The standardized position descriptions that many laboratories are using under the demo assist managers in effectively administering their classification authority.

Findings. The number of position descriptions that a laboratory has to produce has decreased in all demonstration laboratories. For example, prior to implementation, AMRDEC used between 1,800 and 2,300 position descriptions. Under the demonstration, AMRDEC now has only 24 benchmark positions. ERDC has reduced approximately 1,400 individual job descriptions down to just 32 generic level descriptors under the demonstration. The NAVSEA Warfare Centers reported similar results with the demonstration project, relying on approximately 46 generic one-page descriptors supplemented by a one-page addendum to cover work accomplished by their entire workforce.

Delegated Classification Authority. One of the goals of a simplified classification system is to allow supervisors to assume more authority and accountability. The demonstration provides for delegation of classification authority to supervisors.

Findings. As Table E-4 shows, few demonstration supervisors reported that they have delegated classification authority, since the authority is held two levels above the classifying supervisor. Of the supervisors at Wave 1 and Wave 2 laboratories, only 18% indicated that they have been delegated classification authority in 2001. At non-implemented laboratories, 15% of supervisors reported delegated classification authority. “China Lake” reported 24%.

Satisfaction with Classification. It was expected that managers and supervisors would be more satisfied with simplified classification as implemented in the demonstration.

Findings. Within the Wave 1 laboratories, 59% of supervisors who indicated that classification authority has been delegated to them reported being satisfied with the classification procedures used at their laboratory. For Wave 2 laboratories, 62% of supervisors who indicated that classification authority has been delegated to them reported that they were satisfied (see Table E-7).

A More Responsive, Flexible System. An important objective of a simplified classification system coupled with broadbanding is to make the system more flexible and more responsive to the needs of the laboratories.

Findings. Table E-5 shows small, significant improvement in classification flexibility between 1996 and 2001 for both Wave 1 and Wave 2 laboratories. Respondents were also asked if they feel that, under the current personnel system, it is easy to reassign employees to permanent positions within their laboratory, center, or activity. No

difference was found between demonstration and non-demonstration laboratories, with 38% overall agreeing that it was easy in 2001, up from 20% in 1996 (see Table E-6). This lack of an effect is most likely due to the need to consider the priority placement program.

Challenges for Management. Supervisors and managers need thorough training to use the new systems and new authorities properly. The simplified classification procedures are designed to reduce paperwork and provide more flexibility. Managers may need to receive more training and, in turn, do a better job communicating with employees about the features, requirements, and limitations of the new system.

Results for the simplified classification system are summarized in Table 4.1.

Table 4.1
Summary Results for Simplified Classification

HR Component	**Trend/Change**
Classification Timeliness	Significant reduction
Length of Position Descriptions	Significant reduction
Number of Position Descriptions	Significant reduction
Automated classification	Increased satisfaction

[1] At NRL, the Integrated Pay Schedule is applied to all positions covered by the demonstration. Under this broadbanding system, occupations with similar characteristics have been grouped into four career tracks (S&E Professional, S&E Technical, Administrative Specialist and Professional, and Administrative Support). Like the other laboratories, within these tracks, OPM job series still apply. Each career track includes three to five bands. Each career track has two or three generic critical elements that are further refined using descriptors and discriminators to define the scope, type, and level of work needed to reach the highest point within each career band. These critical elements serve as both a classification standard and the criteria for assessing an individual's contribution.

Compensation and Broadbanding

The many interventions of the laboratory demonstration program are intended to make it easier for management to recruit, develop, motivate, and retain a high-quality workforce. Interventions such as broadbanding and simplified classification, which replace the traditional government classification and pay system, and performance-based pay systems, which replace the traditional government lock-step pay progression system, were implemented as an integrated set of interventions that are expected to work synergistically to produce the desired results. Properly implemented and managed, they have the potential to reduce paperwork and increase management flexibility in hiring, compensating, and promoting employees while also promoting effective communication between management and the workforce.

This section will examine how broadbanding and performance-based pay were implemented and how they affected the quality of the workforce, organizational commitment, and turnover and retention.

Broadbanding

All the laboratories implemented broadbanding systems similar to the one initiated in the project popularly known as the "China Lake Demonstration Project" in 1980.[1] Broadbanding reduces the standard fifteen General Schedule grades into a series of three to five bands for a given career path or occupational group. Broadbanding increases organizational flexibility by reducing paperwork for classification actions and promotions. By creating broad pay ranges, it increases pay potential, gives recruiters greater flexibility in offering starting salaries, and, when combined with a pay-for-performance system, provides the opportunity to progress based on performance rather than tenure. As one employee in the focus groups expressed it, "the old system was a clock."

Within a particular demonstration project, career paths generally correspond to occupational groups with similar educational requirements and pay potential. With the exception of the Air Force Research Lab, which limited its project to scientists and engineers, all the laboratories created similar career paths for their projects (e.g., scientists and engineers, administrative support, technicians, and clerical support), with separate banding schemes for each career path. The salary ranges (corresponding to General Schedule grades) that comprise bands for a given career path also vary across the demonstration projects.

Banding Schemes

Both AFRL and NAVSEA (NSWC and NUWC) have selected a single demonstration plan each for their participating divisions. The Army laboratories have developed and implemented four different plans to date, each designed to meet the needs of a particular laboratory. ARL and AMRDEC banded the high graded scientists and engineers (GS-14 and GS-15) together. MRMC combined GS-13 and GS-14. The ERDC combined GS-12, GS-13, and GS-14. Both MRMC and ERDC left GS-15 in a separate band. AFRL kept both high grades, GS-14 and GS-15, as separate bands, in effect choosing not to band its

high grades. However, AFRL allows movement between the bands, i.e., performance-based promotions. In all cases, banding differed from one career path to another. For a graphic description of the various banding schemes, see Tables 4.2 through 4.5.

Army. All Army demonstration projects include a unique feature in Pay Band V (VI for ERDC). Pay Band V covers the pay from 120% of Step 1, GS-15 through SES Level 4 and covers Senior Scientific Technical Managers (SSTM). This band differs from the non-supervisory ST positions, which are classified in the Senior Level Band (formerly grades 16 to 18; Level V for "China Lake"). The rationale behind the formation of this new pay band is that neither the SES nor the ST classification is appropriate for preeminent bench scientists with supervisory responsibilities. The SES classification criteria involve executive responsibility, while ST positions are reserved for non-supervisory bench scientists and engineers. The new Pay Band V resolves this problem by establishing a category that recognizes both the high-level technical and supervisory requirements of such positions.

A grand total of 40 Pay Band V positions have been authorized within DoD. These positions are allocated by the Assistant Secretary of Defense (Force Management Policy) and administered by each military service. The Department of the Army made a rigorous review of positions that potentially met Pay Band V criteria; the review included a panel process conducted by the Chief Scientist of the Army. Based on the results of that review, in November 1999, the Army requested 16 slots to support Pay Band V positions in Army demonstrations. In December 1999, DoD approved the Army's request.

NAVSEA. The NAVSEA demonstration also includes ST and other Senior Level positions as Band VI of the scientist and engineer career path. However, these positions are covered for employee development, performance appraisal, and awards only. Their classification, compensation, and staffing remain unchanged.

Band VI of the scientist and engineer path includes the Senior Scientific Technical Manager (SSTM) positions under the NAVSEA demonstration project. Of the total 40 authorized within DoD, NAVSEA Warfare Centers have been allocated eight. Additionally, the Navsea demonstration project also includes ST and other Senior Level positions. However, these positions are covered only for employee development, performance appraisal, and the incentive pay components. Their classification, basic compensation, and staffing remain unchanged.

The NAVSEA bands overlap to a greater extent than is indicated in the tables. Each band extends downward by one additional grade into the band below. For example, Band IV for scientists and engineers (GS-12/13) actually covers some whose pay is equivalent to GS-11.

NRL. Like army, NRL has been given authority to create a limited number of Senior Scientific Technical Managers, which NRL calls Advanced Research Scientists and Engineers. NRL has been allocated 12 of the 40 DoD-wide positions. These employees are assigned to Band V.

Air Force. The Air Force bands are similar to the concept of a career band. The level designators are anchors, but employees are able to move non-competitively from band to band on the basis of their contribution scores. As in the other labs, budget considerations limit the number of promotions to high grades. However, the original high-grade constraints in existence at the time of the implementation of the demonstration program have been lifted.[2]

Table 4.2 Banding Schemes for Scientists and Engineers

Grade	China Lake	NAVSEA	NRL	ARL	AMRDEC	ERDC	MRMC	AFRL
1	A	I	I	I	I	I	I	
2								
3								
4								
5	I	II	II	II	II	II	II	
6								
7								I
8								
9	II	III						
10								
11			III			III		
12	III	IV		III	III	IV		II
13							III	
14	IV	V	IV	IV	IV			III
15						V	IV	IV
Above 15*	V*	VI**	V**	V**	V**	VI**	V**	

China Lake: Navy demonstration since 1980; **NAVSEA:** NSWC **(**Naval Surface Warfare Centers) & NUWC (Naval Undersea Warfare Centers); **NRL:** Naval Research Laboratory; **ARL:** Army Research Laboratory; **AMRDEC:** Aviation Missile Research, Development, and Engineering Center; **ERDC:** Engineer Research and Development Center; **MRMC:** Medical Research & Materiel Command; **AFRL:** Air Force Research Laboratory.
*****These levels cover the Senior Level band.
**This level covers the Senior Scientific Technical Managers (SSTMs).

<table>
<tr><th colspan="8">Table 4.3 Banding Schemes for Administrative Occupations</th></tr>
<tr><th>Grade</th><th>“China Lake”</th><th>NAVSEA</th><th>NRL</th><th>ARL</th><th>AMRDEC</th><th>ERDC</th><th>MRMC</th></tr>
<tr><td>1</td><td rowspan="4">A</td><td rowspan="4">I</td><td rowspan="4">I</td><td rowspan="4">I</td><td rowspan="4">I</td><td rowspan="4">I</td><td rowspan="4">I</td></tr>
<tr><td>2</td></tr>
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<tr><td>4</td></tr>
<tr><td>5</td><td rowspan="4">I</td><td rowspan="4">II</td><td rowspan="6">II</td><td rowspan="6">II</td><td rowspan="4">II</td><td rowspan="6">II</td><td rowspan="6">II</td></tr>
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<tr><td>8</td></tr>
<tr><td>9</td><td rowspan="2">II</td><td rowspan="2">III</td></tr>
<tr><td>10</td><td rowspan="4">III</td></tr>
<tr><td>11</td><td rowspan="2">III</td><td rowspan="2">IV</td><td rowspan="2">III</td><td rowspan="4">III</td><td rowspan="2">III</td><td rowspan="2">III</td></tr>
<tr><td>12</td></tr>
<tr><td>13</td><td rowspan="4"></td><td rowspan="2">V</td><td>IV</td><td rowspan="4">IV</td><td rowspan="4">IV</td><td rowspan="4">IV</td></tr>
<tr><td>14</td><td rowspan="3">V</td><td rowspan="3">IV</td></tr>
<tr><td></td><td rowspan="2">VI</td></tr>
<tr><td>15</td><td>V</td><td>V</td><td>V</td></tr>
<tr><td colspan="8">China Lake: Navy demonstration since 1980; NAVSEA: NSWC (Naval Surface Warfare Centers) & NUWC (Naval Undersea Warfare Centers); NRL: Naval Research Laboratory; ARL: Army Research Laboratory; AMRDEC: Aviation Missile Research, Development, and Engineering Center; ERDC: Engineer Research and Development Center; MRMC: Medical Research & Materiel Command.
Note: Air Force does not include administrative employees under the demonstration.</td></tr>
</table>

Table 4.4 Banding Schemes for Technical Occupations

Grade	"China Lake"*	NAVSEA	NRL	ARL	AMRDEC	ERDC	MRMC
1	A	I	I	I	I	I	I
2							
3							
4							
5	I	II	II		II	II	II
6							
7							
8						III	
9	II	III	III	II			III
10					III		
11	III	IV	IV			IV	
12				III			IV
13		V	V**		IV		
14		VI					
15					V		

China Lake: Navy demonstration since 1980; **NAVSEA:** NSWC **(**Naval Surface Warfare Centers) & NUWC (Naval Undersea Warfare Centers); **NRL:** Naval Research Laboratory; **ARL:** Army Research Laboratory; **AMRDEC:** Aviation Missile Research, Development, and Engineering Center; **ERDC:** Engineer Research and Development Center; **MRMC:** Medical Research & Materiel Command.
***** These bands apply to Naval Command, Control and Ocean Surveillance Center; Naval Air Warfare Center Weapons Division bands are 1-4, 5-7, 8-10, and 11-12.
** Temporary career level to accommodate current incumbents.
Note: Air Force does not include technicians under the demonstration.

Table 4.5 Banding Schemes for Support Occupations

Grade	"China Lake"*	NAVSEA	NRL	ARL	AMRDEC	ERDC	MRMC
1	A	I	I	I	I	I	I
2							
3							
4	I					II	
5		II	II	II	II		II
6	II					III	
7		III			III		
8	III		III	III		IV	
9		IV			IV		III
10	IV						
11		V					
12							

China Lake: Navy demonstration since 1980; **NAVSEA:** NSWC **(**Naval Surface Warfare Centers) & NUWC (Naval Undersea Warfare Centers); **NRL:** Naval Research Laboratory; **ARL:** Army Research Laboratory; **AMRDEC:** Aviation Missile Research, Development, and Engineering Center; **ERDC:** Engineer Research and Development Center; **MRMC:** Medical Research & Materiel Command.
***** These bands apply to Naval Command, Control and Ocean Surveillance Center; Naval Air Warfare Center Weapons Division bands are GS 1-3, 4-5, 5-6, 6-7, 8-9, and 10-11.
Note: Air Force does not include support occupations under the demonstration.

Results

Recruitment

Offer/Acceptance ratios. By removing constraints on pay setting, the laboratories can offer higher starting salaries that are more commensurate with applicant qualifications and more competitive with private industry. As a result, starting salaries may be higher under broadbanding, which should improve offer/acceptance ratios.

> **Findings.** Data limitations make it impossible to confirm any improvement in offer/acceptance ratios. Unfortunately, pre- and post-demonstration information was available only for ERDC and NSWC, Dahlgren Division. Neither of these laboratories demonstrated improvement in offer/acceptance ratios from pre-demonstration levels. However, focus group interviews with personnel from several of the demonstration laboratories suggest that the demonstration has improved the timeliness with which some of the laboratories make offers of employment to candidates.

Starting Salaries. As a result of banding, the laboratories can offer higher (more competitive) starting salaries than is possible under the GS system.

> **Findings.** Starting salaries for Scientists and Engineers are higher in laboratories that have implemented pay banding. In each year starting salaries of Scientists and Engineers were highest in Wave 1 labs, and higher in Wave 2 laboratories than in non-implemented, Wave 3 laboratories. Although this ordering occurs in 1996, implementation has increased the differences. The trend is less clear for the other occupational categories because the small number of new hires makes the results unstable. See Appendix F, Table F-2 for average starting salaries, across years, for each wave and each occupational group.

Pay Progression and Payroll Costs. By changing the basis for pay progression from longevity to performance, high performing employees covered by the demonstration can increase their pay more quickly and poorly performing employees may progress more slowly than their counterparts under the General Schedule. The rate of this progression partly depends on pay pool funding levels (see Appendix F, Table F-3). Broadbanding also increases pay potential for some employees who might not have been promoted to the top grade in the band. Pay progression and average salaries, therefore, may be higher under the demonstration project, and employees under broadbanding should be more satisfied with their pay and opportunities for advancement. The number of employees in high-grade bands should not differ from the GS system, but ultimately, employees may cluster at the high end of the band.

> **Findings.** Although pay increased from 1996 to 2000 more for implemented than non-implemented labs, many of the implemented laboratories did not include their bargaining unit employees due to union opposition. As a result, the lower-graded bargaining unit employees are not represented in the same proportions in the post-demonstration implementation salaries. As such, the higher salaries may represent the effects of age and tenure, rather than broadbanding per se. Dropout was a particular problem for the non-S&E career paths, whose average salary for demonstration employees increased more relative to the CPDF comparison group and the non-implemented laboratories than did the salaries of scientists and engineers who were more likely to be covered by the demonstration. Appendix F, Tables F-4 to F-8 show mean basic pay for each lab, each occupational group, and each year from 1996 to 2000.
>
> A more useful examination of pay progression compares a cohort of employees for the years covered by this evaluation, 1996-2000. This analysis used the grade and step corresponding to average pay for a given occupational group over time. Table 4.6 on page 31 shows pay progression over time by comparing the grade and step corresponding to average pay for a given occupational group over time. This comparison holds constant the effects of general pay increases, and the same

Table 4.6 Average Grade and Step Equivalent of Mean Salaries by Lab Group for 1996 – 2000 Cohort

Lab	S&E		Admin		Tech		Cler.		Other	
	1996	2000	1996	2000	1996	2000	1996	2000	1996	2000
Wave 1										
AFRL	13-6.08	13-8.34								
AMRDC	13-5.07	13-7.08	12-2.01	12-4.18	10-2.53	10-5.65	6-2.22	6-4.75	4-9.18	3-4.27
ARL	13-5.11	13-8.75	12-1.59	12-5.28	10-4.46	10-8.42	6-4.88	6-8.54	6-8.15	6-6.12
MRMC	13-2.64	13-3.98	11-6.58	11-8.32	9-1.60	9-2.94	6-4.68	6-5.65		
Wave 2										
NSWC	13-3.21	13-4.70	12-1.76	12-4.29	10-5.60	10-7.99	6-4.68	6-6.91	6-3.57	6-8.53
ERDC	13-2.47	13-3.96	11-4.27	11-6.87	8-3.49	8-6.26	6-2.17	6-4.56	5-2.27	5-5.48
NRL	13-8.48	13-10.42	12-2.17	12-4.32	10-3.14	10-4.88	6-5.79	6-6.62	5-6.31	4-4.07
NUWC — Newport	13-3.57	13-4.39	12-2.98	12-5.54	10-6.18	10-8.23	6-3.22	6-5.06		
Wave 3										
NUWC—Keyport	13-1.72	13-3.07	11-6.84	11-8.43	10-6.83	10-8.75	6-3.34	6-6.24	6-2.65	
CECOM	13-5.29	13-5.03	12-4.21	12-5.97	10-2.92	10-2.56	6-3.09	6-4.45	4-2.12	4-3.14
TACOM—Armaments	13-3.69	13-3.73	12-2.95	12-3.52	10-2.90	10-3.33	6-5.26	6-6.29	6-4.66	6-6.16
TACOM	13-3.79	13-1.24	12-4.26	12-3.78	9-8.59	8-2.17	6-3.21	6-4.90	4-4.32	6-6.60
SBCCOM	13-1.84	13-4.72	11-5.85	12-4.80	9-3.94	9-7.18	6-3.71	6-5.25	6-1.88	
STRICOM	13-3.13	13-3.93	12-5.81	12-6.81	7-2.61	7-2.00	6-2.05	6-3.24		
CPDF	13-6.58	13-9.11	13-2.58	13-5.81	10-1.47	10-5.08	7-2.95	7-6.92	-	-

Note. Based on regressions for 1996 – 2000 cohort. The number before the dash is the grade. The number after the dash is the step within that grade. The numbers after the decimal represent the distance between steps. For example, 13-2.50 means grade 13 and half way between steps 2 and 3.

groups over time. From 1996 to 2000, the average salary of scientists and engineers increased the equivalent of 2 to 3 steps in Wave 1 labs, one to 2 steps in Wave 2 labs, about zero to one steps in Wave 3 labs, and about 2.5 steps in comparable CPDF laboratories. The ranges were similar, though somewhat higher, for the other occupational groups, especially when compared to the CPDF laboratories.

As might be expected given their comparatively lower funding levels, salaries at NSWC generally increased less than in other Wave 2 and Wave 1 laboratories. For scientists and engineers, the increase was almost the same as for Wave 2 laboratories and about 2 steps less than in Wave 3 laboratories. Conversely, the increases at ARL generally exceeded both the other S&T laboratories and the laboratories represented in the CPDF sample. The merit pay pool funding levels in the implemented laboratories are shown in Appendix F, Table F-3.

Although the laboratories used many different banding schemes, there is no indication that one scheme is more or less costly than another, because promotion policies still influence movement between bands. In some cases, where bands included higher grades (14 and 15), promotions from the lower band have been less common than under the GS system. Each banding system was designed to fit a particular laboratory's needs, and it appears that a variety of different systems can work effectively, as long as overall budget control is exercised.

Satisfaction with Advancement Opportunity. Under broadbanding, employees are expected to be more satisfied with their pay progression. Satisfaction with opportunities for advancement should not be affected by the demonstration, since the same budget constraints apply to both demonstration and non-demonstration laboratories.

Findings. Satisfaction with advancement increased from 1996 to 2001, for all laboratories at the same rate (see Appendix F, Table F-9). The pattern of results was similar for the perception that advancement opportunities are available for qualified employees regardless of gender, race, and other non-performance factors. Overall, satisfaction levels were slightly higher in Wave 1 laboratories.

Dual Career Ladder. Under the broadbanding system, it was expected that mission critical employees (e.g. bench scientists) could advance in pay without becoming supervisors.

Findings. Respondents were asked whether they believe that they do not have to become a supervisor within their organization to receive more pay (see Appendix F, Table F-10). 53% of Wave 1 respondents and 50% of Wave 2 respondents agreed that they do not have to become a supervisor in order to receive more pay, compared to 43% in Wave 3.

Procedural Justice and Pay Satisfaction. It is important that employees perceive that pay progression is fair, that pay is administered fairly, and that employees understand how pay decisions are made.

> **Findings.** The perception that pay is administered fairly, i.e., procedural justice, increased slightly across years, at a proportional amount for all waves, with a slight decrease following demonstration implementation. There is no significant difference between Wave 1 laboratories and non-implemented laboratories under the GS system (see Appendix F, Table F-11).
>
> Satisfaction with pay also increased from 1996 to 2001, although satisfaction dropped slightly around the time of implementation. In 2001, pay satisfaction was highest in the Wave 1 labs, 57%, compared to 48% in Wave 2 and 51% in the non-implemented laboratories under the GS system (see Appendix F, Table F-11).
>
> There were only slight differences between the waves on understanding how pay decisions are made. Because of the concerted efforts of the laboratories to communicate changes, Wave 1 employees actually had a better understanding of pay decisions than General Schedule employees.
>
> The perceived fairness of pay progression generally increased from 1996 to 2001, with a drop around the time of implementation (see Appendix F, Table F-11). This drop is primarily due to an increase in the number of undecided responses (i.e., neither agree nor disagree), rather than increased dissatisfaction.

Conversion from GS to Broadbanding

Experience with previous demonstration projects served as a guide in planning the conversion to broadbanding for the S&T Reinvention Laboratory Demonstration Program. Conversion of employees under the General Schedule into a broadbanding system is implemented with the assurance that an employee's initial place within the band system does not result in any loss of pay. Since employees lose "entitlement" to step increases, conversion must include a method of compensating them for this loss. When "China Lake" converted their employees to banding, employees were compensated for the loss of entitlement to step increases and career ladder promotions through prorated "buy-ins" in the form of base pay increases.[3] The cost of this conversion method was estimated at about 2.5% of payroll. Subsequent demonstration projects chose less costly conversion methods. The Pacer Share demonstration (Air Force/DLA 1988-1993) bought out upcoming step increases (but not career ladder promotions) in the form of base pay, resulting in a cost of about 2% of payroll. NIST (1988-1996) bought out only upcoming step increases and paid them as a lump sum, at a one-time cost of about 1% of payroll.

All laboratories in this project "bought in" upcoming step increases with base pay increases, often as a result of union negotiations.[4] Upon implementation, employees had their base salary adjusted by that portion of the next higher step based on the portion of the waiting period they have completed prior to the date of implementation. Table F-1 (Appendix F) shows the conversion costs at the laboratories for which we have the

necessary data. In general, compensating employees for step increases would result in an increased payroll cost of 1 to 2%.

Effects of Performance and other Factors on Pay Progression

Under the demonstration pay-for-performance systems, performance and pay ratings are linked directly to salary increases and, over time, pay progression is expected to be based more on performance than tenure. To assess the degree to which pay progression under broadbanding is due to banding and pay for performance rather than other factors, such as age and tenure, regression analyses were performed for the first four laboratories in Wave 1, predicting basic pay in 2000 from baseline basic pay (1996 for AFRL and CPDF; 1997 for AMRDEC, ARL, and MRMC) and performance and demographic factors. The results are summarized in Appendix F, Tables F-11 to F-15. These analyses control for the problem of unequal baseline and post-demo comparison by selecting cohorts on board at the laboratories between 1996/1997 and 2000.

> **Findings.** Across all occupation groups, the regression models accounted for almost all of the variance in 2000 pay (much of it due to starting pay in 1996/1997). The non-performance factors (other than starting pay) generally had small effects on pay, though with the large sample sizes some of the effects are statistically significant. Although some disparate impact was found for race, the effects were sporadic across laboratories and inconsistent in direction (both negative and positive), suggesting that factors other than the demonstration moderate the effects.
>
> The results show that performance is becoming an increasingly significant predictor of pay progression in each of the demonstration laboratories. The effect of performance on pay was small to non-existent in the CPDF sample. At AFRL, the longest running project, performance had a much stronger effect than at the other Wave 1 laboratories (see Appendix F, Table F-12). Performance had the weakest effect on pay at MRMC, most likely because MRMC uses only up to two pay points, compared to four or more in the other laboratories. Given adequate differentiation among performance and payout levels, the pay-for-performance systems have been successful in strengthening the pay-performance link.

High-Grade Distribution

Movement between bands represents a promotion, just as movement between grades does under the GS system. Banding reduces the number of promotions. As a result, average salaries within a band may increase while the number of employees in high-grade bands may remain relatively constant.

> **Findings.** In general, the percentage of employees in high grades/bands increased from 1996 to 2000 in each wave and in the CPDF comparison group. The rate of

increase from 1996 to 2000, however, was not the same for each wave or laboratory (see Table F-16). As expected, Wave 1 laboratories showed larger increases than Waves 2 and 3 but some laboratories were below the CPDF increase of 5%. AFRL, the longest running demonstration, showed the largest increase but this did not raise average salaries as much as would be expected. AFRL appears to have been successful in realigning pay by limiting increases for "overcompensated" employees.

Senior Scientific/Technical Manager Positions

An innovative feature of the demonstration is the provision of 40 DoD-wide Senior Scientific Technical Manager (SSTM) positions for highly qualified bench scientists with supervisory responsibility. These positions are allocated by the Assistant Secretary of Defense (Force Management Policy) and administered by each military service. The rationale behind these new positions is that neither the SES (executive positions) nor the ST (non-supervisory bench scientists and engineers) classification is appropriate for preeminent bench scientists with supervisory responsibilities. SSTMs are placed in Band V at ARL, AMRDEC, MRMC, and NRL, and Band VI at NSWC, NUWC, and ERDC. Table F-17 (Appendix F) shows the number of SSTMs at each of these laboratories. To date, 36 of the 40 positions have been allocated to Army, NRL, and NAVSEA.

Supervisory Bands

One potentially negative consequence of the dual career ladder concept is pay inversion. First-line supervisors who are in the same band as their subordinates may in some cases receive lower pay than those they supervise. The supervisory allowances, differentials and bonuses offered by some laboratories should help alleviate this problem by compensating them for their supervisory duties. The Army laboratories may compensate supervisors for their added responsibility with higher base pay (AMRDEC and optionally at ERDC) and supervisory bonuses (MRMC). Tables F-18 and F-19 (Appendix F) compare the average pay of supervisors and non-supervisors in the professional and administrative career paths, for AMRDEC, ERDC, MRMC and the other laboratories.

Findings. Although supervisors generally make more than non-supervisors, at some laboratories and in certain bands and years the average supervisory salary is less than the average non-supervisory salary. This pattern holds for both AMRDEC, ERDC, and MRMC, and for the laboratories that did not implement a supervisory bonus or differential.

Although supervisors at AMRDEC, MRMC, and ERDC generally are not satisfied with their pay differential as adequate compensation for the additional supervisory responsibilities, the number of dissatisfied supervisors declined, overall, from 63% in 1998 to 56% in 2001. During the same period, the percentage of satisfied supervisors increased from 19% to 26%. See Appendix F, Table F-20 for satisfaction with supervisory differentials.

External and Internal Pay Equity

Greater flexibility in pay setting was expected to make the laboratories more competitive and more market sensitive. All other things held constant, this should increase the perception of external pay equity. Perceptions of internal pay equity, traditionally low among Federal employees, were not expected to change under broadbanding.

> **Findings.** The demonstration project was not found to have an effect on perceived external or internal pay equity. External pay inequity increased across both implemented and unimplemented laboratories. The perception that other employers in the same area pay more than the government increased somewhat from 1996 to 2001, but the rate of increase was the same for all Waves. This is likely attributable to the booming economy between 1996 and 2001. Similarly, the perception that pay differentials in the laboratories fairly represent real differences in levels of responsibility and job difficulty rose slightly across both implemented and unimplemented laboratories. There is no obvious explanation for this rise. See Appendix F, Table F-21 for specific results across time.

Bonuses

Under most of the laboratory demonstration pay-for-performance systems, employees can receive bonuses in addition to or in lieu of base pay increases. Funding for bonuses ranges from less than 1% to 1.5% or in some cases 2%. In addition, NRL implemented a Distinguished Contribution Allowance (DCA)—funded with 1.5% of employees' basic pay—to award outstanding performers with bonuses far in excess of ordinary merit increases. At NSWC and NUWC, employees may be granted a continuing pay increase (pay adjustment), bonus pay, or a combination of these. Additional contributions by employees may be recognized via the traditional on the spot or special act awards, although with the advent of the incentive pay system, significantly smaller numbers of these traditional awards have granted to the workforce.

> **Findings.** The demonstration projects afford great flexibility in awarding bonuses. Tables F-22, F-23, and F-24 (Appendix F) show, respectively, the range of bonus amounts, mean bonus amounts, and the percentage of employees receiving a bonus. The range of bonuses did not necessarily increase from year to year, nor did the average bonus amount or the number of employees who received a bonus. The decrease in bonuses at NSWC after 1998 reflects the shift from traditional awards to incentive pay. As expected, DCA bonuses at NRL in 1999 exceeded the merit bonus in all labs, with 33 employees receiving a minimum of $10,089, a maximum of $20,179, and a mean of $13,728. In 2000, three employees each received $21,471.

Organizational Commitment

Satisfied employees are more committed to their organization. Because the demonstration projects were expected to increase satisfaction with compensation, the pay-for-performance systems should result in greater organizational commitment. However, because commitment depends on more than the amount of pay, levels of commitment must be considered in light of other variables, such performance appraisal procedures, job challenge, and the quality of supervision.

> **Findings.** Table F-25 shows that average organizational commitment was similar across all the labs, implemented and non-implemented. Although the differences were slight, employees in Wave 1 laboratories were most committed, followed by those in non-implemented labs, with those in Wave 2 laboratories the least committed. Commitment was highest at MRMC and AMRDEC and lowest at ARL.
>
> Table F-26 shows that opportunities for advancement, pay satisfaction, performance appraisal fairness, perceiving a link between pay and performance, the quality of supervision, and overall job satisfaction are all positively related to organizational commitment. The change in regression weights from step 1 to step 2 shows that satisfaction depends on both the amount of rewards and the procedures used to determine them. The weights from step 3 show that the pay and performance appraisal effects influence commitment primarily through their effect on overall job satisfaction. The perceived quality of supervision had nearly the same strength of effect as overall job satisfaction. These results show that factors in addition to pay influence organizational commitment.

Turnover

It was expected that the demonstration program would facilitate retention of the highest-performing, most critical employees and increase the turnover of poorer-performing employees. This was especially true for mission-critical scientists and engineers.

> **Findings.** Any way the data are examined, there is no discernable pattern that consistently distinguishes turnover within the demonstration laboratories from that within the CPDF sample or within the non-implemented laboratories (see Table F-27, Appendix F). In every case, factors, such as the booming economy or laboratory consolidations have simply made turnover more erratic.

In the case of turnover as a function of performance, several factors confound the results. First, all rating distributions are heavily skewed with almost no employees being rated below fully successful (see Table G-12). Second, over time, some of the demonstration laboratories and many organizations within the CPDF dataset have converted from the formerly standard five-point system to pass/fail systems. These simply do not lend themselves to an examination of turnover by performance.

Turnover by Performance

As part of the original demonstration evaluation plan, a new methodology for measuring turnover by "criticality" was tested. This methodology, known as "Starturn," was tested in a limited number of laboratories. Supervisors were asked to rate the criticality of their scientists and engineers on a scale of 1 to 10. Criticality was defined as technical competence, importance to mission, and ease/difficulty of replacing the individual. The ratings were confidential and did not become part of any record for the employees. They are also exempt from the Freedom of Information Act since they are only used for research purposes.

> **Findings.** More than 5,000 "Starturn" ratings were collected in three waves, but the numbers were too small at some laboratories for meaningful analyses. Where it was possible to analyze results, it was determined that, while the ratings are still skewed, they are not as skewed as standard performance ratings. In the two laboratories with the largest number of ratings, AFRL and AMRDEC, turnover was highest among those rated lowest. At AFRL, among the least critical employees, the turnover rate was 28%. Among the employees rated most critical to mission, it was 19%. At AMRDEC, turnover was 10% for those rated lowest and 6% for those rated highest (see Table F-28, Appendix F). Table F-29 shows the demographic characteristics of those who left, and Table F-30 summarizes the statistics. The majority of those who left had advanced degrees and were electronics or aerospace engineers, and physicists. The age distribution of leavers was bimodal (about 40% were under 40 and 50% were over 50, with 10% between 40 and 50).

End Notes

[1] The Navy's demonstration project in "China Lake" (Naval Air Warfare Center Weapons Division, formerly Naval Weapons Center) and San Diego (Space and Naval Warfare Systems Center, formerly Naval Ocean Systems Center), California, was initiated in 1980 and became permanent in 1994.

[2] (1999 PL 106-065, Sec. 1109, waived high-grade controls, FTE limits and supervisory ratios).

[3] The term "buyout" was used in the original "China Lake" project. This was revised to "buy-in" for the DoD S&T Reinvention Laboratory Demonstration Program in order to distinguish this payment from the more current "buyouts" paid as an incentive for employees to leave Federal employment during force reductions.

[4] MRMC initially provided for a lump sum payment at the one-year anniversary of implementation of their demonstration project. In June 1999, as a result of union negotiations, MRMC amended its project plan so as to make this payment an increase to base pay, rather than a lump sum.

Performance Management

A key feature of the laboratory demonstration project is pay for performance. It is designed to shift the organizational culture from one of entitlement where pay increases are determined by length of service to one of merit where pay increases depend on performance or contribution to mission accomplishment. The Wave 1 and Wave 2 laboratories have developed different types of pay-for-performance systems around this concept. Pay increases are determined annually and are based on the individual's performance rating and/or a comparison of performance contribution and current pay. Pay pool funding comes from money that would have been spent for within-grade or quality step increases and promotions to grades within a band. In some organizations (e.g., ERDC, MRMC, NRL, and AFRL), the general increase is "at risk" and receipt of this is contingent on satisfactory performance or contribution. In other organizations (e.g., ARL, AMRDEC and the Naval Warfare Centers), the general increase is granted to all employees annually, as is the practice under Title 5. An employee's performance may not be determined "unacceptable" unless the employee has been placed on and failed an annual performance plan. Generally, employees who are rated "acceptable" are eligible for a payout in the form of base pay (continuing pay), bonus pay, or a combination. Table 4-7 provides a brief description of the features of each pay-for performance system.

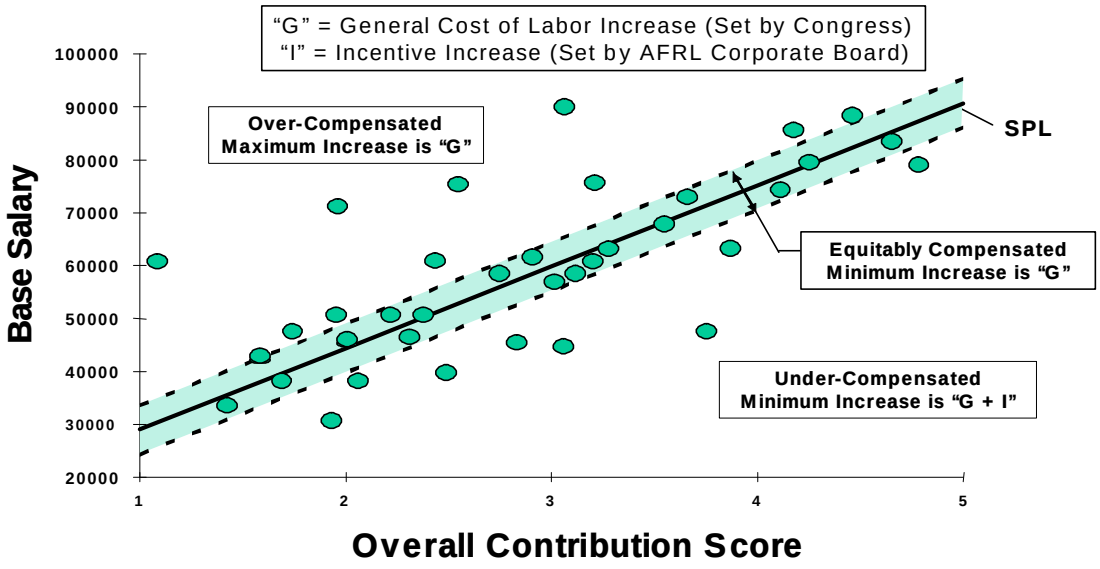
Performance Management Systems

AFRL

The Air Force Research Laboratory's Contribution-based Compensation System (CCS) is the model for a new integrated approach to classification, compensation and performance management. CCS measures the contribution of the employee to the mission of the organization. Employee contribution is measured on the same six factors that are used to classify positions and to assign them levels in the broadbanding system. The six factors are Technical Problem Solving, Communications/Reporting, Corporate Resource Management, Technology Transition/Technology Transfer, R&D Business Development, and Teamwork and Leadership. Employees under the demonstration will be assigned to one of five job categories. Varying weights may be applied to the six factors based on the job categories. An individual's CCS score is determined by comparing his/her score on the six performance factors to his/her compensation. This score is plotted on a Standard Pay Line (SPL). The pay decision for the individual is based on the "zone" in which the CCS score falls: within the rails (immediately above or below the SPL) or outside the rails (see Figure 4.1). If the score is above the upper rail, the individual is over-compensated. The goal of the AFRL system is to achieve a balance between an individual's contribution and his/her compensation so that over time CCS scores approach the SPL.

Table 4.7 Performance Rating Systems				
Lab	**Rating Levels**	**Rating Points**	**Payout Shares**	**General Increase at Risk**
Air Force Research Lab	42 levels: 0, 1.0 to 4.90 on a continuum, and 5.9	0, 1.0 to 5.25 on a continuum, 5.9	Dollar amount corresponding to scores	Yes
Naval Warfare Centers (NAVSEA)	2 levels: acceptable and unacceptable		0-4	No
Army AMRDEC	4 levels: A, B, C, U	100	0-4	Yes
Army Research Lab	4 levels: distinguished, commendable, successful, and unsatisfactory (changed from A B, C, U)	100	0-4	No
Army MRMC	4 levels: superior, exceptional, satisfactory, and failure (changed from A B, C, F)	100	0-2	Yes
Army ERDC	6 levels: 0-5	6	0-4	Yes
Naval Research Lab	2 levels: acceptable and unacceptable	0 to 89	Percentage corresponding to scores	Yes
Army TACOM	5 levels	120	Percentage corresponding to scores	Yes
Army CECOM	2 levels: acceptable and unacceptable	50	Percentage corresponding to scores	Yes

Figure 4.1 AFRL's Contribution-based Compensation System (CCS)



ARMY

Most of the Army Wave 1 laboratories (AMRDEC, ARL, and MRMC) use generic performance elements and evaluate overall performance on four levels. For ARL the levels are Distinguished, Commendable, Successful, and Unsatisfactory; for AMRDEC they are the letters A, B, C, and U; and for MRMC they are Superior, Exceptional, Satisfactory, and Failure. Since not all of the employees will have the same number of rating elements, the scores are summed and averaged to determine the overall performance score. Employees with scores greater than 2.0 will be eligible for performance awards and the general increase. Each performance element is assigned a weight in a specified range with a total weight of all elements set to equal 100 points. The overall score for each individual is the sum of the performance element scores. Only employees with a grade of "C" (or the equivalent) or higher will receive general increases, performance-pay increases, and/or performance bonuses. ERDC uses generic performance elements in a six-level rating system (plus a provision to add specific work plans) with scores ranging from 0-5. The pay scores result in payout "shares" whose value varies based on the performance ratings given in the pay pool. A pool with many high performance ratings results in more shares being distributed at a lower value per share.

NAVSEA

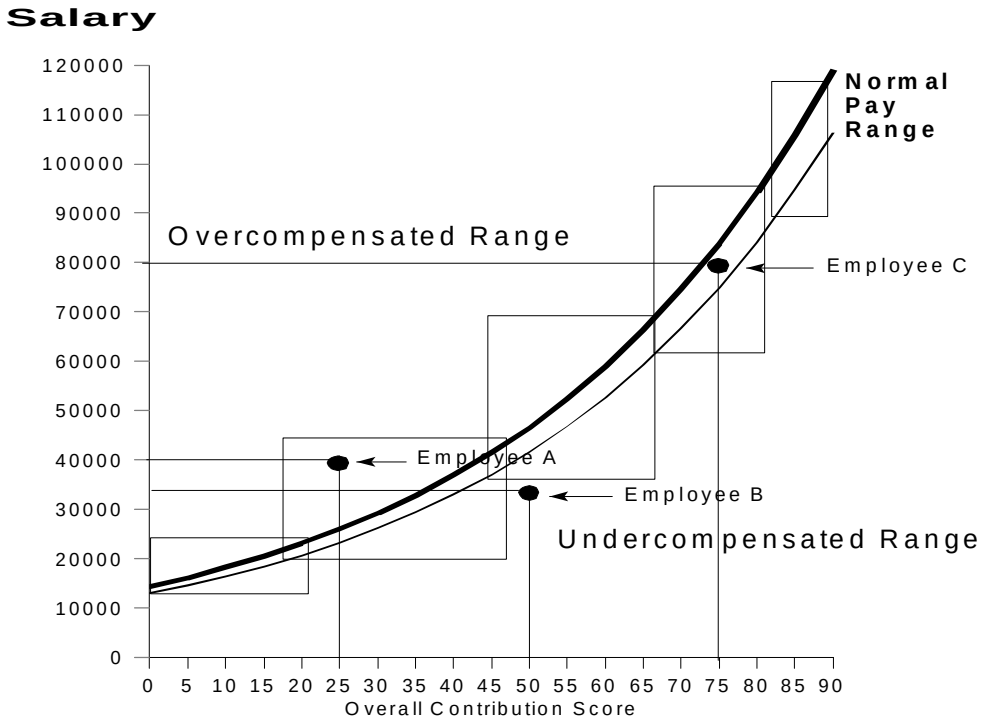
The Naval Sea Systems Command Warfare Centers (NAVSEA) are comprised of the six Naval Surface Warfare Center (NSWC) divisions and the two Naval Undersea Warfare Center (NUWC) divisions. NAVSEA has implemented a two-level rating system called the Performance

Development System: acceptable, unacceptable. Performance goals and expectations are set by the employee and the supervisor and are based on clear expectations of products and services to be provided by the employee as well as a set of evaluation criteria to determine success. Examples of criteria may include criticality of skills, difficulty of position, individual or team contributions, and suggestions for improving processes. The amount received depends upon the number of pay points (0-4) granted. The number of pay points is determined after a review of the employee's contributions and his/her current compensation. Generally, the value of a pay point value is set at 1.5% of the mid-point of the salary range of the pay band.

NRL

The Naval Research Laboratory's Contribution-based Compensation System (CCS) is modeled on the AFRL system and also uses an integrated approach to classification, compensation and performance appraisal by assessing the contribution of an employee to the mission of the organization on the same factors that are used for classification. This process is designed to promote increased fairness and consistency in ratings and facilitate career progression for NRL employees. Employee contribution is assessed based on career track using a common set of critical elements. Critical elements may be weighted or even determined not to be relevant for subgroups within each career track. Examples of critical elements for S&E professionals are Scientific and Technical Problem Solving, Cooperation and Supervision, and R&D Business Management. Scores range from 0 to 89 and the relationship between score and career levels differ for each career track. Basic pay adjustments are based on a comparison of the employee's level of contribution to the normal pay range for that contribution and the employee's present rate of base pay. Supervisors and pay pool panels determine for each element where an employee's contribution should be scored, using descriptions for work at the top of each career level. Each element is judged separately and the weighted scores on all elements are averaged to obtain an Overall Contribution Score (OCS). The pay decision for the individual is based on the relationship of the employee's OCS to the Normal Pay Range (NPR) which is current basic pay versus contribution (see Figure 4.2). Employees who are compensated below the NPR for their pay range are considered "under-compensated," while employees compensated above the NPR are considered "over-compensated." In addition to the CCS score, NRL's system provides for a separate determination as to whether an employee's performance was "acceptable" or "unacceptable" for each element. An "unacceptable" rating on any element will result in an "unacceptable" overall rating. This process was retained from the existing OPM appraisal system to provide a means for removing poor performers.

Figure 4.2 NRL's Contribution-based Compensation System (CCS)



Supervisory Panel Review

All performance ratings submitted by first-line supervisors undergo second-level review. In the demonstration laboratories, this process is lengthier because ratings are tied to pay decisions. The goal of the supervisory panel review is to have increased consistency in performance ratings within the laboratories and an increased employee perception that performance ratings are fairly distributed. In most of the laboratories, final pay determinations are made following review of ratings across organizations at the management level by a group of supervisors who allocate the final performance evaluation scores (AFRL). In some of the laboratories (viz., AMRDEC, ARL, NRL, MRMC, NAVSEA, and ERDC), final performance payout decisions rest with the pay pool managers following a similar review.

Pay-for-Performance Objectives

The main objective of the pay-for-performance or pay for-contribution systems is to increase the pay-performance link and to reduce the impact of longevity. Over time, there should be differential pay progression based on performance, and high performers should receive more pay than average or low performers. Pay for performance requires improved communication of expectations and performance feedback on the part of managers, since employees have to

understand what they have to do in order to receive higher ratings and increased pay. The system has to be perceived as fair in order to be effective in motivating employees. One of the key factors related to fairness is the level of trust that employees have in their supervisor (Lawler, 1981), since their pay is now determined by their supervisor's rating.

Lawler (1981) spelled out seven criteria for successful pay-for-performance systems: (1) significant rewards can be given and tied to performance; (2) information is communicated to employees about how rewards are given; (3) supervisors are willing to explain and support the reward system in discussions with their subordinates; (4) rewards can vary widely, depending on performance; (5) meaningful performance appraisal sessions can take place; (6) performance can be objectively and inclusively measured; or (7) high levels of trust exist or can be developed between supervisors and subordinates if performance cannot be objectively measured. The results of the different pay-for-performance projects were analyzed according to these criteria and other expected effects and are summarized below. The performance rating distributions will be described first.

Performance Rating Trends

Performance rating trends from 1996 through 2000 (data as of January 2001) were examined, as were results of the regression analyses for the first four laboratories that have been under pay for performance for at least three years, in order to assess the impact of performance on pay. The rating distributions are shown in Table G-2, Appendix G.

> **Findings: AFRL.** The AFRL goal was to pay employees based on their contribution and to reduce the number who were over- and under-compensated. In AFRL, overcompensated scores (low contributors relative to their pay) were 3.6% in 1997 and .3% in 2001; undercompensated (high contributors relative to their pay) were 31% in 97 and 23% in 2001. These results suggest that the contribution-based pay system used in AFRL was successful at reducing under- and over-compensation. The regression analyses in Tables F-12 to F-15 indicate that after 4 years, contribution has become the strongest predictor of pay (after starting salary and pay level which are the strongest predictors) and that tenure is no longer significant.
>
> **Findings: AMRDEC**. AMRDEC ratings have changed little over time: at the fully successful equivalent level, ratings dropped from 4.5% in 1996 to 2.4% in 2000 and top ratings increased from 77% in 1996 to 80% in 2000, after a drop to 71% in 1999. Identification of poor performers in AMRDEC dropped from .2% in 1996 to .1% in 2001. However, the regression analyses indicate that performance is becoming a significant factor in pay progression and that tenure no longer plays a significant role.
>
> **Findings: ARL.** ARL's distribution remained the same at the equivalent of the "Fully Successful" level, 12% of employees received that rating in 1996 and also in 2001. However, the number of employees receiving top ratings dropped from 53% in 1996 to 30% in 2001. Identification of poor performers dropped from .9% in 1996 to none in 2001. But again, the regression analyses indicate that performance has become the most

important predictor of pay (after starting salary and pay level) and that tenure no longer plays a significant role.

Findings: MRMC. MRMC's rating distribution did not change at the "Fully Successful" equivalent level where 5% of employees received that rating in 1996 and in 2001. The ratings did change at the top level over time, reducing the highest rating from 79% in 1996 to 61% in 2000. Identification of poor performers dropped from .5% in 1996 to .2% in 2000. The regression analyses also indicate that performance is becoming more important than tenure in pay progression.

Findings: ERDC. ERDC's ratings have become more rigorous over time: 8% were rated at the fully successful equivalent level in 1996 and 19% in 2000. Identification of low performers increased from 0.2% in 1996 to 0.3% in 2000. The top rating dropped from 60% in 1996 to 6% in 2000. Since ERDC only had two payouts under the demonstration at the time of these analyses, no regression analyses are included here.

Findings: NAVSEA. The NAVSEA laboratories changed to a two-level rating system following implementation of their demonstration project. Thus, the only comparison that can be made is to examine identification of poor performers. NSWC's identification of poor performers decreased from .1% and .2% in 1996 and 1997, respectively, to almost 0 with only two cases identified as unsatisfactory post-implementation of the demonstration. Further distinctions are now made through pay points, which were not available for analysis in the workforce data submitted for the evaluation. Regression analyses were not conducted for NSWC, since a two-level rating system is not sensitive to performance differences.

Findings: NRL. NRL had a less inflated rating distribution prior to the demonstration than other laboratories, with 11% of employees receiving a "Fully Successful" performance rating. NRL also moved to a two-level rating system (acceptable and unacceptable) and identification of poor performers in this two-level system decreased from .6% in 1996 to .1% in 2001. However, actual performance distinctions are now made through contribution scores that were not available for analysis in the workforce data submitted for the evaluation. These contribution scores differentiate the high contributors from average or low contributors. For the same reasons described above for NSWC, no regression analyses were conducted for NRL.

Adverse Impact Analyses

Differences in rating distributions by race were also examined, as was the impact of non-performance factors, including race, veterans preference, age, disability, and gender, on pay progression, see Tables F-12 to F-15.

Findings. There was no consistent pattern across laboratories and occupational groups, but lower ratings, when they occurred, were generally found for Blacks, Hispanics or Asians. Disparate rating distributions by race were found before and after the demonstration projects were implemented, indicating that these are not the result of the

demonstration project. Although the results of the regression analyses revealed statistically significant effects in some cases, the impact was relatively small and never reached the size of an annual step increase. The reverse was also found, and in some laboratories, in administrative occupations, there was a statistically significant, positive effect on pay for Hispanics and Asians. In one case, there was a negative impact of gender for female technicians.

No definitive conclusions can be reached regarding the disparate rating distributions and whether they reflect real performance differences or other factors, such as bias. A recent article addressed this difficult issue and concluded that research on performance differences between whites and minorities needs to go beyond the boundaries of the workplace and racial discrimination and address possible effects of earlier life experiences caused by social and educational factors (Dewberry, 2001). For example, whites may accumulate more cultural capital by attending well-regarded universities in disproportionate numbers (the value and prestige associated with the institution), more scholastic capital (amount of knowledge acquired), and more social capital (personal contacts, network ties). Laboratories with disparate rating distributions need to carefully examine all relevant factors and ensure that any differences are based on performance alone.

Communication and Performance Feedback

The role of performance appraisal in an organization is to define and communicate performance standards, and to provide feedback to employees on how well they are doing.

Findings: Understanding the New System. The percentage of employees indicating that they understand the performance appraisal system being used in their organization has increased in the Wave 1 laboratories from 74% in 1996 to 77% in 2001. For Wave 2 laboratories the percentage of employees indicating that they understand the performance appraisal system has decreased slightly from 75% in 1996 to 72% in 2001. However, the pattern has not been a steady decline (see Table G-3). This could be reflective of recent implementation of the demonstration project in the Wave 2 laboratories.

Findings: Relevance of Rating Factors. According to the survey, in Wave 1 laboratories there has been a 3% decrease since 1996 in perception that performance evaluations take into consideration the most important aspects of the job. For Wave 2 laboratories this decrease is 15% since 1996 and for the non-implemented laboratories the decrease is 4% (similar to the Wave 1 laboratories; see Table G-4). Focus group results indicate that the generic rating factors were often viewed as inappropriate for specific jobs and that the degree of customization of rating elements varied by supervisor. Many managers were unsure how much customization was allowed.

Findings: Performance Feedback. Under the demonstration project, the communication between employees and supervisors regarding performance expectations and feedback seems to drop at first, see Table G-5. Overall 56% of Wave 1 and 57% of non-implemented laboratories reported receiving adequate feedback. About one out of four employees

disagreed and want more feedback. The results of focus groups indicate both positive and negative experiences. In some Wave 1 laboratories, employees feel that they have more open conversations about performance with their supervisors than they had prior to the demonstration project. In others, there were complaints that supervisors were perfunctory in giving feedback and took little or no time to communicate the ratings. In some cases where systems were automated, employees were able to find their rating on the Intranet before they had a meeting with their supervisor. As one employee commented, "They can hide behind the Internet sheets… There is no need to interact with the employees." Another employee commented that those who were good supervisors before the demonstration communicated well, whereas those who did not communicate well before did not improve.

Findings: Trust and Confidence in Supervisor. In each of the laboratories, the majority of employees, 66% and 64% in Waves 1 and 2, respectively, and 63% in the non-implemented laboratories, reported that they have trust and confidence in their supervisor (see Table G-6). This is very important given that performance evaluations are now tied directly to pay. However, as mentioned in Chapter 3, differences were again found in the trust levels of minorities when compared to whites (see Table G-6A). The differences between whites and minorities in 2001 for Wave 1 were 67% vs. 56%, and 65% vs. 59% for the non-implemented laboratories. The perception gap became slightly larger in the demonstration laboratories.

An examination of variables correlated with trust revealed that trust correlated most highly with the following variables: satisfaction with supervision, communication, rewards and recognition, procedural justice, performance appraisal, pay satisfaction and labor management relations. While cause and effect are not clear from these correlations, the most important drivers of trust are procedural justice and communication.

Findings: Performance Appraisal Fairness and Accuracy. As the demonstration project progressed, employee perceptions that their performance appraisal represented a fair and accurate picture of their performance decreased slightly moving from 61% in 1996 to 59% in 2001 for the Wave 1 laboratories, and from 64% to 55% for the Wave 2 laboratories (see Table G-7). There were no changes for the non-implemented laboratories. But differences were again found between minority and white respondents (see Table G-7A). Fairness perceptions dropped by 3 percentage points for whites and by 7 points for minorities. In 2001, 60% of white respondents and only 49% of minority respondents agreed that their performance ratings were fair.

Findings: Fairness of Rating Weights. Employees were also asked about the fairness of weights assigned to their rating elements. This perception initially became more negative after project implementation but then improved (see Table G-8). However, overall only about 51% of Wave 1 employees reported that those weights were fair. In the focus groups there was considerable discussion around this issue, and it appears that there are varying degrees of flexibility in how the weights are assigned. Even in the laboratories that have been implemented the longest (e.g., AFRL) the weights assigned to performance elements on which individual's are rated are still a source of debate among employees. Some supervisors

and employees feel that different weights should be assigned to different elements depending upon the job. Employees in all of the implemented laboratories suggested that supervisors are still able to "game the system" and reward the employees who they would like to reward.

Findings: Reconsideration Procedures. Across all of the laboratories, there has been little change in the perception that there are adequate procedures in place to have performance appraisals reconsidered if necessary. A plurality of respondents was not sure, since they may not have experienced an appeal or grievance. About one third felt that the procedures were adequate, and a smaller percentage, between 18 and 25%, disagreed (see Table G-9). However, the results are more positive for "China Lake," where 59% reported adequate procedures.

Findings: Pay-Performance Link. Survey results suggest that the perceived link between pay and performance has become substantially stronger under the demonstration project. In Wave 1 laboratories agreement that pay depends on how well an employee performs rose from 27% in 1996 to 57% in 2001 and compares favorably with the "China Lake" benchmark of 57% (see Table G-10). Similarly, the link between pay and contribution to mission increased from 22% to 51% in all Wave 1 laboratories. For the laboratories that are not implemented, only 29% of employees believe that their pay reflected their contribution to the organization's mission in 2001 (see Table G-11).

The actual link between pay and performance was also examined and discussed earlier in the section on rating distributions. Multiple regression analyses for all implemented laboratories using all the factors impacting annual pay indicate a more significant role of performance in pay progression than under the GS system, (see Tables F-12 to F-15). The effect is strongest for AFRL, which at the time of these analyses had been implemented for 4 years.

Effectiveness of Pay for Performance and Pay for Contribution

The results of the pay-for-performance systems were examined in terms of Lawler's seven effectiveness criteria and are summarized below and compared to earlier demonstration projects. The results indicate that the laboratories are moving in the right direction but still need to improve (see Table 4.8). Historic results for the original Navy Demonstration and NIST are also included (see Table G-1). As expected, the Wave 1 laboratories are more advanced than the Wave 2 laboratories, and AMRDEC and AFRL stand out as having met most of the 7 criteria (5 for AFRL and 6 for AMRDEC). Where the criteria were not met, the issues usually involved communication and perceptions of the adequacy of generic rating elements.

Findings:

As expected, the Wave 1 laboratories are more advanced than the Wave 2 laboratories, and AMRDEC and AFRL stand out as having met most of the criteria (6 for AMRDEC and 5 for AFRL). Where the criteria were not met the issue usually involved communication and perceptions of the adequacy of rating elements.

1. In the demonstration laboratories, outstanding performers can generally expect to receive pay increases of 10% or more (significant rewards are tied to performance) when the general increase is included.

2. Most employees (between 71% and 84%) understand the new performance management system (information is communicated about how rewards are given).

3. Supervisors strongly support the demonstration project, but fewer than two thirds of the employees understand how pay decisions are made.

4. In all the laboratories, rewards now vary more widely, depending on performance. Pay increases can range from zero to 20% or more, in some cases. In the implemented laboratories, the standard deviation for pay (a measure of variance) has increased significantly more over time than in the non-implemented laboratories.

5. Performance appraisal sessions were not always meaningful and fewer than two thirds of the employees agreed that they had received adequate feedback on their performance. None of the laboratories reached the two-thirds benchmark.

6. According to the survey results, performance is not always inclusively measured; fewer than two thirds of the employees agreed that the performance elements on which they were rated took into account the most important factors in their jobs. AMRDEC was a notable exception with 72% agreement.

7. Employee trust can compensate for lack of objectivity or inclusiveness, and three of the eight implemented laboratories had trust levels above 66%.

Table 4.8 Lawler's Criteria for Effective Merit Pay Systems

	AFRL	AMRDEC	ARL	MRMC	ERDC	NSWC	NRL	NUWC-N
1. significant rewards can be given and tied to performance	Yes	Yes	Yes	Yes	Yes	Varies	Yes	Varies
2. information is communicated to employees about how rewards are given	84%	79%	71%	78%	72%	73%	71%	79%
3. supervisors are willing to explain and support the reward system	64% 83%	55% 80%	52% 39%	59% 60%	54% 70%	57% 75%	55% 70%	55% 56%
4. rewards can vary widely, depending on performance	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5. meaningful performance appraisal sessions can take place	61%	63%	45%	58%	48%	51%	57%	53%
6. performance can be objectively and inclusively measured	47%	72%	54%	61%	49%	55%	58%	54%
7. high levels of trust exist or can be developed between supervisors and employees:	69%	71%	51%	67%	58%	66%	67%	61%
Total Number of Criteria Met	5	6	3	4	3	4 or 5	4	3

Source: 2001 Survey Items for Criteria - No. 2: 38; No. 3: 40, 22 (supervisors only); No. 5: 133; No. 6: 39; No. 7: 131.
Note. Criteria are met if at least 66% of survey respondents agree to item; average is used for Criterion No. 3.

Workforce Diversity

As discussed earlier, there are perception gaps between minority and majority employees in the DoD laboratories as elsewhere in the workforce. The demonstration projects were implemented with the assumption that none of the interventions would adversely affect employees. Several survey items assess perceptions regarding fair treatment of minority employees. The results are shown in Appendix J, Table J-1 and Table J-2.

Overall, perceptions of fair treatment (regardless of gender, race, national origin, religion, cultural background, age or disability) became more favorable over time for all groups. The perception gap between minority and majority respondents narrowed somewhat under the demonstration project. The perception gap was unchanged in the non-implemented labs. A similar trend was found for perceptions of advancement opportunities for highly qualified individuals, regardless of differences. The perception gap persisted but perceptions improved at about the same rate for minority and majority respondents. These results suggest that the demonstration project has not had an adverse impact.

As indicated earlier, demonstration project support was generally lower from minorities than white employees. Variables that correlated with positive diversity and fair treatment perceptions provide information on what is most important to minorities. The strongest correlates were: procedural justice, communication, satisfaction with supervision, satisfaction with advancement, performance communication, satisfaction with performance appraisal, pay-performance link, and trust (see Table I-2 in Appendix I). By focusing on these performance management and communication issues, demonstration project support and organizational commitment can be increased.

Adverse Actions

Employees were also asked in the annual surveys whether disciplinary actions taken in their organization are fair and justified. Overall, perceptions have become more positive over time for both implemented and non-implemented laboratories (see Table J-3). The perception that corrective actions are taken when employees do not meet performance standards is shared by few respondents, but has increased more in Wave 1 and Wave 2 laboratories than in the non-implemented laboratories (see Table J-4). In 2001 however, the perception gap between demonstration and non-demonstration laboratories narrowed, such that the demonstration project does not appear to have a noticeable impact in this area.

Actual data on adverse actions, grievances and unfair labor practices are shown in Tables J-5, J-6 and J-7. There are no consistent trends across the laboratories that provided data. It appears that following project implementation grievances increased in some of the laboratories. The trend is similar for adverse actions. Unfair labor practice complaints are rare and no trend could be discerned. It appears that implementation of pay for performance is associated with temporary grievance activity.

Categorical Rating and Veterans Preference

Hiring under categorical rating was examined to determine whether the percentage of veterans hired has been affected. Table J-8 shows results for AMRDEC, ARL, ERDC, NSWC, and NUWC, the laboratories that have implemented categorical rating as an intervention, and comparison data from employees under Title 5 in the CPDF group. The results show that the laboratories are doing either as well or oftentimes better than the comparison group in terms of hiring veterans. Thus, no negative impact on veterans has been found.

CHAPTER 5. RECRUITMENT AND DEVELOPMENT

The demonstration plans for the DoD laboratories proposed a variety of recruitment and staffing changes intended to improve the quality of new hires and to speed up and simplify the hiring process. Interventions initiated include modified term appointments, laboratory-based examining of potential new hires, extended probationary periods for new hires, distinguished scholastic achievement appointments, and voluntary scientist emeritus appointments. Also included is categorical rating, involving the grouping of eligible candidates into three groups and replacing consideration according to the "rule of three." Table 5.1 displays staffing and recruitment interventions by laboratory. Detailed descriptions of each staffing and recruitment intervention follow, as well as results of the interventions' effectiveness across the past five years. It is important to note that most, if not all of the laboratories evaluated for this section have only recently begun hiring again after a significant period of downsizing or time spent in a hiring freeze. This has had an effect on the use and utility of the interventions that is separate from the interventions themselves.

Laboratory-based Examining

Laboratories under NAVSEA (NSWC and NUWC) implemented laboratory-based examining in 1997. In their Federal Register notice, NAVSEA indicated that their laboratories had a need for a "streamlined examining process for both permanent and non-permanent positions" and thus implemented delegated examining in some of their divisions. Several of NAVSEA's eight divisions have implemented local delegated examining units, or laboratory-based examining, including Dahlgren, Indian Head, Carderock, Port Heuneme, and Newport. The authority includes the following: coordinating recruitment and public notices, administering veterans' preference, certifying candidates, and selecting and appointing employees consistent with merit principles.

Quality of New Hires. One goal of laboratory-based examining was to increase the quality of new hires.

> **Findings.** In nearly all cases in which data are reported, there appear to be no significant changes in the quality of new hires at NAVSEA laboratories (see Appendix K, Tables K-1 through K-6). However, the numbers reported are too small to determine statistical significance. Across Wave 1 laboratories, trends indicate a decrease in the hiring of PhDs and an increase in the hiring of employees with Bachelor's degrees. NUWC Newport indicates a similar trend in Wave 2. Average GPA of new hires shows a slight decrease across time for all NAVSEA laboratories in which data were reported. Similarly, the percentages of new hires holding professional licenses, those having participated in post-doc programs, and those holding professional memberships all show a slight downward trend. One exception to this trend is the percentage of professional memberships for NUWC Newport, which has increased slightly from an "all Navy" average of 28% in 1997 to 32% currently (see Table K-4). The lack of a trend for improved quality can be explained in part by the competitive economy and resulting difficulty in attracting qualified candidates that existed from 1997 to 2000, the years in which the demonstration was implemented.

Table 5.1 Staffing and Recruitment Intervention by Laboratory

Laboratories	Modified Term Appointment *	Laboratory-Based Examining	Extended Probationary Period	Distinguished Scholastic Achievement	Voluntary Emeritus Corps **	Categorical Grouping of Candidates
AFRL	N/A	N/A	3 years for S&E.	N/A	Allows gratuitous service by retired or separated volunteers.	N/A
AMRDEC	Up to 5 years, with option to renew for 6th year.	N/A	2 years for the Scientists & Engineers (S&E) and the Business & Technical Support career paths.	GPA 3.5/4.0 in fields of study specified in qualification standards for occupational series.	Allows gratuitous service by retired or separated volunteers.	Basically qualified, highly qualified, superior. "Rule of three" waived.
ARL	Up to 5 years, with option to renew for 6th year.	N/A	3 years for S&E (but supervisor may opt to end probation once employee completes 1 year of satisfactory performance).	GPA 3.5/4.0 in fields of study specified in qualification standards for occupational series.	Allows gratuitous service by retired or separated volunteers.	Basically qualified, highly qualified, superior. "Rule of three" waived.
MRMC	Up to 5 years, with option to renew for 6th year.	N/A	3 years for S&E; 2 years for others.	N/A	Allows gratuitous service by retired or separated volunteers.	N/A
NSWC/ NUWC	N/A	NAVSEA included laboratory-based examining as a part of their demonstration project.	N/A	GPA 3.5/4.0 in fields of study specified in qualification standards for occupational series.	N/A	Basically qualified; highly qualified; superior. "Rule of three" waived.
ERDC	Up to 5 years, with option to renew for 6th year.	N/A	2 years for S&E.	GPA 3.5/4.0 in fields of study specified in qualification standards for occupational series.	Allows gratuitous service by retired or separated volunteers.	Basically qualified, highly qualified, superior. "Rule of three" waived.

Laboratories	Modified Term Appointment *	Laboratory-Based Examining	Extended Probationary Period	Distinguished Scholastic Achievement	Voluntary Emeritus Corps **	Categorical Grouping of Candidates
NRL *-*	N/A	N/A	3 years for non-status employees when nature of work requires more than 1 year to assess their performance.	N/A	N/A	"Rule of three" waived. This demo does not use categorical grouping. *-**
CECOM	Up to 5 years, with option to renew for 6th year.	N/A	3 years for S&E; (but supervisor may opt to end probation once employee completes 1 year of satisfactory performance).	N/A	Allows gratuitous service by retired or separated volunteers.	"Rule of three" waived. This demo does not use categorical grouping. *-**
TACOM	Up to 5 years, with option to renew for 6th year.	N/A	3 years for appointees to non-supervisory/non-managerial positions in Professional and Business broadband occupations.	GPA 3.5/4.0 in fields of study specified in qualification standards for occupational series.	Allows gratuitous service by retired or separated volunteers.	"Rule of three" waived. This demo does not use categorical grouping. *-**

* The employee is eligible for conversion to permanent if he/she:

- was selected under competitive procedures, with vacancy announcement specifying that selectee may later be eligible for conversion;
- has 2 years of continuous service in the term position;
- was selected under merit promotion procedures for the permanent position; and
- in Army demos, has current performance rating at a specific level.

** Does not replace civilian employees in regular positions.

- An initiative unique to NRL is the authority to hire non-citizens into a competitive service position when qualified U.S. citizens are not available after the position has been extensively advertised nationwide.

*-** However, rating and ranking is not required if there are 15 or fewer qualified applicants and no preference eligibles. If the number of qualified candidates exceeds 15, or there is a mix of preference and non-preference candidates, applicants are rated and ranked.

Hiring Timeliness. Laboratory-based examining was also expected to improve hiring timeliness. At data collection, hiring timeliness was defined as the number of days from receipt of the SF-52 request in the personnel office to the date of offer.

> **Findings.** Information concerning hiring timeliness is sparse, as few NAVSEA laboratories have reported their average hiring timeliness figures across years. Further, there is reason to believe that not all laboratories utilized the definition of hiring timeliness given to them at the point of data collection. Results for NSWC Dahlgren indicate that their hiring timeliness has dramatically decreased from an average of 54 days prior to the demonstration to just one day in 2001 for non-competitive appointments (see Table K-7). NUWC Newport, which does not have laboratory-based examining but implemented categorical rating, as did NSWC, also shows a significant decrease in days to hire from 38 days in 1997 to an average of 11 days in 2001. These results indicate a slightly greater decrease in time-to-hire at NSWC Dahlgren which utilizes laboratory-based examining.
>
> Across years, there has been an increasing perception that it takes too much time to process paperwork to fill vacancies (see Table K-8). All NAVSEA laboratories indicate increasing agreement with this survey item. An analysis of variance conducted on Wave 1 NAVSEA managers' responses indicates that there are no significant differences between laboratories with and without the laboratory-based examining intervention.

Satisfaction with the Hiring Process. Finally, laboratory-based examining was expected to increase the level of satisfaction with the hiring process.

> **Findings.** Satisfaction with the process used to fill vacancies was examined (see Table K-9). Survey results indicate that all NAVSEA laboratories reported increased satisfaction with the hiring process from 1996 to 1998. However, laboratories with laboratory-based examining showed decreased satisfaction from 1998 to 2001. Further analysis (ANOVA) reveals an interaction effect such that laboratories with laboratory-based examining were more satisfied with the process than those without laboratory-based examining prior to 1999 but less satisfied with the process after 1999.

Categorical Rating

Several of the demonstration laboratories have adopted the concept of categorical grouping of candidates and have eliminated the "rule of three" previously used for selection. Under the "rule of three" only the three top-rated candidates are referred to the hiring official for selection. Because experience tends to receive more weight than actual competencies, managers are often dissatisfied with the referrals. Under categorical rating, qualified candidates are grouped into three categories: 'basically qualified', 'highly qualified', and 'superior'. In every laboratory that features categorical rating, the following rules apply:

- Except for scientific and professional positions at the basic rate of pay equivalent to GS-9 and above, veterans' preference points are added before assigning candidates to the

respective groups, and 10-point compensable disability preference eligibles (i.e., "CP Vets") "float" to the top group that is certified.

- For scientific and professional positions at the basic rate of pay equivalent to GS-9 and above, quality groups in the order of the numerical ratings will refer candidates, including those with any veterans' preference points. Only veterans in the superior group would receive absolute preference.

Flexibility in Selecting High-Quality Candidates. The goal of categorical rating of candidates is to increase flexibility in selecting high quality candidates. This is possible because a larger group of applicants is usually available for selection under the new system than would have been available under the limited “rule of three” approach. AMRDEC, ARL, ERDC, NSWC, and NUWC have included this intervention in their demonstration projects. NRL has waived the “rule of three” and rating and ranking of candidates when there are 15 or fewer qualified applicants and no preference eligible applicants. NRL generally has a small number of applicants for their S&E positions, thus ranking does not often occur. If the number of qualified applicants exceeds 15, or if there is a mix of preference and non-preference applicants, applicants are rated.

Findings. Overall, every laboratory interviewed had very positive things to say about the categorical rating process. Individuals at NUWC Newport feel that it has decreased their turnaround time in hiring (hiring timeliness data support this claim: see Table K-7). Focus group participants at AMRDEC noted that the new system also had some benefit in adding diversity to the lower grade levels. Further, individuals at various NSWC laboratories mentioned that categorical rating had “streamlined the process”, that it is “more flexible than the old system”, and that it is the “best component of the demo.” Negative comments made include the fact that laboratories still need to contend with veterans’ preference, and that, while categorical rating has simplified their own in-house process, their delegated examining units don’t understand it, creating further frustration.

Attitude survey results indicate that 28% of respondents in Wave 1 laboratories utilizing the categorical rating process agree that the current system provides more qualified candidates per job announcement than the old “rule of three” process (see Table K-10). However, the majority of respondents (52%) were undecided, suggesting limited experience with the intervention. Additionally, 44% of respondents prefer categorical rating while only 5% prefer rating and ranking candidates under the “rule of three” (see Table K-11). However, as with the previous question, the majority of respondents (51%) indicated that they had “no basis to judge” because they are not using categorical rating.

One possible explanation for these results may be found by examining hiring activity by year (see Table K-12) which reflects the continued downsizing in DoD. Data reveal significant decreases in hiring across all services between 1996 and 2000. While Army data suggest an increase in hiring in 1997 followed by subsequent decreases, both Air Force and Navy show steady downward trends across the five years. Although decreased hiring is independent from the implementation of categorical rating, focus groups indicate that many supervisors responding to the survey items discussed above have not had the opportunity to hire under the demonstration project or categorical rating system.

Modified Term Appointments

Many laboratories have adopted modified term appointments for five years, increased from the four-year limitation found in 5 CFR, Part 316. The modification also allows laboratory directors the option to renew term appointments for a sixth year as needed. An additional provision added by each laboratory allows term appointments to be converted to career-conditional status if desired. This is a highly desirable flexibility which allows the laboratories to deal with changing work loads or mission requirements.

Workforce Flexibility. One goal of the modified term appointment is to increase flexibility in reducing the workforce when necessary by allowing term employees to be the first separated. In addition, ARL states in their Federal Register notice that "the current four-year limitation on term appointments imposes a burden on the laboratory by forcing the termination of some term employees prior to completion of projects they were hired to support." Therefore, a second goal of the modified term appointment intervention is to lessen this burden by lengthening appointments. A third goal is to be able to convert employees who have already proven their performance.

> **Findings.** Members of several focus groups across Wave 1 laboratories indicate that they find the modified term appointments extremely useful, particularly for reducing the amount of time it takes to process extensions for term employees. However, laboratories that have chosen to implement this intervention have seen declines in the number of term appointments utilized in the past five years (see Table K-13). Because the modified term appointment intervention has two competing goals (one which allows term employees to stay longer, and one which allows them to be separated more easily), it is difficult to interpret such large decreases in term hiring across years. However, such decreases likely resulted from downsizing and limits in hiring across all DoD laboratories, rather than the modified term appointment intervention.

Usefulness Depends on Context. Individuals in focus groups from two laboratories, NSWC Corona and AMRDEC, offer an interesting perspective. Both make the point that modified term appointing authority had more utility when there was a slowdown in hiring for permanent positions. As one individual put it, "now that recruitment is permitted, there is a greater interest in permanent appointments." Thus, although modifying the term appointment has provided the laboratories with a much needed flexibility with respect to changing workloads, it may not be as important for them as it would have been in past years when permanent hiring was more difficult. This intervention needs to be further tested in an environment without hiring freezes.

Extended Probationary Period

Probationary periods have been extended from one year to two or three years for scientists and engineers (S&Es) at several of the DoD laboratories. The purpose of extending the probationary period is to allow supervisors more time to examine employee qualifications and to evaluate their performance before making them permanent. This also allows researchers more time to "prove themselves" before a decision is made to retain or separate them. In addition to the extension of S&E probationary periods, AMRDEC and MRMC have extended probationary periods up to two

years for non-S&E staff. NRL requires a 3-year probationary period for all new hires when the nature of the work requires more than 1 year for management to assess their performance.

In the past, extended probationary periods have been tested in the NIST and USDA demonstration projects. However, it has been difficult to realize the full impact of the intervention in the current demonstration because it was implemented during periods of limited hiring. This is confirmed by focus groups with DoD laboratory managers. Several individuals indicated that, in the past, there was a hesitation to release new hires because of fear that positions may not be refilled, or months would pass before a replacement was found. However, as hiring begins to increase, perceptions concerning extended probationary periods are changing.

Effectiveness of Extended Probationary Periods. In an attempt to evaluate the effectiveness of extended probationary periods, three measures were examined: (1) the number of involuntary separations under the extended portion of the probationary period, (2) the perceived adequacy of length of probationary period, and (3) willingness to separate employees during the probationary period.

> **Findings.** An analysis of Wave 1 laboratories that have utilized the extended probationary period indicates that all such terminations took place within the first 12 months of the employees' tenure at their laboratories. It therefore appears that the extended period has thus far not been utilized. In the survey data, no more than five percent of supervisors indicated that they have terminated an employee during his or her probationary period (see Table K-14). However, between 6% and 17% state that they have encouraged an employee to leave voluntarily under the same period (see Table K-15). Those who were encouraged to leave would show up in the data as voluntary separations, making it more difficult to isolate the impact of this intervention. A similar result was found in the NIST demonstration project. Supervisors tended to encourage employees to leave voluntarily if there was a poor fit between their skills and job requirements.
>
> Survey data indicate that a majority of individuals at Wave 1 laboratories using extended probationary periods agree with the implementation of a 3-year period for S&Es as do other employees (see Tables K-16 and K-17). Not surprisingly, supervisors favor the 3-year period more than non-supervisors for each of these laboratories. Results are more varied for items asking how employees feel about the current length of probation period for S&E and other employee positions (see Tables K-18 and K19). The majority of respondents indicated that the length of their probationary period is "about right"; although in several instances non-supervisors indicated that they don't know. This is understandable, as most non-supervisory employees with tenure at the laboratories are likely to be unaware of this intervention. A notable exception is ARL, where 35% of supervisors who responded to the 2001 survey indicated that the extended probationary period for S&Es (now 3 years) is too short, and 52% indicated that it is too short for other employees (currently still 1 year).
>
> Many supervisors interviewed in focus groups stated that the extension is now viewed as a large improvement because it gives supervisors more time to make accurate

assessments of employee qualifications and performance. As one focus group member at ERDC/CRREL put it, "It's a good idea because of the nature of scientific work. Research takes a great deal of time to show results at times."

Overall, it appears that the termination of employees under the probationary period is rare, and that the extension of the probationary period has not yet greatly increased its use in this capacity. However, supervisors appear to be pleased with the extension created under the demonstration project, and no negative perceptions have been found among non-supervisors. During focus groups with scientists and engineers, some compared the 3-year probationary period favorably with the longer 5- to 7-year period required to earn tenure in a university. It is expected that, as hiring increases, use of the extended probationary period will increase as well.

Distinguished Scholastic Achievement Appointment Authority

Many of the demonstration laboratories feature a distinguished scholastic achievement appointment authority. The main objective of this intervention is to increase the quality of new hires. A secondary goal is to potentially increase hiring timeliness by generating a smaller applicant pool through raising qualification requirements (i.e., college GPA).

Distinguished scholastic achievement is defined as a grade point average (GPA) of 3.5 or better on a 4.0 scale in courses for fields of study that are specified in the qualification standards for the occupational series. Although this authority existed for some laboratories prior to the demonstration, the implementation of this intervention increased the GPA requirement from 3.0 to 3.5. At the undergraduate level, candidates may be appointed at a pay level no greater than the equivalent of GS-07, step 10, provided that the criteria are met. Appointments may also be made at the equivalent of GS-09 through GS-12 on the basis of graduate education and/or experience, provided that the criteria are met.

It is important to note that the distinguished scholastic achievement appointment authority differs from the Outstanding Scholar Program, created in response to the Luevano Consent Decree of 1981. The Outstanding Scholar Program is a non-competitive appointment and had as its original intent a focus on recruiting from sources that would increase the pool of African American and Hispanic candidates for employment. The program may only be used to hire into grades GS-5 and GS-7 in positions previously subject to the PACE exam. The distinguished scholastic achievement authority has greater flexibility, as described above, and has as its intent an increase in the quality of all new hires, regardless of their racial or ethnic background.

Findings. In site visit interviews with demonstration project managers and team members, several of the demonstration laboratories stated that they are either not using distinguished scholastic achievement appointments or they felt that the appointments had not benefited their laboratories significantly. In one exception, AMRDEC stated that the intervention was their "primary recruiting tool" in 2000. Individuals here stated that the intervention worked well with categorical rating. Unfortunately, many laboratories did not report the number of distinguished scholastic achievement appointments they used.

Only AMRDEC reported utilizing the distinguished scholastic achievement appointment authority six times in 2000 while ERDC reported an increase in appointments from one in 1999 to five in 2001 (see Table K-20).

Quality of New Hires. It was expected that the Distinguished Scholastic Achievement Appointment Authority would produce an increase in the GPA of new hires.

Findings. The results were mixed, as few appointments under this authority have been reported. AFRL, NRL, and ERDC all show slight to moderate increases in GPA, while NSWC Crane, NSWC Port Hueneme, and AMRDEC show decreases (see Tables K-1 through K-6).

Hiring Timeliness. It was also expected that this authority would speed up the process of hiring highly-qualified candidates.

Findings. Data show inconsistent trends in time to hire. NUWC Newport decreased from 38 days in 1997 to just 11 days in 2001 (see Table K-8). However, ERDC's hiring timeliness actually increased, from 62 days prior to the demo, to 71 days in 2001. The remainder of the laboratories with this authority did not provide enough data to fully evaluate the impact of the distinguished scholastic achievement appointment.

Voluntary Scientist Emeritus Corps

The voluntary scientist emeritus intervention allows laboratory directors the authority to offer retired or separated employees voluntary, unpaid positions in the laboratories. The primary benefit of doing so is to help the laboratories retain valuable technical expertise held by their most experienced workers. In addition, the intervention provides incentive to scientists reluctant to retire from challenging positions to do so and to continue working at their own pace while drawing retirement pay. The intervention also aids in opening positions to new employees with the goal of revitalizing the workforce. Emeritus positions are not considered employment, except for the purposes of injury compensation. Candidates apply for the emeritus corps and, if selected, enter into a formal agreement concerning work schedule, duration of work, and administrative support provided by the laboratory.

Findings. Four demonstration laboratories have reported data concerning this intervention (see Table K-21). AMRDEC increased their number of volunteers under this intervention from 1 in 1997, to 18 in 2000, while MRMC and ERDC have consistently utilized three or fewer volunteers between 1997 and 2000. AFRL has used the authority the most, with a high of 25 current participants. Interviews with the three laboratories indicate a high consensus concerning positive effects of the intervention. Management at AFRL stated that they are "happily surprised at the number of volunteers…the extent to which it's being used has exceeded…expectations." MRMC holds that "it works very well for management, and the scientists enjoy being able to stay involved with the scientific project. We definitely feel that it is a beneficial program and [would like to see it remain] in place." Finally, AMRDEC adds that they are "very proud to have volunteer emeritus scientists [whose cumulative experience] equates to over 280 years", and that

the volunteers actively mentor AMRDEC's new employees in addition to the duties they volunteer to perform.

Direct-Hire Authority for Non-Citizens

NRL is the only laboratory to obtain demonstration authority to hire non-citizens if there are no qualified U.S. citizens in their applicant pool. NRL's goal in instituting direct authority for non-citizen hiring is to attract high-quality candidates in order to accomplish their laboratory's mission.

Findings. In interviews, NRL managers indicated that there has been an average of 2-3 non-citizen hires per year. In 2000, there were six non-citizens working at the laboratory. While actual numbers of non-citizen hires remain consistent and low, individuals in focus groups at NRL reported the perception of increased hiring of non-citizens. Some managers in the group viewed this as negative because it lowers the number of NRL staff members that are U.S. citizens.

General Satisfaction with Staffing & Recruitment

Overall Results. One overall expected result of the demonstration interventions is improvement in job offer/acceptance ratios. Table K-39 shows the available data collected from the labs, which indicate that fewer job offers were accepted following implementation of the demonstration projects. It may be that the competitive job market during the time period of this evaluation caused the negative impact.

In addition to examining specific interventions under staffing and recruitment, several survey questions were asked about a variety of staffing and recruitment issues. For detailed results concerning responses, see Tables K-22 through K-38. Result summaries are as follows.

Satisfaction with the Hiring Process. A single attitude survey item evaluated individuals' overall satisfaction with the process used to fill vacancies. For Wave 1 laboratories, satisfaction with the process used to fill vacancies steadily increased between 1996 and 2001, beginning with 18% agreement and increasing to 33% agreement (see Table K-22). This is a surprising finding, given all the problems cited by the laboratories in connection with regionalization of HR services. For survey year 2001, percentage agreement across Waves is nearly identical, indicating little impact of the demonstration interventions.

Flexibility to Reduce Workforce. The 2001 survey data indicate that 32% of Wave 1 supervisors agreed that they have the flexibility to reduce the workforce when necessary (see Table K-23). This result is essentially unchanged from the 31% agreement found in 1996. Interestingly, 37% of individuals in Wave 2 laboratories, and 41% of individuals in non-implemented laboratories agreed with this statement in 2001, leaving the impression that those working under the demonstration for longer periods of time are less likely to feel that management has flexibility to reduce the workforce.

Results concerning perceptions of flexibility may, in part, be related to the lack of term appointments made by the laboratories. As noted previously, term appointments have been perceived as increasing workforce flexibility and have been modified by the demonstration laboratories to further increase this flexibility. However, they have not been utilized to the extent expected under the demonstration. Thus, increasing the use of modified term appointments may be one way in which the laboratories will be able to increase flexibility, and perceptions of flexibility, in reducing the workforce over time.

Staffing Fairness. Overall, a slightly greater number of 2001 respondents disagreed with the statement "competition for jobs here is fair and open" than agreed with the statement. However, agreement has increased over time (see Table K-24). Similar results occurred when respondents were asked if they agree that, when there is a promotion opportunity, the best-qualified applicant is chosen (see Table K-25). In both cases, no significant differences were found between demonstration and non-demonstration laboratories, indicating that the demonstration has not affected perceived staffing fairness.

Staffing Timeliness. As mentioned previously in this chapter, timeliness in staffing and recruiting is an expected outcome of several of the interventions. As seen in Table K-7, hiring timeliness, described as the number of days it takes to hire, has only improved for a few laboratories in specialized circumstances (i.e., for non-competitive hires only). Comments concerning difficulties with hiring timeliness were recorded in nearly every focus group conducted in 2001. One of the most poignant comments came from an individual at NRL who declared that the laboratory "hasn't had any problem attracting good candidates. [It] just can't hire them because it takes too long." This statement was echoed in several focus groups across laboratories.

Many delays in hiring have occurred as a result of regionalization, as well as lack of knowledge about how to plan and implement the best hiring process. Survey data measuring agreement with the statement "It takes too long to process the paperwork needed to fill vacancies here" indicate that the perception of hiring-timeliness has not strongly improved over time. Sixty-four percent of respondents surveyed from Wave 1 laboratories in 2001 indicated their agreement that the process takes too long (see Table K-26). Wave 2 respondents and non-implemented respondents expressed similar attitudes. These results indicate a strong negative perception of timeliness across all laboratories, and the numbers remain similar to those obtained in 1996. Evidence indicates that hiring timeliness is not an issue that the demonstration project has been able to adequately address or improve, in part due to intervening variables, but mostly because the new HR tools have been implemented without redesigning existing processes.

Perceived Quality of New Candidates. Special emphasis was given to evaluating the quality of new hires across laboratories in the personnel data and through several items included in the attitude survey data. As mentioned previously, few changes were found in the level of quality for new hires in recent years as measured by such variables as college GPA, number of publications, highest degree achieved, professional licenses, and number of publications (see Tables K-1 through K-6). One must approach these results with

caution, given that hiring stopped or remained at a minimum for several years of the demonstration project across laboratories. Further, the evaluation context model shows that many external factors may have affected the quality of new hires. In view of the strong, competitive economy that prevailed between 1996 and 2000, and the downsizing in DoD, the fact that the quality of new hires did not dramatically decline across years may actually be seen as a relatively positive result. In addition, although the personnel data do not support dramatic increases in quality, survey results indicate that perceptions concerning new hire quality have become increasingly positive.

In 2001, 41% of Wave 1 respondents agreed with the statement "this organization is able to attract high-quality candidates", up from 34% in 1996 (see Table K-27). Similar results were found when respondents were asked to rate their satisfaction with new hires by job category (see Tables K-28 through K-36). In nearly all cases, the percentage of respondents satisfied with the quality of new hires was the same as, or slightly higher for Wave 1 respondents than for Wave 2 or non-implemented laboratories, indicating a slight positive impact of the demonstration interventions.

Supervisor Perceptions. Additionally, supervisors were asked their level of agreement with the following statement: "The skills and abilities of the most recent candidate I hired were a good match for the job." Eighty-seven percent of Wave 1 respondents agreed or strongly agree in 2001, up from 76% in 1996 (see Table K-37). However, responses were nearly identical for individuals in Wave 1, Wave 2, and non-implemented laboratories. Supervisors were also asked to rate the overall capabilities of those they hired in the past year. The percentage of new hires rated in the top 10% increased from 7% in 1996 to 21% in 2001 among Wave 1 supervisors, but did not increase significantly in Wave 2 or the non-implemented laboratories.

Summary

Interventions in the staffing area have not made a significant impact. This is due, in part, to intervening variables such as the mandated downsizing and hiring freezes that have been in place during most of the evaluation period. This has prevented a full test of the interventions. However, in contrast to the integrated classification, compensation, and performance management interventions, which involved totally reengineered processes and new automated HR tools, the staffing changes were implemented in a system that, with a few exceptions, operated largely unchanged. Without streamlined processes or application of best practices, the interventions had minimal effects and did not significantly improve staffing timeliness or applicant quality.

Certain interventions, such as the Voluntary Scientist Emeritus Corps, have had positive effects. Categorical rating, although limited in use, was also viewed very positively. Overall satisfaction with many facets of staffing and recruitment also increased over time. This increased sense of satisfaction is a positive gain for the laboratories, given the many negative external factors delineated in the context evaluation model. The overall trends are summarized in Table 5.2 below.

Table 5.2
Summary of Results of Recruitment and Staffing Interventions in Demonstration Projects

Laboratory	Extended Probation Period	Laboratory-Based Examining	Categorical Rating/No Rating for Under 15 Candidates	Modified Term Appoint-ment	Voluntary Emeritus Corps	Distinguished Scholastic Achievement Appointment
AFRL	No change	N/A	N/A	N/A	Positive	N/A
AMRDEC	No change	N/A	Positive	Positive	Positive	No change
ARL	No change	N/A	Positive	Positive	Not used	No change
MRMC	No change	N/A	N/A	Positive	Positive	N/A
NAVSEA	N/A	No change	Positive	N/A	N/A	No change
ERDC	No change	N/A	Positive	Positive	Positive	Positive
NRL	No change	N/A	No change	N/A	N/A	N/A

Training & Development

In addition to the improvements in recruitment and staffing discussed earlier, another important objective of the laboratory demonstration program is to develop, motivate, and retain a high-quality workforce. While the pay and performance management interventions were designed in part to achieve this goal, the demonstration laboratories have also implemented a variety of programs to promote the use of sabbaticals, to revise training regulations to support further education, and to encourage new ideas and technology through professional development. Table L-1, Appendix L, displays training and development interventions by laboratory.

Since the implementation of the demonstration project, many laboratories such as ERDC, ARL, and AMRDEC have put into practice programs that increase available training and development opportunities in order to enhance employee skill levels. Some of these changes have included expanding the authority to provide payments for the earning of degrees or training certificates, as well as increasing the number of sabbaticals.

The majority of all laboratory employees stated that they were satisfied with the training and development opportunities available to them. In 2001, 68% of Wave 1 survey respondents agreed with the statement “I have all the skills I need in order to do my job” (see Table L-2). Individuals from Wave 2 and non-implemented laboratories responded similarly. Further, 59% of Wave 1 respondents agreed that “employees are provided with training when new technologies and tools are introduced” (see Table L-3). Here, 54% of Wave 2 respondents and 62% of individuals from non-implemented laboratories responded similarly. Two interventions associated with training and development are discussed in greater detail below.

Critical Skills Training

As described in ARL's Federal Register: "Degree payment is not permitted for non-shortage occupations involving critical skills." Several laboratories in the demonstration project have decided to expand their authority to provide degree or certificate payment to meet critical skill requirements, and to ensure continuous acquisition of "advanced specialized knowledge essential to the organization." This intervention serves as both a recruitment and retention tool.

As with many of the other interventions reported here, data on critical skills training are limited. NSWC Port Hueneme reported that they have only used training opportunities six times throughout the demonstration project, while NSWC Dahlgren reported only one use during the demonstration (see Table L-4). ERDC reported considerable but declining use in the past three years, while AMRDEC reported a significant number of training hours over the past four years.

Table L-5 compares Wave 1 laboratories with and without the critical skills training intervention. As shown, 69% of survey respondents from laboratories with critical skills training agreed with the statement "I am given adequate opportunity to participate in training programs" in 2001, while 76% of those without critical skills training responded in similar fashion to the same item. Thus, it appears that those without the intervention are actually more satisfied with their opportunities for training. However, one should approach this data cautiously, as it is based on a single survey item. It also should be noted that substantial variation exists among the laboratories with critical skills training. For example, 47% of NUWC Keyport respondents indicate agreement that they received adequate training, compared to 77% of respondent from AFRL. Thus, results appear to be laboratory-specific and not necessarily based on the intervention alone. Further analyses of the data indicate no trends over time for laboratories with or without critical skills training. Unfortunately, not enough hard data on actual training exist to correlate these perceptions.

Sabbaticals

Although the use of sabbaticals at DoD research laboratories is not solely a demonstration project intervention, several laboratories, including AMRDEC, ARL, CECOM, and ERDC have made new provisions for sabbaticals under the demonstration system. Sabbaticals are promoted as learning or uncompensated work experiences that will contribute to development and effectiveness in the laboratory.

For 2001, 57% of respondents from laboratories that offer sabbaticals under the demonstration indicate that they would like the opportunity to take a sabbatical for their professional development, while 48% of those individuals from laboratories without the intervention similarly agreed (see Table L-6). However, focus groups at a variety of sites indicate the perception that sabbaticals are generally not used. MRMC noted that they have not utilized paid sabbaticals in their demonstration project because it is too expensive and because the majority of their scientists cannot do the work they are trained to do at other facilities. Individuals from AFRL stated that, while they did not include sabbaticals under the demonstration project, they sometimes use sabbaticals informally with universities and use them to train S&E's in other AFRL research areas. AMRDEC noted that they are now becoming more popular and are beginning to be approved. In actuality, few of the demonstration laboratories have reported

recent data concerning sabbaticals. Of those that have, NUWC Newport reported the highest use, with a range of 8 to 15 individuals on sabbatical each year between 1998 and 2001 (see Table L-7). AFRL also shows six to eight individuals on sabbatical for years 1997-1999, and 2001. Several laboratories, including MRMC, NSWC Dahlgren, NRL, and AMRDEC, reported four or fewer sabbaticals in the past five years.

The limited results for the training and development interventions are summarized in Table 5.3 below.

Table 5.3 Summary Results of Training and Development Interventions

Laboratories	Critical Skills Training / Training for Degrees	Sabbaticals
AFRL	N/A	No significant change over time. Moderate use.
AMRDEC	Decreased use in 2001	Used twice
ARL	No data	Not used
MRMC	N/A	Used twice
NSWC	No change	No data
ERDC	Decreased use 1999-2001	Not used
NRL	N/A	Moderate use
NUWC	N/A	High use

CHAPTER 6. MODIFIED REDUCTION-IN-FORCE

A fourth objective of the demonstration program was to adjust workforce levels to meet strategic program and organizational needs. In order to facilitate mandated reductions, reduction-in-force (RIF) regulations have been modified to better match the career paths and banding schemes.

Generally, there are three major differences between modified and standard Title 5 procedures.

1. Competitive areas are defined in terms of career paths within a unit or geographic area.

2. The definition of grade has been replaced by band. For example, three grades lower would be replaced by one or more broadband levels lower since bands typically include two or more grades.

3. Different formulas are used for crediting additional years based on performance.

Table 6-1 shows the modified RIF procedures for those laboratories that have implemented their demonstration projects.

Usually demonstration projects conduct RIFs for three major reasons: mandated downsizing, loss of funding, or changes in technology. Since most of the downsizing has been accomplished using buyout authority, most RIFs are limited to individuals or small groups. Under the DoD Base Realignments and Closures (BRACs), downsizing has affected large numbers of employees and groups, but few employees were separated as a result of RIFs. Downsizing efforts have been underway since 1992 and have resulted in a 29% reduction of the laboratory workforce by 2001 (see Status Report, p. 5). Survey, workforce, and site historian data were used to track the effects of the RIFs that have taken place.

Table M-1, Appendix M, shows the data based on separation due to RIF (Nature of Action Code #356) for calendar years 1996-2000 across laboratories. Except for 1996, the annual numbers are in the single digits.

Tables M-2 through M-4 show nature of actions that could be due to pending or actual RIFs. These include voluntary retirements, retirements in lieu of involuntary action, and resignations in lieu of involuntary action. AFRL and NAVSEA laboratories show the highest numbers of voluntary retirement separations over the five years represented. NAVSEA laboratories remain high for retirements and resignations in lieu of involuntary actions.

Table 6-1
Modified Reduction-in-Force

Laboratory	**Competitive Area/ Competitive Levels**	**Retention Criteria**	**Performance Credit**	**Bumping/ Retreat Rights**
Air Force Research Laboratory	By geographic location/ same series and pay band; similar duties, qualifications, and working conditions	• Tenure • Veterans Preference • Length of Service • Performance	Depends on CCS	Up to 3 broadband levels
Army Aviation and Missile RDEC	By all geographic locations/Pay band; series; similar duties, qualifications, pay schedule, working conditions, and service (excepted, competitive)	• Tenure • Veterans Preference • Length of Service • Performance	A=10 years B=7 years C=3 years U=0 years (credit added, not averaged, over last 3 years)	Equivalent of 3 GS levels; 30% compensable veterans, equivalent of 5 GS levels
Army Research Laboratory	Occupational family by geographic location/Same series and pay band; similar duties, qualifications, and working conditions	• Tenure • Veterans Preference • Length of Service • Performance	A=10 years B=7 years C=3 years U=0 years (credit added, not averaged, over last 3 years)	One band; 30% compensable veterans, equivalent of 5 GS levels
Army MRMC	By HQ and subactivity by geographic location/ Occupational	• Tenure • Veterans Preference • Performance Credit	A=10 years B=7 years C=3 years F=0 years (credit added,	One band for everyone; 30% compensable veterans retreat two bands

Table 6-1
Modified Reduction-in-Force

Laboratory	**Competitive Area/ Competitive Levels**	**Retention Criteria**	**Performance Credit**	**Bumping/ Retreat Rights**
	Family; pay band; similar duties, qualifications, and working conditions	• Length of Service	Not averaged, over last 3 years-service comp. dates used as tie breakers)	Equivalent of 5 GS levels
NUWC/NSWC, NRL	By geographic location/ Competitive levels not required	• Tenure • Veterans Preference • Length of Service • Performance	No additional performance credit (NUWC/ NSWC); Up to 20 years per CCS (NRL)	One band; 30% compensable veterans, 2 bands (NUWC/ NSWC); Up to 3 GS levels below the highest current grade, plus 2 more GS levels for compensable veterans (NRL)
Army ERDC	Occupational Family/Pay band; Series; Specialty Code; Pay Schedules and Service (excepted Competitive)	• Tenure • Veterans Preference • Performance • Length of Service (Tie breaker only)	Performance credit based on average of most recent three performance scores received during past four years	Two bands; 30% compensable veterans, equivalent of 5 GS level

Table 6-1
Modified Reduction-in-Force

Laboratory	**Competitive Area/ Competitive Levels**	**Retention Criteria**	**Performance Credit**	**Bumping/ Retreat Rights**
Army TACOM (proposed)	By geographic location/occupa-tional family; pay band; similar duties, qualifications, and working conditions	• Tenure • Veterans Preference • Length of Service	Performance credit based on current rating of record (tenure, veterans' preference, and length of service considered)	Same or one band below; 30% compensable service-related disability (equivalent of 5 GS grade levels)
Army CECOM (proposed)	By geographic location/occupa-tional family; pay band and series; similar duties and qualifications	• Tenure • Veteran Preference • Length of Service	48-50 =10 years 45-47 = 9 years 42-44 = 8 years 39-41 = 7 years 36-38 = 6 years 33-35 = 5 years 30-32 = 4 years 27-29 = 3 years 24–26 = 2 years 20-23= 1 year 19 or below = no credit for RIF retention (credit added, not averaged, over last 3 total performance scores during preceding 4 years)	One band below; 30% service-related disability (equivalent of 5 GS levels)

Perceptions of RIF Process

Survey respondents were asked if there had been a RIF at their organization within the last year. It was found that nine percent of Wave 1, five percent of Wave 2, and nine percent of respondents in non-implemented laboratories indicated that there had been a RIF at their organization within the last year. When asked to indicate how fair the RIF process was, 41% of Wave 1 respondents indicated that the RIF process was fair, compared to 49% in Wave 2 and non-implemented laboratories. There was no discernible effect of the demonstration RIF procedures (see Table M-5).

When asked if they had received adequate information about the RIF process, 47% of Wave 1 and 31% of Wave 2 respondents indicated that they had received adequate information, compared to 56% of non-implemented respondents. These results indicate more information about the RIF in the laboratories that had not yet implemented their demonstration projects (see Tables M-6 and M-7).

Findings. Despite the mandated downsizing under BRAC, few employees have been separated through RIFs. In general, RIF is an unpleasant and unpopular process and voluntary retirements and separation incentives, as well as retirements and resignations in lieu of involuntary actions, have been more common and have reduced the organizational turmoil resulting from large-scale RIFs. There has been no noticeable impact of the modified RIF procedures.

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Appendix A

Table A-1 Number of Employees and Union Members by Lab under the Laboratory Demonstration Project			
Lab	**Site Population**	**Bargaining Unit**	**Non-bargaining Unit**
AFRL	2367	334 (14%)	2033 (86%)
AMRDEC	2162	1841 (85%)	321 (15%)
ARL	1893	436 (23%)	1457 (77%)
MRMC	907	147 (16%)	760 (84%)
NSWC – Dahlgren	3527	229 (6.5%)	3298 (93.5%)
NSWC – Indian Head	752	39 (5%)	713 (95%)
NSWC – Carderock Div.	2073	0 (0%)	2073 (100%)
NSWC – Crane Division	1417	64 (4.5%)	1353 (95.5%)
NSWC – Port Hueneme Division	614	236 (38.4%)	378 (61.5%)
NSWC – Corona	832	22 (2.6%)	810 (97.3%)
ERDC	1496	499 (33%)	997 (67%)
NRL	2691	0 (0%)	2691 (100%)
NUWC – Newport	2038	1634 (80%)	404 (20%)
NUWC - Keyport	312	0 (0%)	312 (100%)
CECOM	790	0 (0%)	790 (100%)
TACOM: proposed	11436	9785 (86%)	1651 (14%)
SBCCOM	No data		
STRICOM	No data		
TOTAL	**35,307**	**15,266**	**20,041**

Source: Data submitted by Labs as of February 2002.
Note. For the implemented labs, 29 percent are bargaining unit participants.

Figure A-1
Support for First Navy Broadbanding Project:
1979-1998

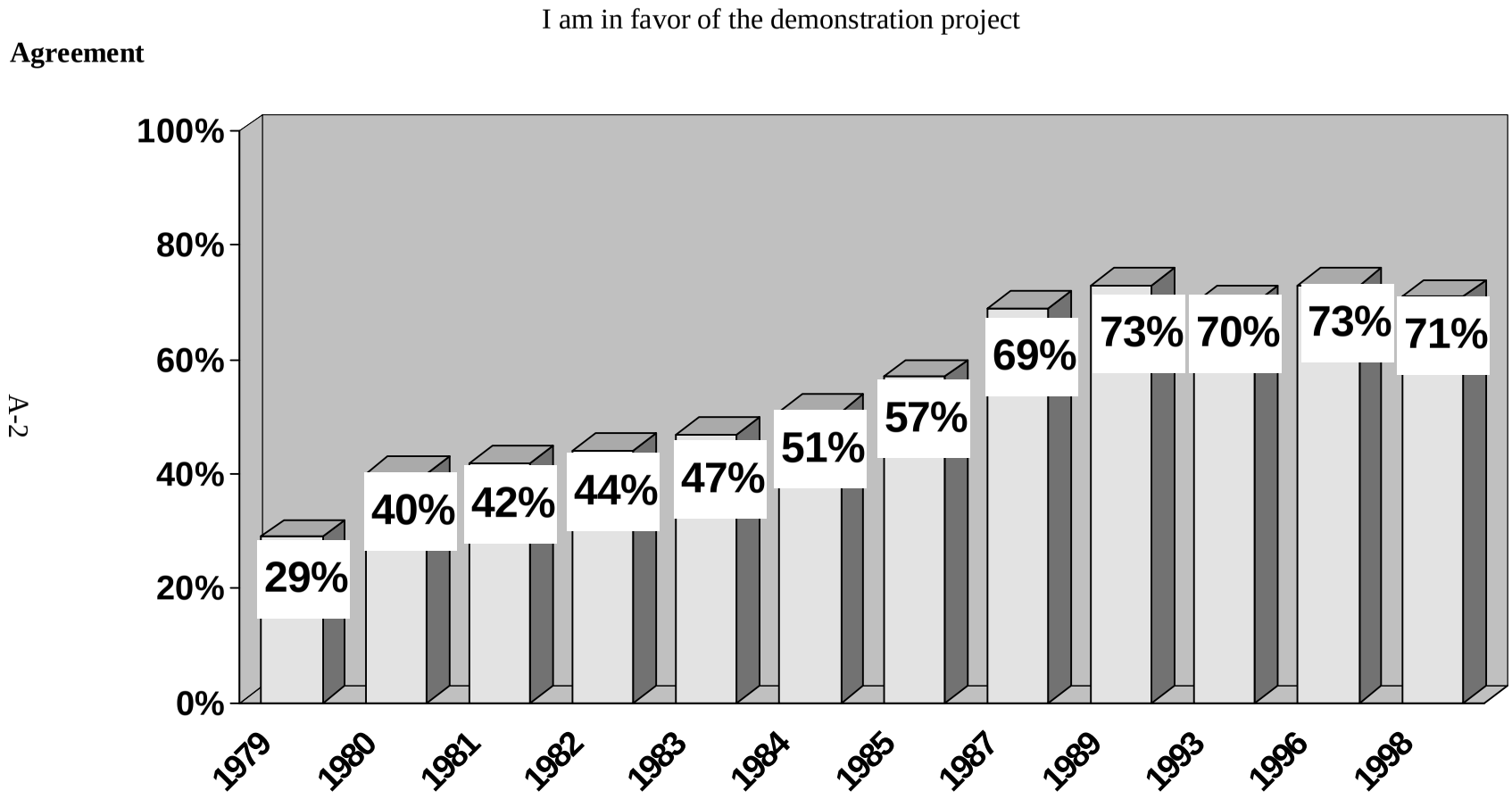
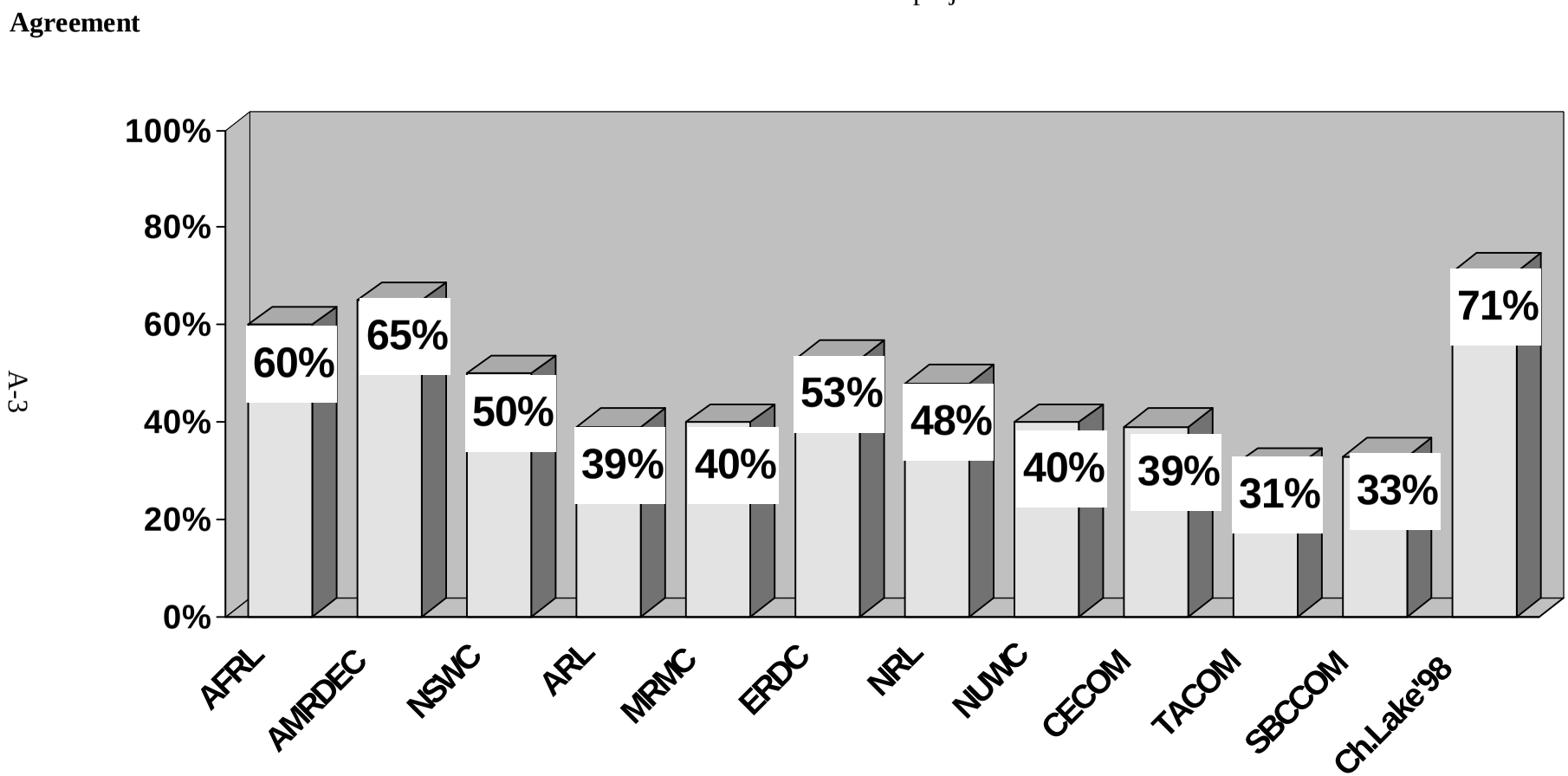


Figure A-2
Support for DOD S&T Laboratory Demonstration Project: 2001

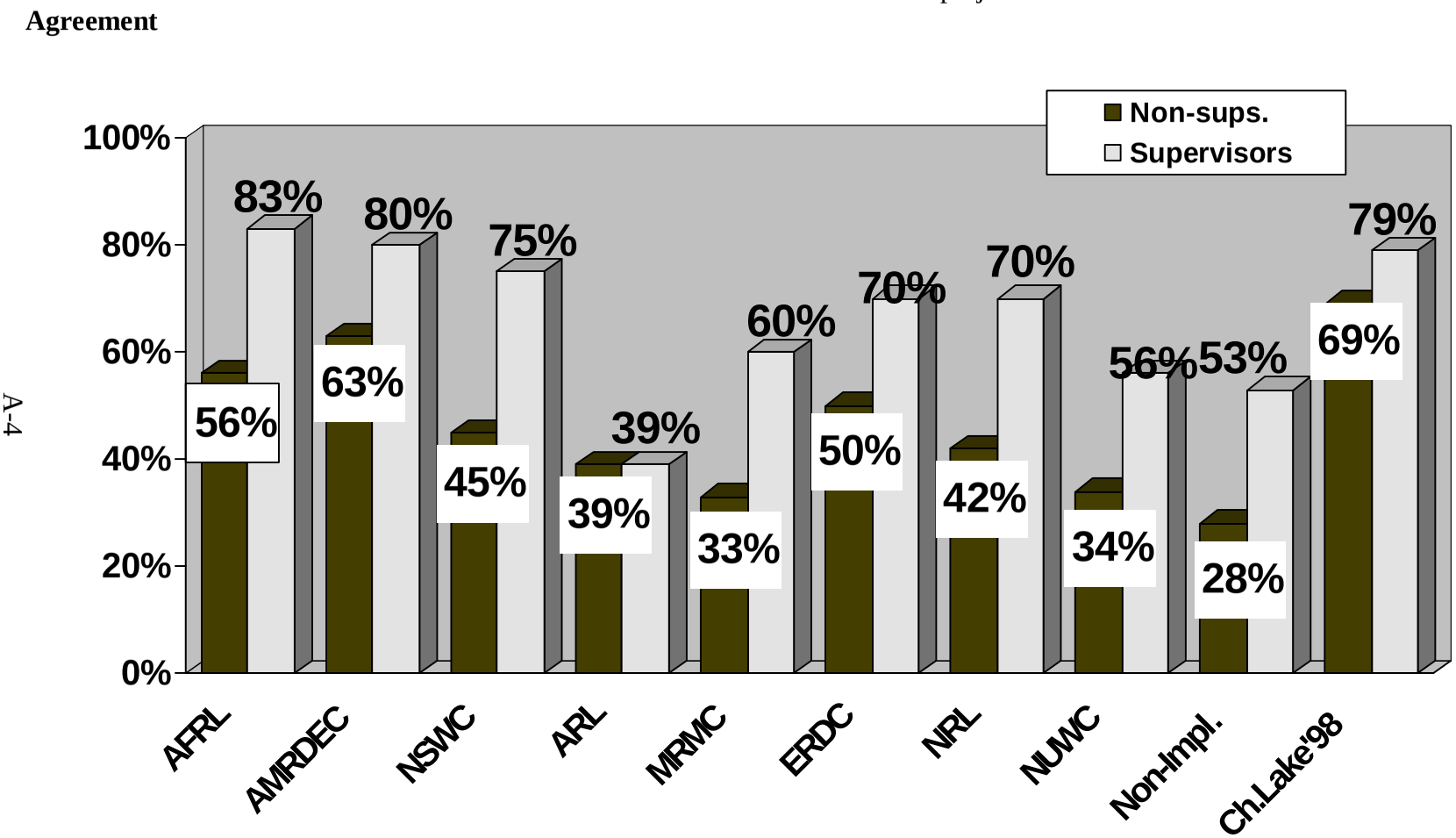
I am in favor of the demonstration project



Note. STRICOM did not participate in 2001 Survey

Figure A-3
Support for DOD S&T Laboratory Demonstration Project:
Supervisors vs. Non-Supervisors 2001

I am in favor of the demonstration project



Appendix B

Appendix B: Evaluation Methodology

Overview

The purpose of the evaluation of the demonstration program was to determine the effectiveness of the personnel system changes, determine the cost of the broadbanding systems, and assess the contribution of the project to organizational outcomes. The evaluation design for the S&T Reinvention Laboratory Demonstration Program was described in the document titled "Proposed Plan for the Evaluation of the Department of Defense S&T Laboratory Demonstration Program" (June 1995). It was a modification of a quasi-experimental design with non-equivalent control groups.

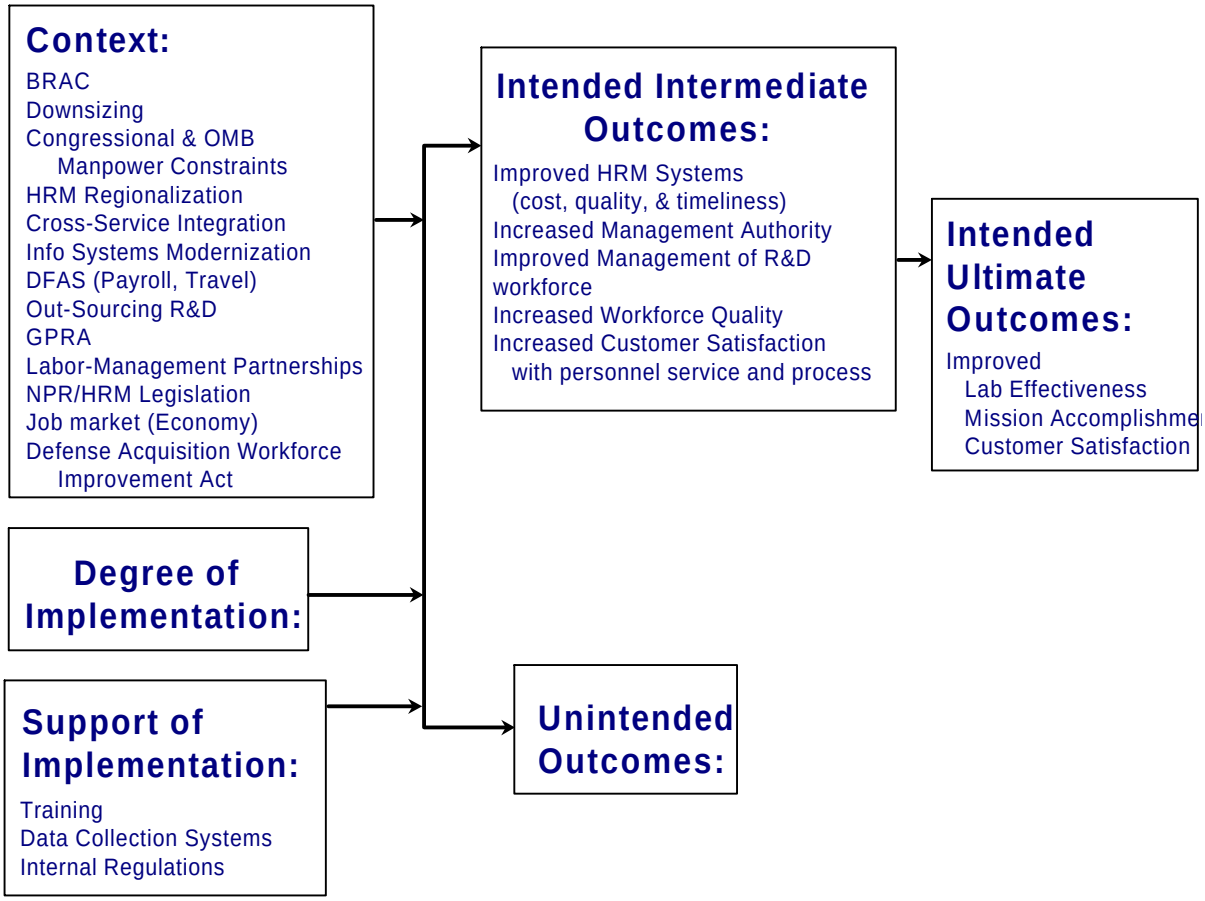
The original Navy Demonstration project at "China Lake" and San Diego served as a benchmark against which the progress of the labs can be measured. A comparison group, constructed from the Central Personnel Data File (CPDF) served as a control group for tracking demonstration project cost (see page B-10 for a list of these agencies). This comparison group consisted of Title 5 employees who work under the traditional General Schedule (GS) system in occupations similar to those covered by the demonstration project. In addition, because of the extended implementation period, there were multiple baselines, and non-implemented labs served as comparison groups for the implemented labs.

The evaluation was focused on the overall impact of similar interventions across the different projects rather than on the individual demonstration projects themselves. The models that guide the evaluation are described next.

Evaluation Models

A general model for the evaluation of the demonstration project is shown in Figure B-1 on the next page.

Figure B-1
Evaluation Context Model

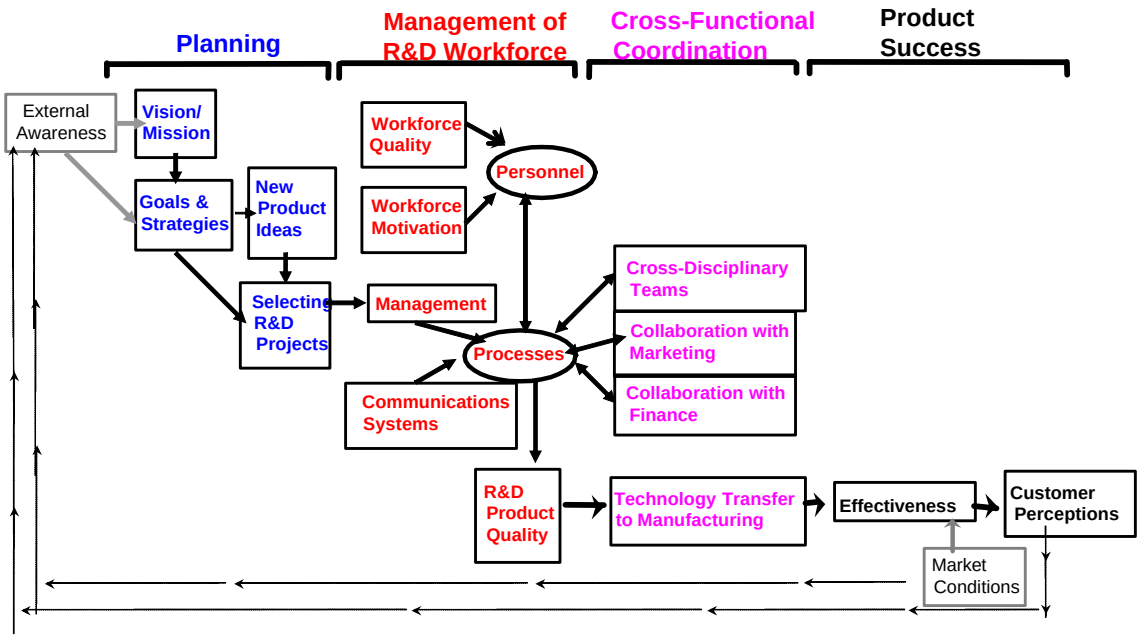


The evaluation context model in B-1 illustrates that the context within which the demonstration projects are operating is an important consideration in interpreting the results obtained. It also shows that the degree of implementation and the support for implementation have an impact on the achievement of intermediate and ultimate outcomes. These factors can facilitate or inhibit the intended outcomes, or they can result in unintended outcomes. Without a careful evaluation of the implementation of the project, something that did not happen or was not fully implemented could adversely affect expected project outcomes. The implementation evaluation is performed to ensure that the project was implemented as designed before conclusions are drawn about the impact of the changes. For results of our implementation evaluation, see the *2000 Implementation Report: DOD S&T Reinvention Laboratory Demonstration Program.*

In attempting to evaluate the effect of personnel system changes on ultimate outcomes such as organizational effectiveness, it is helpful to consider the components that interact in an organizational model. Our Model of R&D Organizational Performance (Figure B-2, next page), illustrates these four components: planning, management of the R&D workforce, cross-functional coordination, and product success (McCarthy, 1995). Most of the demonstration project interventions fall in the second category, Management of the R&D Workforce.

The model in Figure B-2 has guided our attempt to link the personnel system changes implemented in the demonstration project with outcome measures such as customer satisfaction and technology transfer ("Product Success").

Figure B-2
Model of R&D Organizational Performance



An Intervention Impact Model was used to measure the effectiveness of the various personnel system changes. A small part of the model is shown in B-3, below. The full model appears at the end of Appendix B, as Table B-7.

Figure B-3
Intervention Impact Model (part)

Interventions	Expected Effects	Measures	Data Sources
COMPENSATION:	**-increased organizational flexibility**	**-perceived flexibility**	**-attitude survey**
a. broadbanding	**-reduced administrative workload, paperwork reduction**	**-actual/perceived time savings**	**-personnel office data, attitude survey**
	-advanced in-hire rates	**-starting salaries of banded vs. non-banded employees**	**-workforce data**
	-slower pay progression at entry levels	**-progression of new hires over time by band, career path**	
		-mean salaries by band, career path, demographics	
	-increased pay potential	**-total payroll cost**	
	-higher average salaries	**-employee perceptions of advancement**	
	-increased satisfaction with advancement		
	-increased pay satisfaction	**-pay satisfaction, internal/external equity**	**-attitude survey**
	-improved recruitment	**-offer/acceptance ratios**	**-personnel office data**

The Intervention Impact Model provides a framework for evaluating the individual personnel system changes by specifying the effects that were expected, the measures that were used to assess the extent to which the expected effects took place, and the data sources that provided the needed information. It has to be recognized, however, that when multiple interventions are implemented, they act together and contribute to the same results.

It is difficult to determine whether the interventions in the S&T Reinvention Laboratory Demonstration program are cost effective. The desired ultimate outcomes (improved lab effectiveness, mission accomplishment, and customer satisfaction) are difficult to quantify and are influenced by many uncontrollable factors. An attempt has been made to specify and collect measures of laboratory quality from the labs.

The cost of broadbanding can be compared to the salary costs under the Title 5 General Schedule. On the benefit side, administrative savings from simplified classification can be measured and have been documented in previous demonstration projects, as can increased employee satisfaction, lower turnover among high performers, and increased customer satisfaction. This summative evaluation combines the results of the cost analysis with the organizational effectiveness measures. By doing so, it is possible to

provide decision-makers a clear picture of the tangible and intangible benefits of the S&T Reinvention Laboratory Demonstration program, as well as the program's costs.

Project Participants

The demonstration project began with a potential population of about 50,000 employees in 20 labs and currently includes about 24,000 participants in 9 out of a total of 12 consolidated labs. There are potentially 13,000 more participants in the three labs that have yet to implement (TACOM, SBCCOM and STRICOM). The final total, therefore, may rise to about 38,000. There are two reasons for this lower number, downsizing in DoD and selective implementation of non-union employees only where unions refuse to have bargaining unit employees participate in the projects. Currently, 29% of demonstration employees are in a bargaining unit.

The overall demographics of the laboratory population are shown in Table B-1 below and combine implemented and non-implemented labs. More detailed demographics by implementation wave are shown in Tables B-3 to B-5, comparing workforce and survey demographics.

Table B-1 Workforce Demographics of Employees in DoD S&T Laboratory Demonstration Program

Education	Gender	Occupational Group	Race	Hispanic Origin
No Degree: 38% Bachelor's: 39% Master's: 20% Ph.D.: 3%	Male: 68% Female: 32%	Professional: 52% Administrative: 27% Technical: 11% Clerical: 8% Other: 2%	White: 84% Minority: 16%	3%

Note. N = 37,000.

Data Sources

Data for this evaluation are collected from a variety of sources: employee workforce databases, surveys, personnel office data on quality and timeliness, site historian documents, ratings collected from supervisors of scientists and engineers on the criticality of individual employees to the organization's accomplishment of its mission (Starturn), measures of laboratory quality and effectiveness, as well as focus groups and structured interviews conducted during site visits.

Workforce Data

Designated contacts in the Army, Air Force and Navy have provided workforce data on an annual basis. The first usable data set covered calendar year 1996 with the January 1997 general increase included in salary figures. Workforce data variables include employee demographics, and information on salary, performance ratings, bonuses, and turnover.

Problems have been encountered in the past several years obtaining accurate data for the demonstration populations, particularly from the Army labs, which lacked unit identification codes to identify organizations below the command level that were participating in demonstration projects. The frequent reorganizations, centralization of personnel servicing, and conversion to the Modern System have exacerbated this problem. Quality checks have resulted in frequent returns and resubmissions of data files. The last collection of workforce data for the January 2001 Army data took five months. The numbers for each of the Army labs generally match the numbers provided by the labs within ± 5%, which is less than the average for annual turnover. Given the large overall numbers involved, the error resulting from analyses of approximate rather than precise workforce numbers is estimated to be small and is not likely to affect the trends identified. Turnover, i.e., coding of separations, in recent years appears to be less accurate, however, and we have substituted data, when provided by the labs to improve accuracy.

Employee Surveys

Attitude surveys of employees and managers/supervisors were conducted in 1996 prior to the implementation of the first demonstration project, and in 1998, 1999, and 2001. Survey data were collected from "China Lake," our benchmark group, in 1996 and 1998; their recent data have changed very little over time and represent a stable demonstration project.

Table B-2 shows the sample sizes and overall error margins for the 4 surveys. Error margins for each lab and comparison group are shown in Table B-6 at the end of this appendix. When interpreting percentage differences in the report tables, this table should be consulted to determine whether the differences are statically significant, i.e., outside the margin of error.

Table B-2 Survey Response Rates and Error Margins *1996 to 2001

Year	Number Sent or Notified**	**Number** Distributed	Number Returned	Response Rate	Margin of Error	Time Period of Administration
1966	43,140	No data	23,546	55%	± 0.49%	June – August
1998	36,482	No data	15,931	44%	± 0.64%	July – October
1999	30,868	23,366	11,328	49%	± 0.77%	July – October
2001	36,241	36,241	9,305	26%	± 0.88%	June – October

Note. * Based on 95% level of confidence. **The 2001 Survey was administered on line and employees were notified by e-mail

Since survey response rates have declined over time and non-response bias is a possibility, the characteristics of the survey respondents (occupational group, race, Hispanic origin, gender, education, supervisory status) were compared with the actual workforce demographics for each comparison group in order to determine the representativeness of the survey results. These analyses are shown in Tables B-3 to B-5 and reveal that the survey results are fairly representative of the population, with a few

exceptions. In terms of occupational group, professional employees are somewhat over-represented and technicians are under-represented in all years, as are administrative employees in the last 2 surveys. Analyses by race and Hispanic origin show that all groups are represented in the survey samples, but African Americans have somewhat lower response rates, especially in Wave 2. The percentage of individuals with college degrees is also slightly higher than in the population, especially in Wave 2 and the non-implemented labs. Multiple follow-up procedures were used to increase response rates in the surveys, the administration period for the surveys was extended for several months, and employees were reminded that the results would be used for policy decisions. There was no way to determine whether non-respondents hold different attitudes and opinions than respondents, since all surveys were anonymous. During on-site focus groups and interviews with demonstration project managers, the issue was raised, but participants who had not responded to the surveys did not show a tendency to be more or less favorable toward the demonstration project. The most frequent reason cited for responding was work pressure and lack of time.

Table B-3 Survey Respondents vs. Actual Workforce by Occupational Group

1996	**Professional**	**Administrative**	**Technical**	**Clerical**	**Other**
Wave 1	59% - 55%	15% - 16%	9% - 17%	10% - 9%	8% - 3%
Wave 2	60% - 59%	16% - 13%	6% - 15%	11% - 11%	7% -2%
Non-Implemented	57% - 56%	16% - 20%	7% - 12%	9% - 10%	10% - 2%
1998					
Wave 1	73% - 62%	12% - 16%	7% - 15%	5% - 5%	3% - 2%
Wave 2	66% - 59%	13% - 14%	9% - 15%	8% - 10%	4% - 2%
Non-Implemented	59% - 59%	16% - 20%	10% - 11%	8% - 8%	7% - 2%
1999					
Wave 1	76% - 63%	10% - 16%	7% - 15%	5% - 4%	2% - 2%
Wave 2	78% - 61%	9% - 13%	4% - 14%	5% - 9%	3% -2%
Non-Implemented	64% - 48%	14% - 33%	10% - 10%	6% - 8%	5% - 2%
2001					
Wave 1	79% - 64%	10% - 15%	6% - 15%	4% - 4%	2% - 2%
Wave 2	68% - 62%	14% - 13%	9% - 14%	6% - 9%	4% - 2%
Non-Implemented	49% - 45%	25% - 37%	14% - 9%	5% - 7%	8% - 2%

Note. The first number in each cell represents the survey respondents; the second number reflects the actual workforce data provided by the labs.

Table B-4 Survey Respondents vs. Actual Workforce by Race					
1996	American Indian	Asian/Hawaiian Pacific Islander	African American	Other	White
Wave 1	1% - 1%	3% - 4%	6% - 8%	3% - 4%	87% - 83%
Wave 2	.3% - .3%	4% - 4%	7% - 9%	2% - 2%	87% - 85%
Non-Implemented	1% - 1%	7% - 7%	4% - 4%	3% - 3%	85% - 85%
1998					
Wave 1	1% - 1%	3% - 4%	5% - 8%	3% - 3%	87% - 83%
Wave 2	1% -.3%	2% - 4%	2% - 9%	2% - 2%	93% - 85%
Non-Implemented	1% - 1%	7% - 7%	4% - 4%	4% - 3%	84% - 84%
1999					
Wave 1	1% - 1%	4% - 5%	5% - 8%	3% - 3%	87% - 83%
Wave 2	1% - .3%	3% - 4%	3% - 9%	3% - 2%	90% - 85%
Non-Implemented	.4% - 1%	9% - 6%	4% - 7%	5% - 3%	82% - 83%
2001					
Wave 1	1% - 1%	4% - 5%	4% - 8%	4% - 4%	88% - 83%
Wave 2	1% - .3%	4% - 4%	5% - 9%	3% - 2%	87% - 84%
Non-Implemented	1% - 1%	5% - 6%	4% - 6%	5% - 3%	86% - 84%

Table B-5 Survey Respondents vs. Actual Workforce by Gender, Hispanic, and Supervisory Status					
1996	**Female**	**Male**	**Hispanic**	**Percent Supervisors**	**Percent with College Degrees**
Wave 1	29% - 31%	71% - 69%	5% - 4%	18% -	66% - 65%
Wave 2	34% - 33%	66% - 67%	2% - 2%	20%	68% - 62%
Non-Implemented	29% - 29%	71% - 71%	4% - 3%	13%	69% - 63%
1998					
Wave 1	26% - 21%	74% -79%	3% - 3%	16%	81% - 80%
Wave 2	31% - 33%	69% - 67%	2% - 2%	8%	76% - 63%
Non-Implemented	29% - 28%	71% - 72%	2% - 3%	12%	70% - 65%
1999					
Wave 1	25% - 21%	75% - 79%	3% - 3%	15%	82% - 80%
Wave 2	29% - 31%	71% - 69%	2% - 2%	11%	85% - 64%
Non-Implemented	27% - 35%	73% - 65%	5% - 3%	9%	87% - 59%
2001					
Wave 1	24% - 21%	76% - 79%	2% - 4%	13%	86% - 81%
Wave 2	29% - 31%	71% - 69%	3% - 2%	13%	67% - 65%
Non-Implemented	33% - 35%	67% - 65%	4% - 3%	9%	67% - 61%

Personnel Office Data

Personnel offices provided data on the efficiency of their operations, e.g., staffing and classification timeliness measures. They also were the repository for other "non-automated" data, such as the number of sabbaticals taken, and the quality of new hires (e.g., average grade point average and number of publications).

Demonstration project offices provided data on demonstration project plans and implementation, including information on communication strategies, training, and modifications to project plans, labor-management cooperation, and the interface with human resource systems.

Laboratory Quality

The following measures of laboratory quality and effectiveness were identified: education levels, number of post-docs, percent of professionals with professional society memberships, number of annual refereed publications, number of annual patents, average patent income, and results of customer satisfaction. Few labs tracked all these measures and we have tabulated and analyzed the information provided to us.

Site Histories

Site historians at each lab recorded significant events that impact the organization. The site historian logs were invaluable in helping the evaluators understand the contextual variables that affected the implementation of the demonstration project and the results that are measured. Site historians submitted information on an annual basis.

On-Site Visits

Site visits provided the evaluation team with valuable information on the organization's environment, structure, mission, leadership, labor-management relations and its experience working under the demonstration project. Evaluation team members received briefings and tours, and they conducted structured interviews and focus groups to get a "snapshot" of the degree of project implementation and its impact on the organization. The interviews and focus groups were conducted with individuals and groups responsible for implementing particular aspects of a given demonstration project or with those affected by certain interventions. Focus group sites and organizations were selected following preliminary analysis of workforce data, surveys, site histories, and other pertinent information. The first set of focus groups for Wave 1 labs took place from September through December 1999. The second set of focus groups for both Wave 1 and Wave 2 labs were conducted in the summer and early fall of 2001. Focus groups with employees and managers were designed primarily to assess the impact and implementation of the broadbanding and pay-for-performance systems. All labs that implemented the demonstration project have been visited. Examples of a typical agenda and focus group questions are shown in Table B-9.

Benchmark Group

The original Navy Demonstration Project, with its 20-year history using simplified and integrated classification, compensation, and performance management systems, provided a benchmark for the current S&T Reinvention Laboratory Demonstration Program. Although two research laboratories in California, "China Lake" (Space and Naval Warfare Weapons Divisions, formerly Naval Weapons Center) and San Diego (Space and Naval Warfare Systems Center, formerly Naval Ocean Systems Center), made up the original Navy Demonstration Project, for simplicity we referred to them as "China Lake" throughout this report.

Title 5 Comparison Group

A comparison group constructed from OPM's Central Personnel Data File (CPDF) was used for comparison of pay progression. It included employees in Federal civilian research organizations in occupations matched to the demonstration project population who were working under the traditional Title 5 system. The agencies that make up this comparison group were the Department of Energy; the Environmental Protection Agency; the National Aeronautics and Space Administration; the National Institutes of Health's National Institute of Allergy and Infectious Diseases, National Institute of

Environmental Health Sciences, National Institute of General Medical Sciences, National Center for Research Resources, and the Nuclear Regulatory Commission.

Wave 3 Research Laboratories

A third comparison group consisted of Wave 3 laboratories that had not yet implemented their demonstration projects as of January 2002 (Army Tank Automotive Command, Army Communications Electronics Command, Army Soldier Biological and Chemical Command, and Army Simulation, Training, and Instrumentation Command).

Table B-6 Survey Margins of Error							
Group	**Population**	**OPM Drawn Sample**	**Known Undelivered**	**# Delivered**	**# Returns**	**Response Rate**	**Max. Margin of Error**
1996							
All Labs	56103	43,557	842	42715	23,222	54%	0.49%
AFRL (all employees)	5450	5,450	20	5430	3,028	56%	1.19%
AMRDEC	2840	2840	209	2631	1779	68%	1.42%
ARL	2725	2,725		2725	1,244	46%	2.05%
MRMC	1298	1298	14	1284	682	53%	2.59%
NSWC	16764	8382	151	8231	4930	60%	1.17%
All Wave 1	29077	20,695		20301	11,663	57%	0.70%
ERDC	2736	2736	84	2652	1730	65%	1.43%
NUWC	3173	3173	6	3167	1546	49%	1.79%
NRL	3613	3613	204	3409	1645	48%	1.78%
All Wave 2	9522	9522		9228	4921	53%	0.97%
CECOM	2281	2281	113	2168	1373	63%	1.67%
TACOM	5460	5460	28	5432	2660	49%	1.36%
SBCCOM	983	983	6	977	462	47%	3.32%
STRICOM	552	552		552	329	60%	3.44%
Wave 3	9276	9276		9129	4824	53%	0.98%
NWC	5418	2709	7	2702	1261	47%	2.42%
San Diego	2810	1355		1355	553	41%	3.74%
"China Lake"	8228	4064		4057	1814	45%	2.03%

Table B-6 Survey Margins of Error (con't)							
Group	**Population**	**OPM Drawn Sample**	**Known Undelivered**	**# Delivered**	**# Returns**	**Response Rate**	**Max. Margin of Error**
1998							
All Labs	48,780	37,836	2307	35529	15,931	45%	0.64%
AFRL (S&Es only)	2621	2,621	65	2556	1,246	49%	2.01%
AMRDEC	2299	2299		2299	1136	49%	2.07%
ARL	2250	2,250	268	1,982	1171	59%	1.98%
MRMC	1150	1150		1150	341	30%	4.45%
NSWC	16106	8053	116	7937	3566	45%	1.45%
All Wave 1	24426	16,373		15924	7,460	47%	0.95%
ERDC	2654	2654	539	2115	1004	47%	2.44%
NUWC	3700	3700	195	3505	1515	43%	1.94%
All Wave 2	6354	6354		5620	2519	45%	1.52%
CECOM	3600	3600	605	2995	791	26%	3.08%
TACOM	3816	3816	519	3297	2051	62%	1.47%
SBCCOM	899	899		899	335	37%	4.24%
STRICOM	521	521		521	258	50%	4.34%
Other Army					472		
Wave 3	8836	8836		7712	3907	51%	1.17%
NWC	5782	2891		2891	861	30%	3.08%
NCCOSC	3382	3382		3382	1184	35%	2.30%
"China Lake"	9164	6273		6273	2045	33%	1.91%

Table B-6 Survey Margins of Error (con't)							
Group	**Population**	**OPM Drawn Sample**	**Known Undelivered**	**# Delivered**	**# Returns**	**Response Rate**	**Max. Margin of Error (95% confidence interval)**
1999							
All Labs	34,804	24,098	583	23515	10,999	47%	0.77%
AFRL (S&Es only)	2606	1,866	167	1699	900	53%	2.64%
AMRDEC	2225	2225		2225	916	41%	2.48%
ARL	2250	2,200		2200	1,061	48%	2.19%
MRMC	1150	1149	40	1109	255	23%	5.42%
NSWC	14118	6920	28	6892	3484	51%	1.44%
All Wave 1	22349	14,360		14125	6,616	47%	1.01%
ERDC	2276	2276	187	2089	802	38%	2.79%
NUWC	2585	2580		2580	889	34%	2.66%
All Wave 2	4861	4856		4669	1691	36%	1.92%
CECOM	2675	1495	20	1475	532	36%	3.80%
TACOM	3525	2858	114	2744	1473	54%	1.95%
SBCCOM	889	889		26	17	2%	23.55%
STRICOM	505	503	27	476	216	45%	5.05%
Other Army					454		
Wave 3	7594	5745		4721	2692	57%	1.52%

Table B-6 Survey Margins of Error (con't)							
Group	**Population**	**OPM Drawn Sample**	**Known Undelivered**	**# Delivered**	**# Returns**	**Response Rate**	**Max. Margin of Error (95% confidence interval)**
2001							
All Labs	36,241	36,241		36241	9,305	26%	0.88%
AFRL (all employees)	5000	5,000		5000	1,072	21%	2.65%
AMRDEC	2110	2110		2110	1177	56%	1.90%
ARL	2050	2,050		2050	319	16%	5.04%
MRMC	950	950		950	210	22%	5.97%
NSWC	8200	8200		8200	1972	24%	1.92%
All Wave 1	18310	18,310		18310	4,750	26%	1.22%
ERDC	2038	2038		2038	611	30%	3.32%
NUWC	2694	2694		2694	966	36%	2.53%
NRL	2859	2859		2859	677	24%	3.29%
All Wave 2	7591	7591		7591	2254	30%	1.73%
CECOM	2000	2000		2000	397	20%	4.40%
TACOM	7600	7600		7600	1657	22%	2.13%
SBCCOM	740	740		740	246	33%	5.11%
STRICOM	0	0		0	1	0%	n/a
Wave 3	10340	10340		10340	2301	22%	1.80%

Table B-7
Intervention Impact Model

	EXPECTED EFFECTS	MEASURES	DATA SOURCES
1. Compensation **a. broad-banding** (ALL)	- increased organizational flexibility - reduced administrative work load, paperwork reduction - advanced in-hire rates - slower pay progression at entry levels - increased pay potential - higher average salaries - increased satisfaction with advancement - increased pay satisfaction - improved recruitment - no change in high-grade (GS-14 +) distribution	- perceived flexibility - actual/perceived timesavings, length of PDs - starting salaries of banded vs. non-banded employees - progression of new hires over time by band, career path - mean salaries by band, career path, demographics - total payroll cost - employee perceptions of advancement - pay satisfaction, internal/ external equity - offer/acceptance ratios - number/percentage of white collar employees at hi-grade salaries pre/post banding - number/percentage of white collar employees at SL/ST pre/post banding percent declinations	attitude survey personnel office data, PME results, attitude survey workforce data attitude survey personnel office data workforce data
b. new Senior Scientific Technical Manager positions (NRL, All Army)			
c. supervisory differential (ERDC: S&E only; AMRDEC)	- incentive to become a supervisor - better quality supervisors	- perceived incentive - differences in average pay of supervisors/non-sups. by band and career path - perceived quality of new supervisors	survey/focus groups workforce data survey/focus groups

	EXPECTED EFFECTS	MEASURES	DATA SOURCES
2. Supervisory Bonus MRMC only	- incentive to become a supervisor - better quality supervisors	- perceived incentive - number and mean dollar amounts of bonuses by band and career path - perceived quality of new supervisors	survey/focus groups workforce data survey/focus groups
a. conversion "buyin" of pro-rated WIGI	- employee acceptance	- employee perceptions of equity, fairness - cost as a percent of payroll	attitude survey workforce data
3. Performance Management (ERDC, MRMC and ARL excludes SL/ST) **a. cash awards/ bonuses distinguished contribution allowance (NRL)**	- reward performance - pay-performance link - support fair and appropriate distribution of awards	- number and average amounts of bonus awards by career path, demographics, performance - perceived fairness of awards - satisfaction with monetary awards	workforce data attitude survey
b. performance/ contribution-based pay progression <u>General increase at risk</u>: ERDC, AFRL, AMRDEC, NRL, MRMC <u>Rating levels</u>: NWC: 2, (0-4 pay points) AFRL: 0 -5.9 perf. Discont. (0-1),4.9-5,9) No composite above 4.9 ERDC: 5 pay (0-4)	- increased pay-performance link - improved performance feedback, communication -changes in administrative workload - increased retention of high performers/turnover of low performers - differential pay progression of high/low performers - reduced pay for low performers - alignment of organizational and individual performance expectations and results	- pay-performance correlations - perceived pay-performance link - perceived fairness of ratings - satisfaction with ratings - employee trust in supervisors - adequacy of performance feedback, communication of expectations -actual, perceived workload, perf. mgt. procedures - turnover by performance rating - performance rating distribution - pay progression by performance rating category, career path, demographics - number of employees with reduced pay	workforce data attitude survey attitude survey performance plans workforce data

	EXPECTED EFFECTS	MEASURES	DATA SOURCES
6 perf. (0-5) MRMC: 100 pt. pay (0-2 shares) 4 performance levels AMRDEC, ARL: 100 pt. pay (0-4 shares) 4 perf. (A,B,C,U)	- increased employee involvement in performance planning and assessment	- linkage of performance plans to strategic plans/goals - performance expectations - perceived involvement - procedures	performance plans, strategic plans attitude survey/focus groups personnel regulations
c. Supervisory panel review	- increased consistency of ratings	- perceived fairness of ratings	attitude survey/focus groups
4. Classification **a. Simplified/ automated systems with generic standards** (ALL)	- reduction in amount of time and paper work spent on classification - ease of use - improved recruitment of employees with appropriate skills	- time savings - paper work/ personnel actions (classification, promotions) - managers' perceptions of time savings, ease of use, - quality of recruits (education, GPA, etc.)	Personnel office data attitude survey/focus groups /interviews personnel office data
b. classification authority delegated to managers (ALL)	- increased supervisory authority/accountability - perceived fairness of classification - decreased conflict between management and personnel staff - no negative impact on internal pay equity	- perceived classification authority - number of classification disputes/appeals pre/post - management satisfaction with service provided by personnel office - internal pay equity	attitude survey personnel records attitude survey
c. dual career ladder (ALL)	- increased flexibility to assign employees - improved internal mobility - increased pay equity	- assignment flexibility - sup./non-sup. ratios - perceived internal mobility	focus groups, surveys workforce data attitude survey

	EXPECTED EFFECTS	MEASURES	DATA SOURCES
	- flatter organization - improved quality of supervisory staff	- perceived pay equity - employee perceptions of quality of supervision	
5. Staffing/Recruitment **a. modified term appointing authority (1-5 years + 6th year)** (MRMC, ARL, AMRDEC, ERDC)	- streamlined hiring process, increased timeliness - increased flexibility to reduce workforce - improved recruitment process -increased quality of temporary employees	-management perceptions of hiring process - time to hire - management perceptions of flexibility to reduce staff - workforce reductions over time - workforce mix (percentage of civilians/contractors) -management satisfaction with recruitment process - quality of temporary employees (education, GPA, experience)	survey, focus groups personnel office data survey, focus groups workforce data workforce and budget data attitude survey personnel office data
b. lab-based examining (NWC)	- improved hiring process - increased timeliness - increased quality of hires - no negative impact on fairness of selection process, openness to competition	- management satisfaction with hiring process - time to hire (issue of Form 52 to referral of candidates) - quality of new hires - examining procedures - perceptions of fairness of process	attitude survey personnel office data attitude survey, personnel office data personnel audit attitude survey
c. extended probationary period <u>3 years</u>: AFRL for S&Es ARL: up to 3 years for S&Es MRMC: S&E (up to 3; up to 2 for all other employees) NRL: 3 years for non-status	- more opportunity to demonstrate ability to perform job and remove unsatisfactory performers	- number/percent of employees separated (by reason) during probationary period compared to 1-year career conditional period, and 3-year period at comparison sites - management/employee satisfaction with probationary period	workforce data focus groups attitude survey

	EXPECTED EFFECTS	MEASURES	DATA SOURCES
employees when required by nature of work 2 years: ERDC: S&E only AMRDEC: S&E, business and technical support (mandatory) None: NWC			
d. Distinguished Scholastic Achievement Appointment (AMRDEC, ARL, ERDC, NWC)	improved recruitment	number and percent of hires, quality of hires (GPA, education, etc.)	Workforce data personnel office data
f. scientist emeritus program (ALL, except NWC, NRL)	- encourage voluntary retirement and open up hiring slots for new staff	- frequency of use and cost - intrinsic work motivation of scientists/engineers	personnel office data attitude survey
g1. modified X-118 qualifications (All) **g2. Categorical ratings** (NWC, AMRDEC, ARL, ERDC) **g3. No rating/ranking if less than 15 candidates and no preference eligibles (NRL)** **g4. Non-citizen hiring for shortage categories (NRL)**	- improved recruitment and placement of employees with appropriate skills - increased quality of hires - increased timeliness - no negative impact on fairness of process, openness to competition - fill critical positions	- management satisfaction with quality of new hires (education, GPA, experience) - education vs. experiences levels - GPAs of new hires, education level - time to fill positions - candidate/employee satisfaction - management satisfaction with quality of hires	attitude survey, focus groups personnel office data attitude survey focus groups

	EXPECTED EFFECTS	MEASURES	DATA SOURCES
6. Separation/RIF **a. modified RIF** **b. locally delegated early retirement/ buyout authority**	- prevent loss of high performing employees with needed skills - limit disruption - simplify downsizing and restructuring	- separated employees by demographics, performance - satisfaction with RIF process - number of RIF rounds, employees affected - number of appeals/ reinstatements - number taking buyouts by grade, age, series, retirement eligibility average amount of buyout	workforce data attitude survey/ focus groups personnel office data RIF procedures workforce data
7. Adverse Action/Dispute Resolution **a. Last Chance Agreement** (ARL)	- reduced administrative burden, increased timeliness of actions - no negative impact on due process	- number of actions taken by demographics - estimated cost savings - estimated time savings - fairness of process - consistency of application	personnel office data attitude survey review of case files
b. better management of poor performers (ALL)	- better communication of performance expectations -increased separation of poor performers	- performance feedback procedures used - perceived feedback	personnel regulations/focus groups attitude survey personnel office data

	EXPECTED EFFECTS	MEASURES	DATA SOURCES
	- no negative impact on due process	- frequency of performance improvement plans, remedial programs - number, percent of performance-based removals - fairness of process - consistency of application - number of settlements	workforce data attitude survey document review personnel office data
8. Training **a. Critical Skills training** (ERDC, ARL, AMRDEC)	-increased development of employees	- increased perceptions of fairness in career development - number and percent of employees supported in degree programs	focus groups personnel office data
9. Combination of all interventions	Improved Organizational Effectiveness - improved management of R&D workforce - improved planning - improved cross-functional coordination - increased product success - cost of innovation	combination of all personnel measures - employee/management satisfaction - planning procedures - perceived effectiveness of planning procedures - actual/perceived coordination - customer satisfaction -project development cost (staff salaries, contract cost)	all data sources attitude survey strategic planning documents attitude survey organizational charts attitude survey customer sat. surveys demo project office records
Context **1. Regionalization**	- reduced HR servicing ratios/cost -no negative impact on service quality	- HR servicing ratios - average cost per employee served - service quality, timeliness	attitude survey workforce data
2. GPRA (ALL)	- improved organizational performance	see 9 - combination of all interventions and available GPRA measures	lab records

1. ERDC: ST/SL included for employee development purposes only.

Table B-8 Survey Scales and Reliabilities
DoD S&T Reinvention Laboratory Demonstration Survey

Scales and Items for Performance Management Dimensions

Advancement Satisfaction (2 items)
Alpha=.80*

27. Pay progression, the way I move up within my grade or band, is fair.
29. I am satisfied with my chances of getting a promotion.

Pay Satisfaction (2 items)
Alpha=.71

36. All in all, I am satisfied with my pay.
28. Pay is administered fairly in this organization.

External Pay Equity (1 item)

37. Other employers in this area pay more than the Government does for the kind of work I am doing.

Internal Pay Equity (1 item)

61. Pay differentials here fairly represent real differences in levels of responsibility and job difficulty.

Negative Performance Consequences (3 items)
Alpha=.80 (Note: Items 77 and 78 are reversed for the scale)

77. This organization passes off marginal and unsatisfactory workers to others or moves them to positions where they can be ignored.
78. Disciplinary actions in this organization are avoided because of the paperwork that is required.
79. Corrective actions are taken when employees do not meet performance standards.

Pay-Performance Link (4 items)
Alpha=.86 (Note: Item 35 is reversed for the scale)

35. Under the present system, financial rewards are seldom related to employee performance.
44. Pay raises depend on my contribution to the organization?s mission.
45. Pay raises depend on how well I perform.
46. Cash awards depend on how well I perform.

*Cronbach's Alpha is a statistical measure of reliability applied to scales, where 1.0 reflects a perfect reliability score and 0.0 is zero reliability. An acceptable level of reliability for survey scales is .65 or higher.

Performance Communication (4 items)
Alpha=.91

126. My supervisor sets clear goals for me.
132. My supervisor recognizes my personal accomplishments.
133. My supervisor gives me adequate information on how well I am performing.
137. My supervisor and I agree on what good performance on my job means.

Performance Appraisal Satisfaction (5 items)
Alpha=.83

32. My performance rating represents a fair and accurate picture of my actual performance.
33. There are adequate procedures to get my performance rating reconsidered, if necessary.
38. I understand the performance appraisal system being used in this organization.
39. The factors/performance elements on which I am rated take into account the most important parts of my job.
41. The weights assigned to the factors/performance elements on which I am rated are fair.

Rewards and Recognition (4 items)
Alpha=.86

47. High-performing employees receive monetary rewards (e.g., cash awards, bonuses).
48. High-performing employees receive non-monetary rewards (e.g., plaques, letters of appreciation, public recognition).
49. Supervisors are fair in recognizing individual accomplishments.
50. Supervisors are fair in recognizing team accomplishments.

Procedural Justice (7 items)
Alpha=.84

28. Pay is administered fairly in this organization.
32. My performance rating represents a fair and accurate picture of my actual performance.
33. There are adequate procedures to get my performance rating reconsidered, if necessary.
38. I understand the performance appraisal system being used in this organization.
39. The factors/performance elements on which I am rated take into account the most important parts of my job.
40. I understand how pay decisions are made.
41. The weights assigned to the factors/performance elements on which I am rated are fair.

Scales for Human Resources Administration Dimensions

Personnel Services Satisfaction (4 items)
Alpha=.91

123. Overall, the quality of personnel services provided to me is: very poor...very good.

124a. The staff who provide personnel services have a good understanding of my work group's operations and mission.

124b. The staff who provide personnel services provide timely service.

124c. The staff who provide personnel services help me achieve my organization's mission.

Staffing Fairness (3 items)
Alpha=.87

64. In this organization, when there is a promotion opportunity, the best-qualified applicant is chosen.
65. Competition for jobs here is fair and open.
66. I am satisfied with the process to fill vacancies here.

Recruitment Quality (10 items)
Alpha=.89

68. This organization is able to attract high-quality candidates.
69. I am satisfied with the quality of new supervisors.
74. How satisfied are you with the competence of the new hires in the following positions:
    a. Scientists
    b. Engineers
    c. Other professionals
    d. Scientific or Engineering Technicians
    e. Other technicians
    f. Administrative (financial, personnel, contracting, program analysis, etc.)
    g. Support staff/Clerical
    h. Skilled trades (WG/WS)
    i. Security

Classification Satisfaction (1 item)

144. I am satisfied with the classification procedures used in this organization.

Training Adequacy (2 items)
Alpha=.83

93. I am given adequate opportunity to participate in training programs.
94. Employees are provided with training when new technologies and tools are introduced.

Red Tape (1 item)

55. Supervisors here feel their ability to manage is restricted by unnecessary personnel rules and regulations.

Supervisor Authority (6 items)
Alpha=.84 (Note: Only Supervisors? responses are included in this scale)

141. I have enough authority to hire people with the right skills when I need them.
142. I have enough authority to promote people.
143. I have enough authority to determine my employees? pay.
145. I have enough authority to remove people from their jobs if they perform poorly.
146. I have enough authority to influence classification decisions.
147. In this organization, management has the flexibility to reduce the workforce, when necessary.

Scales for Climate Dimensions

Communication (3 items)
Alpha=.82

80. Employees are kept well informed on all issues affecting their jobs.
81. My supervisor encourages subordinates to participate in important decisions.
83. Managers promote effective communication among different work groups (e.g., about projects, goals, needed resources).

Teamwork (2 items)
Alpha=.69

82. Employees share their knowledge with each other.
110. My group works well together.

Cross-functional Coordination (2 items)
Alpha=.77

111. Coordination among employees in different organizational functions is good in this organization.
120. How would you rate your organization in coordinating the efforts of different work groups?

Customer Orientation (3 items)
Alpha=.80

101. Employees in my organization have a good understanding of who their customers are.
102. Employees in my organization use suggestions from their customers to improve the quality of products and services.
106. In my organization, products and services are designed to meet customer needs and expectations.

Flexibility (1 item)

53. Management is flexible enough to make changes when necessary.

Innovation (2 items)
Alpha=.78

51. New practices and ways of doing business are encouraged in this organization.
52. My organization develops innovative processes, products and services.

Strategic Orientation (4 items)
Alpha=.78

103. I understand the mission of this organization.
104. Overall, my organization is effective in accomplishing its objectives.
105. My organization establishes strategic plans (goals and objectives) that help guide program decisions.
119. How would you rate your organization in assigning the right people to the job?

Labor-Management Relations (2 items)
Alpha=.67

117. Management and labor unions work cooperatively on mutual problems.
118. Union representatives are consulted sufficiently in advance of changes in matters that affect employees.

Diversity (3 items)
Alpha=.82

138. In this organization, differences among individuals (gender, race, national origin, religion, age, cultural background, disability) are respected.
139. In this organization, advancement opportunities are available for highly qualified individuals regardless of gender, race, national origin, religion, age, cultural background or disability.
140. In this organization, policies and programs promote diversity in the workplace.

Supervision Satisfaction (7 items)
Alpha=.88

127. My supervisor works well with people.
128. My supervisor knows the technical parts of his/her job well.
129. My supervisor handles the administrative parts of his/her job well.
130. My supervisor takes corrective action when problems arise.
134. My supervisor understands and supports employees' family/personal responsibilities.
135. My supervisor determines program or project priorities to allocate resources.
136. My supervisors sets deadlines for project completion.

Trust in Supervisor (1 item)

131. I have trust and confidence in my supervisor.

Physical Work Environment (2 items)
Alpha= .75

108. Physical conditions (e.g., noise level, temperature, lighting, cleanliness) allow me to perform my job well.
109. Employees here are protected from health and safety hazards on the job.

Scales for Job Satisfaction/Commitment Dimensions

Job Satisfaction (1 item)

26. In general, I am satisfied with my job.

Intrinsic Motivation (3 items)
Alpha= .83

23. My job requires me to use my specialized knowledge and abilities.
24. My work forces me to continue to develop new specialized knowledge and skills.
25. My job is challenging.

Performance Motivation (1 item)

90. I am willing to put in a great deal of effort beyond that normally expected in order to help this organization be successful.

Turnover Intention (1 item)

85. During the next year I will probably look for a new job.

Organizational Commitment (4 items)
Alpha= .83

84. What happens to this organization is really important to me.
87. For me, this is one of the best of all organizations for which to work.
88. I find that my values and the organization's values are very similar.
89. I would be very happy to spend the rest of my career with this organization.

Table B-9 Site Visit Agenda & Topics of Discussion

Site Visit Agenda

1. Courtesy visit with Commander/Technical Director
2. Lab tour or briefing
3. Meeting with Project Staff
4. Meeting with HRO/HRM staff
5. Meeting with Demo Steering Committee
6. Focus Group with Managers/Supervisors
7. Focus Group with Employees
8. Meeting with GPRA Staff
9. Meeting with union reps
10. Debrief with Commander/Technical Director

General Topics for Discussion with Demo Project Manager & Team

- Status of downsizing, hiring, reorganizations and other factors currently affecting labs (including site historian information)
- Status of project interventions:
- Pay-for-performance; supervisory differentials
- Any use of/experience with 360
- Classification under broadbanding: delegation, automation
- Modified term appointments up to 6 years
- Lab-based examining (Naval warfare centers)
- Extended probationary period
- Distinguished scholastic achievement appointment
- Paying for degree training
- Scientist emeritus, sabbaticals
- Elimination of rule of 3 and replacement with categorical rating
- Revised RIF
- Use of ADR and Last Chance Agreements
- Grievances/adverse actions resulting from pay-for-performance
- Training (civilian & military managers, employees, HR staff)
- Any continuing training of management in compensation system
- Any other demo-related continuing training
- CPAC/CPOC (HRO/HRSO) servicing in relation to the demo project
- HR servicing
- HR delegations and role of managers
- Staffing: visiting scholars? Impact of priority placement program; samples of PDs and job announcements
- RIF
- Role of Personnel Management Board or Steering Committee
- Internal controls and accountability processes
- Labor management relations
- Lab outcome measures: customer satisfaction, technology transfer, other
- Copy of Strategic Plan

Table B-10 Focus Group Questions for Lab Demo Site Visits Summer 2001

Focus Group with Managers:

1. Can you tell us something about the demo training that you received? Specifically, can you describe the training you received on compensation management and performance management under the demo? Was the training adequate, timely?
2. Are you receiving supervisory differentials and how do you feel about them? Do you feel that it helps to recruit better quality supervisors?
3. How is the performance management process working:
   - The reconciliation process (supervisory panel review)
   - The size of pay pools
   - The performance appraisal system
   - Performance recognition for individuals or teams (adequacy)
4. Have any issues come up regarding the relevance of performance elements/contribution factors or the weighting of criteria?
5. How has the performance feedback process gone with those you manage or supervise? Are you giving more rigorous ratings under the pay-for-performance system? Do you find it more difficult?
6. Can you describe your role in the classification process? How is the automated classification system working?
7. Under broadbanding, you can have first-line supervisors and non-supervisory experts in the same band. Is that the case with your demonstration project? If so, how is it working? Does it give you more flexibility to assign employees?
8. What can you tell us about staffing under the demo project?
   - Have you done any hiring? How do you feel about the quality of the applicant pool?
   - What about your ability to attract a diverse pool?
   - Are there any job series for which you have difficulty recruiting?
   - How is the categorical rating system/no rating and ranking at NRL for 15 or less working for you? Does it give you more qualified applicants?
9. What are your thoughts about the extended probationary period? Have you released someone under this system?
10. Are you using term appointments? How do you like that flexibility?
11. How do you feel about the HR support you have received?
12. What do you like best about the demo?
13. What do you like least about the demo?

Focus Groups with Employees

1. What can you tell us about the orientation you received about the Demo? Did it give you a good understanding of the demo? When you have questions, can you get them answered?
2. Let's discuss the pay-for-performance system. How do you feel about the system? Do you understand your rating?

3. What has your experience been in terms of performance feedback from your supervisor or manager? (Prompt: Did you have a session with your supervisor and dialogue about your performance? Did you sign your rating?)
4. How do you feel about the elements/criteria on which you are rated? Are they appropriate to your job? What about the weighting of the elements?
5. Let's discuss your experience with preparing your performance objectives with your supervisor or manager. Do you prepare annual accomplishments? How has this worked?
6. Can you tell us about the rating reconsideration process here?
7. What do you think about the extended probationary period for scientists and engineers? In the Federal government, the current probationary period is one year, Your lab has extended it to 3 years.
8. What do you like best about the Demo?
9. What do you like least about the Demo?

Appendix C

Table C-1 Strategic Orientation of S&T Labs			
Strategic Orientation			
Year	Wave1	Wave 2	Non-Implemented
1996	3.56_a	3.56_a	3.62_b
2001	3.66_{bc}	3.56_a	3.71_c
Innovation			
Year	Wave1	Wave 2	Non-Implemented
1996	2.99_a	2.97_a	3.19_b
2001	3.50_c	3.46_c	3.60_d

Note. Means not sharing a common subscript are significantly different at .05 level based on ANOVA results.

Note. Means for Items on 5-point scale (1=negative, 3=neutral, 5=positive)

Table C-2 Motivation to Perform 90. I am willing to put in a great deal of effort beyond that normally expected in order to help this organization be successful					
Lab Group	**Year**	**Agree**	**Undecided**	**Disagree**	**Total**
Wave 1	1999	76%	16%	8%	100%
Wave 1	2001	79%	14%	7%	100%
Wave 2	1999	69%	19%	12%	100%
Wave 2	2001	75%	17%	9%	100%
Non-Implemented	1999	74%	16%	18%	100%
Non-Implemented	2001	75%	14%	13%	100%

Table C-3 Job Challenge 25. My job is challenging					
Lab Group	**Year**	**Agree**	**Undecided**	**Disagree**	**Total**
Wave 1	1996	79%	12%	9%	100%
Wave 1	2001	86%	9%	5%	100%
Wave 2	1996	80%	11%	8%	100%
Wave 2	2001	85%	9%	6%	100%
Non-Implemented	1996	72%	17%	11%	100%
Non-Implemented	2001	81%	11%	8%	100%
“China Lake”	1998	83%	9%	8%	100%

Table C-4 Job Satisfaction 26. In general, I am satisfied with my job					
Lab Group	**Year**	**Agree**	**Undecided**	**Disagree**	**Total**
Wave 1	1996	71%	13%	16%	100%
Wave 1	2001	78%	12%	10%	100%
Wave 2	1996	72%	12%	16%	100%
Wave 2	2001	74%	14%	12%	100%
Non-Implemented	1996	66%	16%	18%	100%
Non-Implemented	2001	73%	14%	13%	100%
“China Lake”	1998	74%	12%	14%	100%

Table C-5 Workforce Quality Education Levels of Scientists and Engineers by Lab Group			
	B.S.	**M.S.**	**Ph.D.**
Wave 1: 1996	46.3%	33.9%	16.9%
Wave 1: 1997	44.9%	33.7%	18.0%
Wave 1: 1998	44.7%	34.1%	18.5%
Wave 1: 1999	43.0%	34.3%	19.8%
Wave 1: 2000	43.3%	34.3%	19.5%
Wave 2: 1996	43.8%	28.0%	25.4%
Wave 2: 1997	40.4%	30.1%	26.7%
Wave 2: 1998	40.1%	29.7%	26.9%
Wave 2: 1999	39.8%	30.1%	27.3%
Wave 2: 2000	39.7%	29.7%	27.8%
Non-Implemented: 1996	61.7%	32.3%	3.8%
Non-Implemented: 1997	59.9%	33.0%	4.3%
Non-Implemented: 1998	59.6%	32.9%	4.3%
Non-Implemented: 1999	60.5%	30.0%	4.6%
Non-Implemented: 2000	59.3%	30.2%	4.2%

Table C-6 Satisfaction with Supervision				
Non-Supervisors	**Year**	**Wave1**	**Wave 2**	**Non-Implemented**
	1996	3.42_{a}	3.45_{ab}	3.47_{ab}
	2001	3.56_{abc}	3.50_{ab}	3.56_{bc}
Supervisors				
	1996	3.57_{bc}	3.64_{cd}	3.66_{cd}
	2001	3.77_{de}	3.65_{cd}	3.82_{e}
All				
	1996	3.44_{a}	3.48_{ab}	3.47_{ab}
	2001	3.59_{c}	3.52_{bc}	3.58_{c}

Note. Means not sharing a common subscript are significantly different at .05 level based on ANOVA results.

Note. Scale Means for Items on 5-point scale (1=negative, 3=neutral, 5=positive)

Table C-7 Communication			
Year	**Wave 1**	**Wave 2**	**Non-Implemented**
1996	2.87_{a}	2.87_{a}	2.92_{a}
2001	3.16_{bc}	3.11_{b}	3.17_{c}

Note. Means not sharing a common subscript are significantly different at .05 level based on ANOVA results.

Note. Means for Items on 5-point scale (1=negative, 3=neutral, 5=positive)

Table C-8 HR Efficiency	
HR Component	**Trend/Change**
Classification Timeliness	Significant reduction
Length of Position Descriptions	Significant reduction
Number of Position Descriptions	Significant reduction
Hiring Timeliness	No significant change

Table C-9 Percent Satisfaction with HR Services by Location

123. Overall, how satisfied are you with the quality of personnel services provided to you?

Service	Year	Within walking distance	Within commuting distance	Outside geographic area	Total for all locations
Air Force	1996	57%	29%	44%	48%
	2001	57%	44%	26%	46%
Navy	1996	59%	36%	45%	54%
	2001	61%	47%	33%	50%
Army	1996	55%	32%	45%	50%
	2001	57%	41%	26%	44%

Table C-10 Cross-Functional Coordination			
Year	**Wave 1**	**Wave 2**	**Non-Implemented**
1996	3.12_{ab}	3.10_{a}	3.22_{c}
2001	3.28_{d}	3.17_{bc}	3.32_{d}

Note. Means not sharing a common subscript are significantly different at .05 level based on ANOVA results.

Note. Means for Items on 5-point scale (1=negative, 3=neutral, 5=positive)

Table C-11 Teamwork			
Year	**Wave 1**	**Wave 2**	**Non-Implemented**
1996	3.57_{a}	3.54_{a}	3.53_{a}
2001	3.72_{b}	3.68_{b}	3.68_{b}

Note. Means not sharing a common subscript are significantly different at .05 level based on ANOVA results.

Note. Means for Items on 5-point scale (1=negative, 3=neutral, 5=positive)

	Table C-12 Number of Annual Patents by Year for 1996 through 2000								
	1996	**1997**	**1998**	**1999**	**2000**	**2001**	**Std.Dev.**	**Mean**	**Trend***
AFRL									
AMRDEC	7	11	14	7	11		3.00	10.00	no significant change
ARL (TPA)									
ARL (Reimbursable)									
MRMC	10	5	12	19	22		6.88	13.60	increase
NSWC Carderock									
NSWC Corona									
NSWC Crane			1	0	1		0.58	0.67	no change
NSWC Dahlgren	6	19	20	24	25		7.60	18.80	increase
NSWC Indian Head	3	7	4	3	4	16	5.04	6.17	increase
NSWC Port Hueneme									
NUWC Keyport									
NUWC Newport	86	76	170	198	183		57.21	142.60	increase
ERDC	13	18	20	19	15	10	3.87	15.83	no significant change
NRL	64	57	78	85	86		12.94	74.00	no significant change
CECOM									
TACOM									
SBCCOM						10		10.00	baseline
STRICOM									
ALL	354	336	574	674	658		163.62	519.20	no significant change

*pre- vs. post-demo

	Table C-13 Annual Patent Income ($K) By Year for 1996 through 2000								
	1996	**1997**	**1998**	**1999**	**2000**	**2001**	**Std.Dev.**	**Mean**	**Trend***
AFRL									
AMRDEC									
ARL									
MRMC									
NSWC Carderock									
NSWC Corona									
NSWC Crane									
NSWC Dahlgren									
NSWC Indian Head									
NSWC Port Hueneme									
NUWC Keyport									
NUWC Newport	$0	$0	$0	$10,610	$18,930		$8,610	$6,000	increase
ERDC	$25,900	$56,100	$170,100	$141,900	$297,600	$472,000	$166,480	$194,000	increase
NRL									
CECOM									
TACOM									
SBCCOM									
STRICOM									
ALL									

***pre- vs. post-demo

	Table C-14 Number of Publications By Year for 1996 through 2000								
	1996	**1997**	**1998**	**1999**	**2000**	**2001**	**Std.Dev.**	**Mean**	**Trend***
AFRL									
AMRDEC	1095	937	828	700	700		168.12	852.00	decrease
ARL	397	602	846	755	922		209.13	704.40	increase in 2000
MRMC	543	546	478	477	506	479	32.60	504.83	no significant change
NSWC Carderock									
NSWC Corona									
NSWC Crane									
NSWC Dahlgren									
NSWC Indian Head									
NSWC Port Hueneme									
NUWC Keyport									
NUWC Newport	145	203	214	215	199		28.90	195.20	no significant change
ERDC	1129	1061	1105	1041	1051	909	76.61	1,049.33	decrease in 2001
NRL	1389	1514	1579	1391	1405	1103	163.35	1,396.83	decrease in 2001*
CECOM									
TACOM									
SBCCOM						62			baseline
STRICOM									
ALL									

*pre- vs. post-demo

Table C-15 Customer Orientation			
Year	**Wave 1**	**Wave 2**	**Non-Implemented**
1996	3.63_b	3.55_a	3.70_c
2001	3.79_d	3.63_b	3.85_e

Note. Means not sharing a common subscript are significantly different at .05 level based on ANOVA results.

Note. Means for Items on 5-point scale (1=negative, 3=neutral, 5=positive)

Table C-16 Number of Annual Society Memberships By Year for 1996 through 2001								
	All Years Combined	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**Trend***
AFRL								
AMRDEC								
ARL								
MRMC	**93%****							
NSWC (Carderock								
NSWC Corona								
NSWC Crane								
NSWC Dahlgren								
NSWC Indian Head								
NSWC Port Hueneme								
NUWC Keyport								
NUWC Newport								
ERDC		2441	2218	1958	1901	1886	1836	decrease due to downsizing
NRL								
CECOM								
TACOM								
SBCCOM	**35%***							
STRICOM								
ALL								

*pre- vs. post-demo
**Mean percentage of military and civilian scientific personnel having at least one professional society membership b/t 1996 and 2000

Table C-17 Impact of Demonstration Project on Organizational Performance 116. My agency's efforts to implement the laboratory demonstration project to date have improved this organization's programs/operations/projects					
Lab Group	**Year**	**Agree**	**Undecided**	**Disagree**	**Total**
Wave 1	1999	18%	37%	45%	100%
Wave 1	2001	37%	29%	34%	100%
Wave 2	1999	9%	45%	47%	100%
Wave 2	2001	27%	33%	41%	100%
Non-Implemented	1999	13%	45%	42%	100%
Non-Implemented	2001	18%	39%	43%	100%

Table C-18 Customer Satisfaction Results By Year for 1990 through 2000														
	1990	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**Std.Dev.**	**Mean**	**Trend***
AFRL														
AMRDEC	3.08	3.61	4.05	4.47	4.52	4.57	4.63	4.66	4.44	4.48	4.49	0.50	4.27	no sig. change
ARL (TPA)					3.90	4.00	4.20	3.80	4.30	4.20	4.30	0.20	4.10	increase
ARL (Reimbursable)					4.20	4.30	4.30	4.40	4.40	4.40	4.40	0.08	4.34	no sig. change
MRMC**														
NSWC Carderock														
NSWC Corona														
NSWC Crane														
NSWC Dahlgren								4.29	4.38	4.38	4.22	0.08	4.32	no sig. change
NSWC Indian Head						4.9	5.3	5.4	5.5	5.5	5.5	0.23	5.35	
NSWC Port Hueneme														
NUWC Keyport														
NUWC Newport						3.87	4.03	3.90	4.13		4.49	0.25	4.08	increase
ERDC**														
NRL														
CECOM														
TACOM														
SBCCOM														
STRICOM														
All														

* pre- vs. post-demo
**no comparable data across organization

Appendix D

Table D-1Training Adequacy in Administering Demo 149. I have been adequately trained to administer the demonstration system					
Lab Group	**Year**	**Agree**	**Undecided**	**Disagree**	**Total**
Wave 1	1998	56%	16%	18%	100%
Wave 1	2001	68%	15%	7%	100%
Wave 2	1998	9%	21%	70%	100%
Wave 2	2001	74%	13%	13%	100%
Non-Implemented	1996	17%	23%	60%	100%
Non-Implemented	2001	25%	26%	50%	100%
“China Lake”	1998	80%	12%	8%	100%

Table D-2 Managerial Authority: Percent Agreement Items 141, 142, 143, 145, 146				
Lab Group	**1996**	**1998**	**1999**	**2001**
Hiring				
Wave 1	21%	33%	39%	43%
Wave 2	32%	37%	44%	49%
Non-Implemented	17%	21%	23%	43%
"China Lake"	34%	43%	No data	No data
Promotion				
Wave 1	22%	27%	30%	32%
Wave 2	20%	24%	27%	29%
Non-Implemented	18%	23%	25%	34%
"China Lake"	36%	36%	No data	No data
Determine Pay				
Wave 1	8%	28%	34%	37%
Wave 2	10%	9%	22%	35%
Non-Implemented	6%	13%	7%	15%
"China Lake"	39%	43%	No data	No data
Remove Poor Performers				
Wave 1	22%	23%	27%	26%
Wave 2	22%	21%	22%	25%
Non-Implemented	22%	27%	24%	24%
"China Lake"	34%	28%	No Data	No Data
Classification				
Wave 1	30%	35%	39%	38%
Wave 2	31%	45%	49%	39%
Non-Implemented	27%	36%	33%	29%
"China Lake"	50%	51%		

Table D-3 Trust 131. I have trust and confidence in my supervisor					
Lab Group	**Year**	**Agree**	**Undecided**	**Disagree**	**Total**
Wave 1	1996	59%	19%	22%	100%
Wave 1	2001	66%	17%	17%	100%
Wave 2	1996	60%	20%	20%	100%
Wave 2	2001	64%	18%	18%	100%
Non-Implemented	1996	58%	21%	21%	100%
Non-Implemented	2001	63%	18%	18%	100%
"China Lake"	1998	60%	20%	20%	100%

Table D-4 Trust by Supervisory Status 131. I have trust and confidence in my supervisor					
Lab Group	**Year**	**Non-Supervisors**	**Supervisors**	**All**	
Wave 1	1996	57%	69%	59%	
Wave 1	2001	65%	75%	66%	
Wave 2	1996	57%	70%	60%	
Wave 2	2001	63%	73%	64%	
Non-Implem.	1996	58%	68%	58%	
Non-Implem.	2001	62%	76%	63%	
"China Lake"	1998	59%	67%	60%	

Table D-5 Trust by Majority and Minority Employees 131. I have trust and confidence in my supervisor			
Lab Group	**Year**	**Minority**	**White**
Wave 1 and 2	1996	53%	60%
Wave 1 and 2	2001	56%	67%
Non-Implemented	1996	57%	59%
Non-Implemented	2001	59%	65%

TableD-6 Perceived Fairness of Performance Ratings 32. My performance rating represents a fair and accurate picture of my actual performance.					
Lab Group	**Year**	**Agree**	**Neither**	**Disagree**	**Total**
Wave 1	1996	61%	16%	23%	100%
	1998	61%	16%	23%	100%
	1999	55%	18%	27%	100%
	2001	59%	17%	24%	100%
Wave 2	1996	64%	14%	23%	100%
	1998	67%	15%	19%	100%
	1999	65%	16%	19%	100%
	2001	55%	20%	24%	100%
Non-implem.	1996	68%	15%	17%	100%
	1998	73%	13%	15%	100%
	1999	70%	16%	14%	100%
	2001	69%	16%	15%	100%
“China Lake”	1998	60%	15%	25%	100%

Table D-7 Perceived Fairness of Performance Ratings by Minority Status 32. My performance rating represents a fair and accurate picture of my actual performance.					
Lab Group	**Year**	**Agree**	**Neither**	**Disagree**	**Total**
Wave 1					
White	1996	62%	16%	22%	100%
White	2001	59%	18%	23%	100%
Minority	1996	56%	16%	28%	100%
Minority	2001	49%	22%	29%	100%
Non-Implemented					
White	1996	70%	14%	16%	100%
White	2001	75%	14%	11%	100%
Minority	1996	64%	18%	18%	100%
Minority	2001	70%	16%	14%	100%

Appendix E

Table E-1 Classification Timeliness (Days)										
	Prior to Demo	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**Demo**	**Difference**
AFRL			7.6						2 hours	7
AMRDEC			22.6	5.7	no classification	2.5	2.5	2.5		20
ARL										
MRMC**	90	90	90	90	90	20	20	20		70
NSWC Dahlgren	1						1			0
NSWC Indian Head									2.5	
NSWC Carderock										
NSWC Crane									28	
NSWC Port Hueneme									1	
NSWC Corona										
ERDC	2							.25 hours		1.9
NRL	15*								1 hour	15
NUWC Newport				39				3		36
NUWC Keyport										
CECOM					14					
TACOM										
SBCCOM							13***			
STRICOM										
Avg. Difference										21.3

Note:. All numbers reported are days except where identified
* NRL: Avg. of 4 types of classifications: 5, 12, 12, and 30 days respectively.
**MRMC: based on[8.86x58 + 10.45x18]/76
***SBCCOM: average of 8 days for routine actions, and 18 days for non-routine actions.
_ NRL's current classification is done automatically when supervisors prepare requirement documents.

	Table E-2 Perceived Classification Timeliness (Supervisors vs. Non-supervisors) Item 60. It takes too long to get classification decisions approved in this organization.					
	Disagree or Strongly Disagree		**Neither Disagree nor Agree**		**Agree or Strongly Agree**	
	Count	**%**	**Count**	**%**	**Count**	**%**
1996						
Wave 1						
Non-Supervisor	626	8.4	3447	46.5	3346	45.1
Supervisor	270	14.0	516	26.8	1142	59.2
Wave 2						
Non-Supervisor	85	8.2	498	48.3	449	43.5
Supervisor	36	10.3	135	38.5	180	51.3
Non-implemented						
Non-Supervisor	245	7.7	1615	51.0	1308	41.3
Supervisor	64	14.6	131	30.0	242	55.4
1998						
Wave 1						
Non-Supervisor	268	7.6	1949	55.4	1303	37.0
Supervisor	199	20.2	289	29.3	498	50.5
Wave 2						
Non-Supervisor	94	10.0	480	51.2	364	38.8
Supervisor	53	42.7	38	30.6	33	26.6
Non-implemented						
Non-Supervisor	226	7.7	1421	48.1	1306	44.2
Supervisor	71	14.3	135	27.2	291	58.6
1999						
Wave 1						
Non-Supervisor	224	7.1	1759	56.1	1151	36.7
Supervisor	174	20.7	282	33.6	383	45.6

Table E-2 Perceived Classification Timeliness (Supervisors vs. Non-supervisors) –cont'd Item 60. It takes too long to get classification decisions approved in this organization.						
	Disagree or Strongly Disagree		**Neither Disagree nor Agree**		**Agree or Strongly Agree**	
	Count	**%**	**Count**	**%**	**Count**	**%**
Wave 2						
Non-Supervisor	21	8.2	171	66.8	64	25.0
Supervisor	19	37.3	21	41.2	11	21.6
Non-implemented						
Non-Supervisor	174	7.6	1189	52.2	913	40.1
Supervisor	28	8.8	81	25.4	210	65.8
2001						
Wave 1						
Non-Supervisor	189	10.7	816	46.2	760	43.1
Supervisor	92	20.8	135	30.5	216	48.8
Wave 2						
Non-Supervisor	69	11.6	293	49.3	232	39.1
Supervisor	53	29.0	60	32.8	70	38.3
Non-implemented						
Non-Supervisor	219	11.1	811	41.1	945	47.8
Supervisor	44	16.2	59	21.8	168	62.0

Table E-3 Position Description Length									
	Prior to Demo	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**All Demo**
AFRL	2.6		2.6						1.0
AMRDEC	5.0	5.0	5.0	1.5	1.0	1.0	1.0	1.0	1.0
ARL									
MRMC	5.5	5.5	5.5	5.5	3.5	1.5	1.5	1.5	1.5
NSWC Dahlgren	3.5				2.0	2.0	2.0		2.0
NSWC Indian Head	7.5				2.0	2.0	2.0		2.0
NSWC Carderock					2.0	2.0	2.0		2.0
NSWC Crane	3.0				2.0	2.0	2.0		2.0
NSWC Port Hueneme	7.0				2.0	2.0	2.0		2.0
NSWC Corona					2.0	2.0	2.0		2.0
ERDC	3.0				3.0			1.5	1.5
NRL	7.0							3.0	3.0
NUWC Newport	4.0			4.0	2.0	2.0	2.0	2.0	2.0
NUWC Keyport	3.0				3.0	3.0	2.0		2.0
CECOM					3.0		3.0		
TACOM									
SBCCOM							3.0		
STRICOM									
Average:	5.0								1.9

Note. All numbers reported indicate page length.

		Table E-4 Classification Delegation Item 159. Has classification authority been delegated to you? (supervisors only)			
		Yes		**No**	
		N	**%**	**N**	**%**
Wave 1	1998	229	20.0	917	80.0
	1999	187	19.6	767	80.4
	2001	99	18.3	443	81.7
Wave 2	1998	33	23.7	106	76.3
	1999	8	12.1	58	87.9
	2001	40	17.9	183	82.1
Non-Implemented	1998	81	15.1	455	84.9
	1999	38	11.3	298	88.7
	2001	46	14.5	271	85.5
"China Lake"	1998	94	24.1	296	75.9

	Table E-5 Classification System Flexibility Item 59. Our job classification system is flexible enough to respond to changing requirements.						
		Disagree		**Neither agree nor Disagree**		**Agree**	
		N	**%**	**N**	**%**	**N**	**%**
Wave 1	1996	5447	50.9	3579	33.5	1671	15.6
	1998	1358	28.4	2081	43.5	1341	28.1
	1999	1167	27.2	1913	44.6	1205	28.1
	2001	647	27.1	864	36.2	879	36.8
Wave 2	1996	1299	45.8	1047	36.9	492	17.3
	1998	315	27.5	467	40.8	364	31.8
	1999	73	18.6	193	49.2	126	32.1
	2001	243	26.2	319	34.3	367	39.5
Non-Implemented	1996	2239	51.4	1563	35.8	558	12.8
	1998	1209	33.4	1445	39.9	968	26.7
	1999	839	31.3	1140	42.5	702	26.2
	2001	786	34.4	790	34.6	710	31.1
"China Lake"	1996	378	25.0	571	37.8	562	37.2
	1998	278	18.9	589	40.0	606	41.1

	Table E-6 Ease of Employee Reassignment Item 63. Under the current personnel system, it is easy to reassign employees to permanent positions within this laboratory or center or activity.						
		Disagree		**Neither agree nor Disagree**		**Agree**	
		N	**%**	**N**	**%**	**N**	**%**
Wave 1	1996	5885	48.0	3873	31.6	2502	20.4
	1998	1784	36.0	1944	39.3	1221	24.7
	1999	1512	32.8	1794	38.9	1300	28.2
	2001	836	30.8	846	31.1	1034	38.1
Wave 2	1996	1439	43.1	1174	35.2	723	21.7
	1998	373	29.5	409	32.4	481	38.1
	1999	91	20.5	178	40.1	175	39.4
	2001	268	25.6	364	34.8	414	39.6
Non-Implemented	1996	2294	46.0	1625	32.6	1072	21.5
	1998	1488	38.2	1315	33.8	1091	28.0
	1999	910	31.5	1093	37.8	888	30.7
	2001	803	31.5	772	30.3	975	38.2
“China Lake”	1996	584	33.5	580	33.3	577	33.1
	1998	392	24.7	549	34.6	647	40.7

	Table E-7 Satisfaction with Classification Procedures Item 144. I am satisfied with the classification procedures used in this organization (those with classification authority only).					
	Disagree		**Neither Disagree nor Agree**		**Agree**	
	Count	**%**	**Count**	**%**	**Count**	**%**
Wave 1	105	20.5	108	21.1	300	58.5
Wave 2	17	21.0	14	17.3	50	61.7
Non-Implemented	59	35.8	38	23.0	68	41.2
“China Lake”	13	14.0	13	14.0	67	72.0

	Table E-8 Pay System Training Item 149. I have been adequately trained to administer the demonstration pay system (those with classification authority only).					
	Disagree		**Neither Disagree nor Agree**		**Agree**	
	Count	**%**	**Count**	**%**	**Count**	**%**
Wave 1	70	13.8	57	11.2	380	75.0
Wave 2	18	27.3	8	12.1	40	60.6
Non-Implemented	43	37.1	29	25.0	44	37.9
“China Lake”	1	1.1	4	4.3	87	94.6

	Table E-9 Ease of Job Classification Item 58. It is easy to classify jobs using the automated system.						
		Disagree		**Neither agree nor Disagree**		**Agree**	
		N	**%**	**N**	**%**	**N**	**%**
Wave 1	1996	273	15.7	1216	70.0	248	14.3
	1998	354	21.5	834	50.5	462	28.0
	1999	301	20.5	757	51.5	411	28.0
	2001	159	19.9	375	46.8	267	33.3
Wave 2	1996	41	10.7	294	77.0	47	12.3
	1998	20	17.2	82	70.7	14	12.1
	1999	23	17.6	79	60.3	29	22.1
	2001	94	22.2	179	42.2	151	35.6
Non-Implemented	1996	89	12.4	518	72.2	110	15.3
	1998	110	17.4	394	62.3	128	20.3
	1999	85	18.6	289	63.1	84	18.3
	2001	111	22.8	259	53.2	117	24.0
“China Lake”	1996	37	9.8	171	45.5	168	44.7
	1998	65	9.3	326	46.8	306	43.9

Table E-10 Pay Potential 62. In this organization, I do not have to become a supervisor in order to receive more pay.									
Lab Group	**Year**	**Disagree**		**Neither Agree nor Disagree**		**Agree**			
		N	**%**	**N**	**%**	**N**	**%**	**N**	**Total %**
Wave 1	1996	4930	42.0%	2021	17.2%	4785	40.8%	11736	100.0%
	1998	2423	38.5%	1045	16.6%	2832	45.0%	6300	100.0%
	1999	2150	36.8%	908	15.6%	2778	47.6%	5836	100.0%
	2001	1235	32.8%	540	14.3%	1992	52.9%	3767	100.0%
Wave 2	1996	1364	42.7%	507	15.9%	1320	41.4%	3191	100.0%
	1998	683	45.6%	238	15.9%	576	38.5%	1497	100.0%
	1999	271	47.5%	93	16.3%	207	36.3%	571	100.0%
	2001	513	35.1%	217	14.8%	733	50.1%	1463	100.0%
Non-Implemented	1996	2254	47.3%	840	17.6%	1676	35.1%	4770	100.0%
	1998	2041	45.9%	766	17.2%	1637	36.8%	4444	100.0%
	1999	1541	45.7%	626	18.6%	1207	35.8%	3374	100.0%
	2001	1320	40.8%	525	16.2%	1393	43.0%	3238	100.0%
"China Lake"	1996	500	30.1%	266	16.0%	895	53.9%	1661	100.0%
	1998	671	36.4%	268	14.5%	905	49.1%	1844	100.0%

Appendix F

Table F-1 Conversion Costs (Buy-In)	
Lab	**Costs**
AFRL	
AMRDEC	$1 million
ARL	
MRMC	
NSWC (Dahlgren)	
NSWC (Indian Head)	
NSWC (Carderock)	
NSWC (Crane)	
NSWC (Pt. Hueneme)	
NSWC (Corona)	
ERDC	$901,826
NRL	$1.2 Million*
NUWC Newport	

* The amount for NRL represents a permanent pay increase equivalent to what employees had earned toward their next within-grade increase.

Table F-2 Starting Base Salaries by Wave, Year, and Occupational Category					
Wave	**1996**	**1997**	**1998**	**1999**	**2000**
S& E					
Wave 1	58,341 (n=132)	62,228 (n=204)	60,036 (n=158)	67,689 (n=144)	61,887 (n=283)
Wave 2	55,540 (n=355)	52,384 (n=184)	55,548 (n=237)	52,955 (n=220)	54,119 (n=229)
Wave 3	52,919 (n=27)	47,310 (n=133)	51,006 (n=46)	45,937 (n=166)	50,754 (n=238)
Admin					
Wave 1	43,058 (n=30)	47,543 (n=23)	44,082 (n=5)	59,685 (n=15)	52,323 (n=11)
Wave 2	45,913 (n=68)	47,310 (n=33)	49,742 (n=51)	49,096 (n=32)	52,318 (n=26)
Wave 3	49,568 (n=16)	47,977 (n=71)	48,675 (n=32)	47,516 (n=62)	51,414 (n=180)
Tech					
Wave 1	28,699 (n=26)	32,907 (n=25)	32,043 (n=2)	36,814 (n=16)	27,191 (n=4)
Wave 2	29,093 (n=73)	26,161 (n=46)	27,915 (n=88)	26,332 (n=76)	24,881 (n=71)
Wave 3	18,843 (n=13)	30,599 (n=16)	22,978 (n=19)	28,240 (n=22)	30,156 (n=49)
Clerical					
Wave 1	21,129 (n=57)	22,786 (n=30)	21,738 (n=3)	33,397 (n=7)	31,713 (n=6)
Wave 2	21,572 (n=103)	20,723 (n=70)	21,502 (n=70)	23,414 (n=46)	25,773 (n=44)
Wave 3	20,835 (n=27)	22,793 (n=37)	22,392 (n=36)	23,180 (n=38)	25,195 (n=54)
Other					
Wave 1	19,716 (n=7)	22,200 (n=5)	20,883 (n=2)	23,392 (n=5)	24,258 (n=12)
Wave 2	19,978 (n=51)	19,109 (n=28)	20,776 (n=30)	23,305 (n=36)	22,095 (n=23)
Wave 3	18,326 (n=22)	19,280 (n=18)	21,047 (n=14)	24,905 (n=45)	22,587 (n=51)

Note. Wave 1 and Wave 2 include only employees who are covered by broadbands.

Table F-3 Pay Pool Funding Levels										
	1997		**1998**		**1999**		**2000**		**2001**	
	Base	**Bonus**	**Base**	**Bonus**	**Base**	**Bonus**	**Base**	**Bonus**	**Base**	**Bonus**
AFRL	2.4	.	2.4	.	2.3	.	2.2	.	2.2	.
AMRDEC	*	*	2.4	1.3	2.4	1.3	2.4	1.3	2.4	1.3
ARL	*	*	2.4		2.4	.	2.4	.	.	.
MRMC**	*	*	*	*	2.0 - 3.0		2.5	.	2.5	.
NSWC										
Dahlgren	*	*	2.3	1.0	2.3	1.0	2.3	1.0	2.3	1.0
Indian Head	*	*	1.5	1.8	1.2	0.6	1.2	0.6	1.8	1.0
Carderock	*	*	1.9	1.1	1.8	1.3	1.8	1.3	1.8	1.3
Crane	*	*	1.5	1.0	1.5	1.0	1.5	1.0	1.5	1.0
Port Hueneme	*	*	*	*	2.0	1.5	2.0	1.5	2.0	1.5
Corona	*	*	*	*	*	*	1.6	0.8	1.7	0.8
ERDC***										
WES	*	*	*	*	2.4	N/A	2.4	N/A	2.4	N/A
CERL	*	*	*	*	2.4	N/A	2.4	N/A	2.4	N/A
CRREL	*	*	*	*	2.4	N/A	2.4	N/A	2.4	N/A
TEC	*	*	*	*	2.4	N/A	2.4	N/A	2.4	N/A
NRL	*	*	*	*	2.4	2.0	2.4	1.5	2.4	1.5
NUWC										
Newport	*	*	*	*	*	*	1.47	1.76	1.87	1.96
Keyport	.	.	.	.	.	.	.	.	1.4	1.6

* Prior to implementation

** MRMC's paypool percentage includes distribution of **both** base and bonus. These are granted either to base salary or a lump sum bonus based on where an employee's salary falls within his or her payband. The range of the total amount varies from 2.0 to 3.0.

*** The ERDC demonstration project does not include a provision for bonuses.

Table F-4 Mean Basic Pay* by Lab and Occupational Group: 1996						
Lab	**Prof.**	**Admin.**	**Tech.**	**Clerical**	**Other**	**Total**
Wave 1						
AFRL	62,406 2965	— —	— —	— —	— —	62,406 2965
AMRDEC	60,640 1615	45,984 335	35,284 190	23,680 239	23,274 25	52,530 2404
ARL	60,830 1037	46,480 205	37,945 216	25,547 109	28,237 14	53,122 1581
MRMC	55,707 410	44,848 197	30,885 208	25,692 170	— —	43,113 985
NSWC	57,203 7347	46,696 2670	39,864 3011	25,506 825	24,756 484	48,685 14337
Wave 2						
ERDC	55,862 1340	43,133 341	30,479 411	23,418 192	21,326 40	46,231 2324
NRL	65,276 1740	46,669 358	36,503 352	26,303 320	24,084 122	53,420 2892
NUWC — Newport	58,029 2043	48,462 367	40,214 314	24,624 180	—	52,823 2904
Wave 3						
NUWC—Keyport	54,730 622	44,812 374	40,774 251	24,584 45	24,057 35	47,464 1327
CECOM	61,104 1035	49,766 320	36,320 75	24,394 152	18,969 11	53,866 1593
TACOM—Armaments	58,246 2140	47,870 521	36,305 459	26,043 355	25,584 63	50,059 3538
TACOM	58,423 643	49,836 217	38,841 127	24,486 109	20,313 51	49,710 1147
SBCCOM	54,948 285	43,572 110	34,041 61	24,863 70	23,475 10	45,718 536
STRICOM	57,251 246	52,162 218	26,700 10	23,601 76	—	50,029 550
CPDF	62,090 29123	54,858 16348	34,116 5001	26,330 4622	23,079 1071	53,808 56165

* Does not include locality pay.

Table F-5 Mean Basic Pay* by Lab and Occupational Group: 1997						
Lab	**Prof.**	**Admin.**	**Tech.**	**Clerical**	**Other**	**Total**
Wave 1						
AFRL	65,158 2888	— —	— —	— —	— —	65,158 2888
AMRDEC	63,316 1113	47,390 213	38,069 115	24,046 151	24,592 24	55,176 1616
ARL	63,178 1357	49,604 378	38,985 291	27,304 149	28,030 33	54,720 2208
MRMC	57,287 440	46,406 202	32,133 209	26,090 168	— —	44,827 1019
NSWC	58,974 7360	48,015 2601	41,806 2905	26,339 714	25,197 470	50,607 14050
Wave 2						
ERDC	58,144 1168	44,731 297	31,463 358	24,817 151	22,739 34	48,298 2008
NRL	67,373 1660	47,524 346	36,788 334	26,601 298	24,245 102	55,098 2740
NUWC — Newport	60,918 1901	50,234 361	41,978 272	25,719 148	—	55,617 2682
Wave 3						
NUWC—Keyport	57,656 496	47,116 283	43,278 189	26,367 24	20,228 1	51,121 993
CECOM	61,943 1421	50,841 385	40,596 129	25,377 180	24,232 18	55,244 2133
TACOM—Armaments	60,287 2008	49,579 484	38,256 410	26,967 297	27,373 61	52,275 3260
TACOM	59,776 674	51,803 214	38,859 143	25,483 68	21,387 51	51,961 1150
SBCCOM	56,987 387	45,563 200	34,581 84	25,903 88	23,996 12	47,521 771
STRICOM	59,640 241	54,645 212	27,863 10	25,327 64	—	52,860 527
CPDF	63,808 28141	56,319 16352	34,410 4917	27,069 4132	24,541 859	55,489 54401

Note. Data in years prior to implementation are from all employees; after and during implementation the data are from covered employees only.
* Does not include locality pay.

Table F-6 Mean Basic Pay* by Lab and Occupational Group: 1998						
Lab	**Prof.**	**Admin.**	**Tech.**	**Clerical**	**Other**	**Total**
Wave 1						
AFRL	69,172 2537	— —	— —	— —	— —	69,172 2537
AMRDEC	64,875 1592	50,665 292	45,073 112	26,650 218	20,553 4	58,168 2218
ARL	65,538 720	51,506 171	41,141 160	28,187 75	27,085 16	57,027 1142
MRMC	60,598 270	47,970 122	32,748 124	25,732 123	21,568 2	45,995 641
NSWC	60,726 6663	49,816 2451	43,678 2557	27,944 534	27,319 309	52,882 12514
Wave 2						
ERDC	60,037 892	44,504 289	32,216 382	25,272 130	24,337 18	48,185 1711
NRL	70,251 1563	49,181 320	37,351 325	28,207 244	25,484 91	57,759 2543
NUWC — Newport	62,845 1896	52,065 368	43,391 286	26,714 142	18,401 2	57,369 2694
Wave 3						
NUWC—Keyport	59,685 493	48,628 287	45,287 183	27,656 23	19,949 6	52,847 992
CECOM	64,250 1357	52,672 344	41,598 127	26,530 160	24,766 13	57,549 2001
TACOM—Armaments	62,383 1850	51,134 470	39,278 376	27,986 249	28,040 61	54,188 3006
TACOM	62,174 666	53,727 203	39,968 174	25,332 40	21,971 33	54,666 1116
SBCCOM	58,975 385	47,656 162	35,145 80	26,068 99	23,709 15	48,817 741
STRICOM	61,522 251	55,880 222	28,705 16	26,803 58	17,848 1	54,524 548
CPDF	67,611 27770	59,669 16846	36,284 4735	28,414 3577	25,368 835	59,100 53763

Note. Data in years prior to implementation are from all employees; after and during implementation the data are from covered employees only.
* Does not include locality pay.

Table F-7 Mean Basic Pay* by Lab and Occupational Group: 1999						
Lab	**Prof.**	**Admin.**	**Tech.**	**Clerical**	**Other**	**Total**
Wave 1						
AFRL	72,313 2368	— —	— —	— —	— —	72,313 2368
AMRDEC	69,912 1427	53,993 269	48,954 100	29,059 176	—	63,031 1972
ARL	71,689 1312	55,760 314	44,388 269	30,989 121	29,000 25	62,705 2041
MRMC	62,484 329	50,132 89	38,036 111	31,444 71	—	52,456 600
NSWC	62,966 7435	52,557 2517	45,965 2610	29,442 504	28,073 351	55,534 13417
Wave 2						
ERDC	63,984 839	49,822 135	37,929 126	28,685 130	26,230 32	55,274 1262
NRL	73,906 1561	52,191 321	36,366 379	28,020 237	23,199 63	60,135 2561
NUWC — Newport	64,417 1879	54,538 368	45,500 282	28,175 113	— —	59,471 2642
Wave 3						
NUWC—Keyport	— —	— —	— —	— —	— —	— —
CECOM	67,645 1338	57,626 1155	40,565 163	28,662 177	25,411 26	59,256 2859
TACOM—Armaments	65,007 1864	53,830 472	41,123 357	29,845 226	30,118 64	56,967 2983
TACOM	61,821 607	55,828 1304	32,769 122	28,688 186	30,347 74	53,164 2293
SBCCOM	64,706 1073	53,630 414	39,864 269	27,887 231	24,767 14	54,545 2001
STRICOM	64,294 238	58,896 189	31,115 18	27,651 52	—	57,206 497
CPDF	70,952 27116	62,801 16706	38,459 4521	29,902 3209	26,934 821	62,342 52373

Note. Data in years prior to implementation are from all employees; after and during implementation the data are from covered employees only.
* Does not include locality pay.

Table F-8 Mean Basic Pay* by Lab and Occupational Group: 2000						
Lab	**Prof.**	**Admin.**	**Tech.**	**Clerical**	**Other**	**Total**
Wave 1						
AFRL	75,526 2320	— —	— —	— —	— —	75,526 2320
AMRDEC	72,122 1562	56,375 269	51,183 93	31,154 160	20,863 5	65,902 2089
ARL	75,358 1260	58,750 284	47,226 242	32,806 113	30,836 27	66,253 1926
MRMC	65,362 359	51,053 106	40,584 119	32,706 89	—	54,408 673
NSWC	66,016 6723	59,490 1031	51,042 683	32,868 116	32,946 69	63,339 8622
Wave 2						
ERDC	66,504 946	51,945 160	40,087 149	29,832 151	27,160 29	57,484 1435
NRL	76,613 1474	53,843 306	38,215 330	29,801 198	23,282 50	63,223 2358
NUWC — Newport	67,422 1747	62,484 87	48,172 46	34,098 5	—	66,636 1885
Wave 3						
NUWC—Keyport	66,013 293	54,060 199	49,628 163	30,939 6	—	58,056 661
CECOM	70,053 1360	60,534 1042	41,479 162	29,367 167	22,631 55	61,456 2786
TACOM—Armaments	67,374 1788	56,290 465	42,495 366	30,981 196	30,871 69	59,083 2884
TACOM	62,253 883	56,736 2193	33,688 190	29,768 227	31,260 75	54,623 3568
SBCCOM	69,399 662	58,495 246	43,184 185	30,070 115	—	59,420 1208
STRICOM	67,786 189	61,984 182	30,247 11	28,312 43	—	60,336 425
CPDF	73,168 27462	65,212 17215	40,487 4464	30,875 3057	27,529 921	64,618 53119

Note. Data in years prior to implementation are from all employees; after and during implementation the data are from covered employees only.
* Does not include locality pay.

Table F-9 Satisfaction with Advancement (% Agreement)					
Item	**Wave**	**1996**	**1998**	**1999**	**2000**
29. I am satisfied with my opportunities for advancement.	Wave 1	23.3%	32.2%	32.9%	42.1%
	Wave 2	24.9%	28.3%	30.2%	38.5%
	Wave 3	18.7%	26.9%	27.9%	38.1%
	"China Lake"	32.5%	41.9%	—	—
139. In this organization, advancement opportunities are available for highly-qualified individuals regardless of gender, race, national origin, religion, age, cultural background, or disability.	Wave 1	55.4%	60.2%	61.6%	68.7%
	Wave 2	58.8%	60.9%	62.7%	67.1%
	Wave 3	49.4%	56.2%	55.1%	64.4%
	"China Lake"	65.8%	63.4%	—	—

Table F-10 Dual Career Ladder (% Agreement)					
Item	**Wave**	**1996**	**1998**	**1999**	**2001**
62. In this organization, I do not have to become a supervisor in order to receive more pay.	Wave 1	39.7%	44.9%	47.6%	52.9%
	Wave 2	39.5%	38.5%	36.5%	49.6%
	Wave 3	36.5%	36.9%	35.8%	43.4%
	"China Lake"	53.9%	49.1%	—	—

Table F-11 Procedural Justice and Pay Satisfaction (% Agreement)					
Item	**Wave**	**1996**	**1998**	**1999**	**2000**
28. Pay is administered fairly in this organization.	Wave 1	32.6%	29.9%	31.0%	38.7%
	Wave 2	32.1%	32.4%	27.8%	33.9%
	Wave 3	33.1%	36.6%	35.6%	40.2%
	"China Lake"	39.9%	41.0%	—	—
36. All in all, I am satisfied with my pay.	Wave 1	47.7%	50.6%	49.8%	56.6%
	Wave 2	45.6%	46.3%	40.1%	47.5%
	Wave 3	42.7%	43.8%	44.8%	50.8%
	"China Lake"	56.2%	56.5%	—	—
40. I understand how pay decisions are made.	Wave 1	—	46.3%	48.3%	57.2%
	Wave 2	—	44.8%	44.2%	54.7%
	Wave 3	—	45.9%	44.5%	50.3%
	"China Lake"	—	61.6%	—	—
27. Pay progression, the way I move up within my grade or band, is fair.	Wave 1	40.2%	37.5%	39.7%	47.5%
	Wave 2	39.8%	43.8%	33.1%	40.6%
	Wave 3	39.2%	42.3%	42.8%	47.0%
	"China Lake"	53.7%	54.9%	—	—

Table F-12 Multiple Regression Summary—Salary Progression of Scientists and Engineers from 1996/1997 to 2000 in Wave 1 Labs					
	AFRL	**AMRDEC**	**ARL**	**MRMC**	**CPDF**
1996/1997 Basic Pay	0.97***	1.06***	1.04***	1.09***	0.66***
Education	384.20***	372.55*	817.64***	498.93*	86.23***
Performance	19341.05***	1886.47***	4526.21***	1431.58***	219.56***
Promotions	-1787.11***	1456.92***	1775.12***	2867.71***	702.05***
Tenure	-8.89	-36.81**	-22.50	-82.41**	-0.39
Grade	1942.04***	1268.86***	1238.65***	216.78***	5521.27***
Supervisory Status	-337.57	-1612.86***	-840.66	169.77	-475.52***
Veteran Status	-513.73**	-421.12	-532.96	-205.26	-6.96
Disability	-321.87	514.89	230.57	366.70	41.62
Age Group	30.28	-521.77*	559.09	-176.72	197.93***
Gender	1.90	-149.53	-542.50	-88.23	46.08
Black	-79.46	-580.49	77.17	179.27	66.57
Hispanic	-349.30	-713.79	-1211.43	-1.62	-84.97
Asian	-1102.26***	-569.15	-804.54	-607.66	-12.10
Model R^2	.951	.947	.929	.968	.974
N	1935	1321	1179	300	21834

Note. Cell entries are unstandardized regression coefficient at the .05*, .01**, and .001*** levels of significance as predictors of pay. Ns are the minimum across all variables. For AFRL and CPDF, basic pay is from 1996; for the other labs, basic pay is from 1997. Education was coded as 1 = no degree, 2 = bachelors degree, 3 = masters degree, 4 = doctorate; Supervisory Status was coded as 1 = supervisor, 2 = non-supervisor; Veteran Status was coded as 1 = veteran, 2 = non-veteran; Disability was coded as 1 = no disability, 2 = disability; Age Group was coded at 0 = under 40 years old, 1 = 40 years old or older. Gender was coded as 1 = female, 2 = male.

Table F-12A Descriptive Statistics for Multiple Regression Summary – Scientists and Engineers					
Variable Means	**AFRL**	**AMRDEC**	**ARL**	**MRMC**	**CPDF**
2000 Basic Pay	76865.56	73996.13	77516.23	67631.89	75868.44
1996/1997 Basic Pay	62502.46	63144.19	63444.11	58367.83	60806.54
Education	2.91	2.28	2.75	3.04	2.53
Performance	0.19	4.72	4.27	4.64	3.43
Promotions	0.49	0.70	1.06	0.89	0.30
Tenure	17.86	13.46	15.16	15.89	14.09
Grade	13.64	3.27	3.41	4.71	13.57
Supervisor Status	1.84	1.89	1.91	1.78	1.89
Veteran Status	1.17	1.15	1.17	1.22	1.12
Disability	0.07	0.04	0.08	0.04	0.07
Age Group	0.74	0.65	0.73	0.92	0.71
Gender	0.09	0.12	0.15	0.31	0.28
Black	0.02	0.06	0.03	0.03	0.08
Hispanic	0.04	0.02	0.03	0.04	0.05
Asian	0.04	0.05	0.09	0.07	0.07

Table F-13 Multiple Regression Summary—Salary Progression of Administrative Employees from 1996/1997 to 2000 in Wave 1 Labs				
	AMRDEC	**ARL**	**MRMC**	**CPDF**
1996/1997 Basic Pay	1.06***	1.07***	1.07***	0.66***
Education	-162.81	-116.76	-275.07	11.39
Performance	921.63*	2727.65***	161.84	157.17***
Promotions	1820.33***	1647.44**	3257.05***	923.76***
Tenure	-22.90	-58.87*	-32.36	-1.53
Grade	301.27**	-145.15	186.00	4850.54***
Supervisory Status	-851.58	-3491.73***	-2029.19**	-1030.39***
Veteran Status	39.61	-448.12	-338.70	-198.05*
Disability	-98.10	-276.41	260.38	-82.76
Age Group	-520.70	578.26	-187.52	-595.70***
Gender	926.24*	-213.44	424.32	-215.62***
Black	281.00	-642.59	-41.61	-120.48
Hispanic	5253.89***	-941.96	413.16	-246.58
Asian	3622.59*	-2369.93	--	310.71
Model R^2	.957	.950	.971	.966
N	234	287	68	11753

Note. Cell entries are unstandardized regression coefficient at the .05*, .01**, and .001*** levels of significance as predictors of pay. Ns are the minimum across all variables. For CPDF, basic pay is from 1996; for the other labs, basic pay is from 1997. See Table F-11 for how the variables were coded.

Table F-13A Descriptive Statistics for Multiple Regression Summary – Administrative Employees				
Variable Means	**AMRDEC**	**ARL**	**MRMC**	**CPDF**
2000 Basic Pay	57631.49	60090.49	53980.95	69390.77
1996/1997 Basic Pay	48849.94	48679.55	46233.96	54044.64
Education	1.48	1.50	1.70	1.92
Performance	4.73	4.47	4.80	3.58
Promotions	0.65	1.03	0.95	0.41
Tenure	15.77	16.73	16.12	14.94
Grade	3.42	3.71	4.23	13.10
Supervisor Status	1.94	1.93	1.74	1.87
Veteran Status	1.33	1.21	1.28	1.17
Disability	0.08	0.08	0.07	0.10
Age Group	0.93	0.84	0.86	0.80
Gender	0.48	0.64	0.53	0.56
Black	0.18	0.17	0.26	0.17
Hispanic	0.01	0.03	0.01	0.04
Asian	0.01	0.01	0.00	0.03

Table F-14 Multiple Regression Summary—Salary Progression of Technicians from 1996/1997 to 2000 in Wave 1 Labs				
	AMRDEC	**ARL**	**MRMC**	**CPDF**
1996/1997 Basic Pay	1.14***	1.09***	1.01***	0.74***
Education	498.94	-457.73	440.00	759.77***
Performance	1221.43*	1913.85***	790.12*	65.02
Promotions	1200.85**	3009.32***	2132.86***	1076.56***
Tenure	-90.97*	3.00	26.15	-31.94***
Grade	663.31**	631.26**	280.15***	2097.20***
Supervisory Status	6006.38*	--	-595.32	-1878.18***
Veteran Status	-875.92	120.69	-381.59	-29.42
Disability	-485.63	136.85	1069.81	-33.81
Age Group	-24.61	-538.15	-415.78	-78.36
Gender	-839.04	-2016.05***	-106.04	208.03
Black	-1215.51	-710.83	105.14	-92.45
Hispanic	--	-677.58	499.51	-247.72
Asian	-3.04	372.57	--	84.65
Model R^2	.963	.942	.920	.947
N	108	253	112	3455

Note. Cell entries are unstandardized regression coefficient at the .05*, .01**, and .001*** levels of significance as predictors of pay. Ns are the minimum across all variables. For CPDF, basic pay is from 1996; for the other labs, basic pay is from 1997. See Table F-11 for how the variables were coded.

Table F-14A Descriptive Statistics for Multiple Regression Summary – Technicians				
Variable Means	**AMRDEC**	**ARL**	**MRMC**	**CPDF**
2000 Basic Pay	45924.16	47987.33	38007.40	43277.22
1996/1997 Basic Pay	38167.02	39225.19	32901.75	33137.52
Education	1.13	1.06	1.27	1.16
Performance	4.60	4.21	4.64	3.28
Promotions	0.86	1.09	0.92	0.73
Tenure	16.41	15.89	14.86	14.42
Grade	2.92	2.40	4.01	9.70
Supervisor Status	1.99	2.00	1.95	1.99
Veteran Status	1.41	1.38	1.23	1.20
Disability	0.09	0.11	0.07	0.12
Age Group	0.87	0.85	0.81	0.72
Gender	0.33	0.34	0.59	0.58
Black	0.13	0.15	0.20	0.27
Hispanic	0.00	0.05	0.04	0.05
Asian	0.02	0.00	0.00	0.03

Table F-15 Multiple Regression Summary—Salary Progression of Clerical Employees from 1996/1997 to 2000 in Wave 1 Labs				
	AMRDEC	**ARL**	**MRMC**	**CPDF**
1996/1997 Basic Pay	0.84***	1.08***	1.03***	0.58***
Education	1800.99***	369.73	--	152.59
Performance	871.17*	1598.78***	595.99	-18.95
Promotions	108.51	2922.24***	1535.87***	406.36***
Tenure	-11.48	-36.61	34.89	-1.92
Grade	2513.80***	326.54	314.65***	2111.79***
Supervisory Status	2790.59	--	--	-513.48
Veteran Status	--	-3523.00	779.36	-460.20*
Disability	-565.49	-753.59	224.08	248.80*
Age Group	-241.13	15.82	-483.71	73.62
Gender	180.06	379.80	-0.08	-732.90***
Black	65.15	-1635.12**	-243.30	-83.64
Hispanic	-94.13	861.47	-53.55	111.05
Asian	498.61	-1825.72	-132.74	236.13
Model R^2	.870	.833	..967	.931
N	133	119	73	3399

Note. Cell entries are unstandardized regression coefficient at the .05*, .01**, and .001*** levels of significance as predictors of pay. Ns are the minimum across all variables. For CPDF, basic pay is from 1996; for the other labs, basic pay is from 1997. See Table F-11 for how the variables were coded.

Table F-15A Descriptive Statistics for Multiple Regression Summary – Clerical Employees				
Variable Means	**AMRDEC**	**ARL**	**MRMC**	**CPDF**
2000 Basic Pay	29631.60	33020.43	29486.91	35006.89
1996/1997 Basic Pay	24736.20	27352.93	25922.55	26885.85
Education	1.11	1.04	1.00	1.08
Performance	4.76	4.51	4.72	3.50
Promotions	0.85	1.03	0.81	0.82
Tenure	12.99	15.41	12.49	12.30
Grade	2.10	2.22	3.38	7.69
Supervisor Status	1.99	2.00	2.00	2.00
Veteran Status	1.08	1.01	1.07	1.03
Disability	0.09	0.12	0.13	0.10
Age Group	0.79	0.75	0.66	0.67
Gender	0.93	0.97	0.88	0.96
Black	0.21	0.18	0.30	0.37
Hispanic	0.03	0.03	0.12	0.07
Asian	0.01	0.01	0.01	0.02

Table F-16 Percentage of Professionals in High Grades/Bands by Wave and Year										
	1996		1997		1998		1999		2000	
	N	%	N	%	N	%	N	%	N	%
Wave 1										
AFRL	819	27.25	844	28.83	840	33.11	961	40.58	1133	48.84
AMRDEC	437	27.03	318	19.16	413	25.62	368	25.48	394	25.00
ARL	354	33.81	472	34.53	272	20.30	550	40.38	518	40.63
MRMC*	83	20.15	83	18.78	60	12.53	30	7.67	41	9.72
NSWC	1031	12.76	1030	12.92	992	13.59	1062	13.37	1199	14.78
Wave 2										
NRL	643	36.37	647	38.33	633	39.84	649	40.54	618	40.71
NUWC — Newport	268	13.07	263	13.76	258	13.54			293	16.21
Wave 3										
NUWC—Keyport	30	4.82	24	4.83	25	5.06	24	5.41	22	7.51
CECOM	246	23.43	341	22.57	333	22.93	332	23.48	341	23.86
TACOM—Armaments	369	16.52	346	16.47	304	15.69	313	16.17	323	17.37
TACOM	131	19.58	122	17.60	120	17.42	115	18.14	126	14.03
SBCCOM	40	13.79	68	16.11	55	13.75	214	19.12	153	22.21
STRICOM	43	17.06	39	15.73	43	16.67	40	16.26	30	15.54
CPDF	11096	36.67	10953	37.46	11271	38.94	11461	40.45	11949	41.54

Note. High grades are defined as GS-14 and GS-15. ERDC was excluded from this analysis because GS-14 and GS-15 could not be separated from GS-12 or GS-13.
*Because MRMC bands span GS-13 and GS-14, numbers are for GS-15 only.

Table F-17 Number of SSTMs by Lab		
Lab	**Number of SSTMs Allocated**	**Number of SSTM Positions Filled in 2002**
AFRL		
All Army	16	
- AMRDEC	0	0
- ARL	0	0
- MRMC	0	0
- ERDC	0	1
NRL	12	12
NSWC	5	5
NUWC	3	3

Table F-18 Average Pay* of Supervisors and Non-Supervisors by Band and Year: Scientists and Engineers											
		1996		**1997**		**1998**		**1999**		**2000**	
Band	Sup	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**
AFRL											
1	S	40424	7	43441	5	.		.		.	
	NS	38980	90	40358	74	42766	31	46237	40	48899	39
2	S	58788	119	61106	101	66790	56	69328	32	70229	20
	NS	57170	1930	59390	1864	62533	1610	64684	1335	66456	1128
3	S	73510	218	76284	179	78384	153	81014	142	82378	143
	NS	73266	318	75122	317	77093	339	78054	489	79515	618
4	S	87213	153	88082	172	91004	174	94540	158	97087	169
	NS	86466	130	87947	176	90703	174	94223	172	96646	203
AMRDEC											
2	S	40811	1	.		.		.		.	
	NS	39224	67	40347	39	41309	65	43383	41	45096	75
3	S	57339	20	57293	5	63634	5	57278	6	61591	11
	NS	55822	1084	57970	745	60051	1109	64437	1012	66902	1081
4	S	77067	217	79506	162	84655	165	92249	129	95135	149
	NS	73866	220	76165	156	79490	248	85904	239	89837	245
ARL											
2	NS	41195	60	42780	75	41263	39	43277	44	45070	50
3	S	59047	9	60312	15	63009	9	65113	8	70624	4
	NS	54273	609	56384	787	58392	400	62639	710	66014	682
4	S	80239	104	82823	148	86545	70	93179	100	96923	85
	NS	72600	250	74437	324	77209	202	84088	450	88880	433
MRMC											
2	S	47690	3	52750	4	57043	2	51473	7	52528	5
	NS	44347	190	45371	203	47508	115	47860	130	49584	138
3	S	64466	41	65367	45	67566	28	73013	33	75948	33
	NS	62006	147	63564	152	65437	97	67160	128	69562	140
4	S	85870	20	86948	22	90314	16	95409	25	96109	30
	NS	85800	7	87220	11	86764	9	99099	5	93837	11
5	S	.		.		.		.		110895	1
	NS	.		.		.		88368	1	88368	1
NSWC											
2	S	25790	1	27206	1	28836	1	29932	1	31176	1
	NS	29723	78	32509	76	33778	116	36912	172	40641	172
3	S	37165	4	35304	4	37436	3	38858	3	40049	1
	NS	40726	378	41159	409	41805	351	43369	460	45191	443
4	S	61341	381	63294	392	65425	327	67989	364	69853	407
	NS	54769	5543	56710	5521	58615	4901	61301	5373	63791	4531
5	S	78628	425	79868	428	82294	397	85563	434	87974	508
	NS	77989	531	79895	520	82605	503	85763	543	88031	584

* Does not include locality pay.

Table F-18 Cont. Average Pay* of Supervisors and Non-Supervisors by Band and Year: Scientists and Engineers											
		1996		**1997**		**1998**		**1999**		**2000**	
Band	Sup	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**
ERDC											
2	S	42852	4	41751	2	45149	1	.		.	
	NS	38423	189	39043	131	40142	105	40622	43	40687	66
3	S	.		.		.		51444	2	62686	1
	NS	.		.		.		49713	64	52106	64
4	S	66828	98	69056	86	69924	69	76534	63	79556	72
	NS	55259	948	56991	859	58951	645	62730	602	65578	669
5	S	83373	55	86483	44	88219	28	92898	25	97129	25
	NS	83017	39	85083	39	87017	37	93593	40	97782	48
NRL											
3	S	.		.		.		64255	15	64782	13
	NS	41507	110	42350	90	43975	78	63557	862	65688	811
4	S	60610	38	61709	28	60716	20	95348	153	98086	126
	NS	57370	915	59051	862	61361	809	88417	478	91504	465
5	S	84621	267	87211	176	90369	158	84766	8	103442	19
	NS	78329	376	80604	471	83204	475	79867	10	86368	8
NUWC-N											
1	S	.		.		.		68331	28	.	
	NS	.		.		.		60965	1521	19716	2
2	S	.		.		.		85849	119	101082	5
	NS	27805	2	30832	5	34851	4	84232	159	58059	11
4	S	62209	45	63696	46	65517	45	.		69756	21
	NS	55945	1589	58222	1536	60320	1521	57243	37	64237	1352
5	S	78039	127	80360	111	82838	105	.		87388	116
	NS	76575	141	78978	152	81795	153	.		85877	177
NUWC-K											
4	S	60180	83	62556	61	64250	58	67295	49		
	NS	55212	346	57199	329	59282	331	62211	314		
5	S	77048	24	79307	22	82035	22	86207	21		
	NS	74250	6	76809	2	78931	3	83394	3		

Note. For years prior to implementation, GS grades have been converted to bands.
* Does not include locality pay.

Table F-19 Average Pay* of Supervisors and Non-Supervisors by Band and Year: Administrative Employees											
		1996		**1997**		**1998**		**1999**		**2000**	
Band	Sup	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**
AMRDEC											
3	S	48642	9	51330	3	53087	6	56217	3	58517	3
	NS	44944	213	46635	145	48563	207	52257	187	55197	181
4	S	61380	27	65002	12	68347	16	72474	10	75454	7
	NS	57919	30	59025	22	65030	31	68598	34	73319	39
5	S	83736	4	82709	1	90507	3	96107	4	102649	3
	NS	85470	1	89798	1	88620	1	92044	1	.	
ARL											
2	NS	31173	31	33430	53	35747	22	38234	38	40554	34
3	S	53774	14	57971	24	59642	13	63305	11	70336	6
	NS	45894	143	48212	263	49770	116	54653	234	57976	221
4	S	76621	14	78290	27	77583	11	83674	18	89220	15
	NS	71681	2	72140	11	77108	7	85844	12	91636	8
MRMC											
2	S	38839	1	37264	2	.		.		42479	1
	NS	33699	41	34422	35	34917	20	36970	18	37913	27
3	S	46547	14	47119	13	46413	6	50671	9	53628	10
	NS	43775	104	44856	111	46651	70	49806	47	51555	50
4	S	60937	21	62044	23	62239	14	66704	12	68545	15
	NS	58166	16	59786	18	61556	12	66305	3	67746	3
NSWC											
2	S	25790	9	26382	8	29027	6	30273	6	35493	1
	NS	27859	42	28649	51	29529	58	30545	32	33159	15
3	S	35400	7	35706	5	41652	1	38958	5	38944	5
	NS	33761	294	34427	289	35746	298	37326	292	38346	73
4	S	48466	99	49651	92	50626	63	52677	60	54800	54
	NS	46084	1882	47367	1782	49380	1645	51664	1695	53896	457
5	S	63748	174	63992	175	65229	147	67856	153	70360	155
	NS	61368	143	62121	175	63725	199	66222	235	68262	228
6	S	84954	19	85195	22	85351	3	92045	3	.	
	NS	92161	1	83406	2	.		.		.	
ERDC											
2	S	29837	3	27710	2	31108	2	37165	3	40640	5
	NS	31496	107	32297	86	33854	102	36973	40	38151	49
3	S	46278	8	45612	9	44706	7	50408	9	53323	9
	NS	43577	165	44508	142	46380	137	49191	56	50979	62
4	S	61376	19	63721	20	67790	15	70705	15	75203	16
	NS	61086	33	61698	34	62037	24	64756	9	68361	16
5	S	84406	6	87335	4	86828	2	94597	2	100313	3
	NS	.		.		.		94646	1	.	

Table F-19 Cont. Average Pay of Supervisors and Non-Supervisors by Band and Year: Administrative Employees											
		1996		1997		1998		1999		2000	
Band	Sup	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N
ERDC											
2	S	29837	3	27710	2	31108	2	37165	3	40640	5
	NS	31496	107	32297	86	33854	102	36973	40	38151	49
3	S	46278	8	45612	9	44706	7	50408	9	53323	9
	NS	43577	165	44508	142	46380	137	49191	56	50979	62
4	S	61376	19	63721	20	67790	15	70705	15	75203	16
	NS	61086	33	61698	34	62037	24	64756	9	68361	16
5	S	84406	6	87335	4	86828	2	94597	2	100313	3
	NS	.		.		.		94646	1	.	
NRL											
	NS	.		.		.		20369	3	24486	1
2	S	.		.		.		45015	2	46676	2
	NS	28239	15	30440	14	30719	10	39079	99	40179	100
3	S	37315	4	40174	3	42368	2	54331	28	56190	23
	NS	34873	89	35578	95	37021	88	52442	135	54447	126
4	S	46782	43	48274	35	50580	31	68406	11	69316	11
	NS	46711	143	48091	141	49051	134	69465	21	71537	22
5	S	66080	36	68485	29	71651	25	88203	18	88265	17
	NS	65215	21	66048	22	67394	24	83357	4	87700	4
NUWC-N											
1	S	.		.		.		57973	3	.	
	NS	.		.		.		50532	56	.	
2	S	.		.		.		74538	21	92797	7
	NS	26912	4	27875	8	29279	9	60889	17	67194	3
	NS	33362	31	34371	26	35313	25	35671	20	37277	10
4	S	52042	5	53629	3	53530	2	.		60228	2
	NS	47113	271	49274	270	51336	281	53638	230	56142	38
5	S	63476	26	65304	22	68697	18	.		73198	15
	NS	62593	26	63669	29	65547	30	67405	21	71696	12
6	S	83875	2	91318	2	94142	2	.		.	
	NS	85072	2	87033	1	89725	1	.		.	
NUWC-K											
2	S	33521	1	.		.		.			
	NS	27044	14	31326	1	28901	2	29469	5		
	NS	35280	51	35233	31	36172	35	37305	26		
4	S	48692	25	50947	19	53594	12	56017	14		
	NS	45633	261	47191	216	48914	215	50646	209		
5	S	63913	18	65059	11	63045	17	64662	18		
	NS	67615	4	62175	4	62758	5	64444	8		

Note. For years prior to implementation, GS grades have been converted to bands.
* Does not include locality pay.

Table F-20 Satisfaction with Supervisory Differential by Lab and Year 151. The supervisory pay differential I receive is adequate compensation for the additional responsibilities under the demonstration project.									
Year	**Lab**	**Disagree**		**Neither**		**Agree**		**Total**	
		N	**%**	**N**	**%**	**N**	**%**	**N**	**%**
1998	AMRDEC	40	61.5	8	12.3	17	26.2	65	100.0
	MRMC	31	66.0	9	19.1	7	14.9	47	100.0
	ERDC	30	61.2	12	24.5	7	14.3	49	100.0
1999	AMRDEC	27	48.2	4	7.1	25	44.6	56	100.0
	MRMC	31	73.8	8	19.0	3	7.1	42	100.0
	ERDC	27	56.3	13	27.1	8	16.7	48	100.0
2001	AMRDEC	41	50.6	13	16.0	27	33.3	81	100.0
	MRMC	18	52.9	8	23.5	8	23.5	34	100.0
	ERDC	30	68.2	8	18.2	6	13.6	44	100.0
Total	1998	101	62.7	29	18.0	31	19.3	161	100.0
	1999	85	58.2	25	17.1	36	24.7	146	100.0
	2001	89	56.0	29	18.2	41	25.8	159	100.0

Table F-21 Internal and External Pay Equity (% Agreement)					
Item	**Wave**	**1996**	**1998**	**1999**	**2000**
37. Other employers in this area pay more than the Government does for the kind of work I am doing.	Wave 1	49.8%	60.2%	59.7%	60.4%
	Wave 2	58.5%	66.1%	75.8%	70.7%
	Wave 3	60.8%	65.1%	67.6%	65.4%
	"China Lake"	50.2%	61.3%	—	—
61. Pay differentials here fairly represent real differences in levels of responsibility and job difficulty.	Wave 1	18.4%	18.1%	19.0%	26.1%
	Wave 2	18.9%	17.3%	16.0%	24.6%
	Wave 3	17.1%	19.5%	19.4%	23.1%
	"China Lake"	26.4%	24.4%	—	—

Table F-22 Bonus Ranges (Minimum and Maximum Amounts) by Lab from 1996 to 2000															
Lab	**1996**			**1997**			**1998**			**1999**			**2000**		
	Min	**Max**	**N**	**Min**	**Max**	**N**	**Min**	**Max**	**N**	**Min**	**Max**	**N**	**Min**	**Max**	**N**
AFRL															
Prof	23	1465	2262	17	3333	1162	25	2333	999	3	3667	1133	3	2167	1080
AMRDEC*															
Prof	33	2292	994	33	3119	832	0	2081	296	10	5000	1400	6	5776	1199
Admin	50	1900	265	67	3333	157	176	1568	97	10	5000	257	26	5000	218
Tech	50	1383	146	17	881	77	.	.	.	82	4084	98	40	2820	75
Clerical	17	1000	179	17	1467	97	90	759	56	38	2000	170	9	2083	128
Other	83	157	9	82	1000	12	.	.	.	.	.		.	.	
Total	17	2292	1593	17	3333	1175	.	.	.	10	5000	1925	6	5776	1620
ARL															
Prof	58	2500	701	28	3325	908				27	5000	1286	35	3648	1120
Admin	42	2333	150	17	2333	291				50	4000	300	44	3500	261
Tech	67	1817	143	17	1920	171				28	2136	265	28	2105	200
Clerical	42	1400	85	33	1100	121				35	3225	118	35	2500	103
Other	50	833	10	50	1017	18				25	943	21	25	943	16
Total	42	2500	1089	17	3325	1509				25	5000	1990	25	3648	1700
MRMC															
Prof	17	1732	261	33	1667	274				100	7000	215	47	7000	209
Admin	50	2133	122	33	3733	120				100	5000	60	150	3250	52
Tech	17	833	133	33	1667	138				100	2897	81	57	2500	70
Clerical	65	833	96	60	833	92				200	2500	52	200	2500	54
Total	17	2133	612	33	3733	624				100	7000	408	47	7000	385

Table F-22 Cont. Bonus Ranges (Minimum and Maximum Amounts) by Lab from 1996 to 2000															
Lab	**1996**			**1997**			**1998**			**1999**			**2000**		
	Min	**Max**	**N**	**Min**	**Max**	**N**	**Min**	**Max**	**N**	**Min**	**Max**	**N**	**Min**	**Max**	**N**
NSWC															
Prof	4	4800	5336	4	8328	5954	25	4378	2474	8	3500	221	2	8999	1010
Admin	8	5000	2058	4	4038	2247	75	5000	1827	2	1900	42	8	5000	170
Tech	8	4500	2373	8	3500	2577	75	2510	2007	2	7033	22	8	1944	155
Clerical	12	2500	601	54	2500	588	50	1800	394	2	1300	6	168	750	18
Other	8	900	245	8	1326	296	135	1708	214	208	208	1	204	498	24
Total	4	5000	10613	4	8328	11662	25	5000	6916	2	7033	292	2	8999	1377
ERDC**															
Prof	33	3683	1139	17	3239	743				75	6000	760	100	4900	142
Admin	17	2431	299	33	1981	242				75	3500	121	150	2470	29
Tech	17	1053	337	17	1240	248				75	2200	118	100	1800	22
Clerical	33	1000	152	33	1417	101				50	1500	123	250	3500	17
Other	73	611	26	100	567	14				245	801	22	150	150	1
Total	17	3683	1953	17	3239	1348				50	6000	1144	100	4900	211
NRL															
Prof	8	5000	1349	16	6000	1294	76	4500	1251	100	18491	1283	100	20720	1210
Admin	8	3500	291	8	5000	295	150	7000	249	275	15447	301	250	8000	285
Tech	16	2700	261	8	2710	239	100	2400	216	100	6695	246	50	7739	217
Clerical	4	2200	232	4	2000	188	100	2000	175	197	5194	165	150	4500	159
Other	40	1012	52	40	1800	47	150	848	36	125	2050	17	150	1000	20
Total	4	5000	2185	4	6000	2063	76	7000	1927	100	18491	2012	50	20720	1891
ArmyW2															
Prof	17	2667	3416	7	4596	3648				25	11800	4238	25	10000	2900
Admin	17	2500	1081	17	3067	1192				25	9536	2928	25	6500	2556
Tech	33	1517	541	28	1733	594				50	3970	794	50	4000	520
Clerical	33	1583	560	25	1650	530				100	4055	725	50	4000	438
Other	25	817	84	38	667	82				100	2300	129	100	2300	108
Total	17	2667	5682	7	4596	6046				25	11800	8814	25	10000	6522

Table F-22 Cont. Bonus Ranges (Minimum and Maximum Amounts) by Lab from 1996 to 2000															
Lab	**1996**			**1997**			**1998**			**1999**			**2000**		
	Min	**Max**	**N**	**Min**	**Max**	**N**	**Min**	**Max**	**N**	**Min**	**Max**	**N**	**Min**	**Max**	**N**
NUWC-N															
Prof	25	5000	1561	25	5000	824	25	5000	1371	200	2000	151	200	1250	79
Admin	38	2500	297	100	3700	196	100	3700	279	250	4000	131	200	2000	2
Tech	50	1635	233	150	1200	120	150	2086	202	100	1500	102	.	.	
Clerical	100	2000	139	191	1000	81	191	1200	107	150	1500	55	.	.	
Total	25	5000	2230	25	5000	1221	25	5000	1959	100	4000	439	200	2000	81
NUWC-K															
Prof	88	2300	622	150	3500	383	150	3500	376	35	7500	331	63	3500	192
Admin	88	875	374	200	4500	243	100	4500	248	8	4500	222	50	4500	141
Tech	88	865	251	100	800	160	100	800	153	60	1200	155	25	1500	82
Clerical	88	350	45	16	500	20	100	500	18	145	300	9	200	500	4
Other	100	150	31	200	200	1	.	.		.	.		.	.	
Total	88	2300	1323	16	4500	807	100	4500	795	8	7500	717	25	4500	419

Note. This table reflects both special act and service awards, as well as performance and contribution awards. Data in years prior to implementation are from all employees; after and during implementation the data are from covered employees only.

* In 1998, Administrative data at AMRDEC includes administrative and technical employees.

** The data for ERDC include awards only.

Table F-23 Mean Bonus Amounts by Lab										
Lab	**1996**		**1997**		**1998**		**1999**		**2000**	
	Mean	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**
AFRL										
Prof	260	2262	281	1162	291	999	274	1133	295	1080
AMRDEC*										
Prof	516	994	581	832	826	296	1084	1400	1299	1199
Admin	427	265	451	157	674	97	822	257	875	218
Tech	351	146	326	77	.	.	598	98	625	75
Clerical	294	179	331	97	365	56	528	170	533	128
Other	120	9	287	12	.	.	.		.	
Total	459	1593	523	1175	.	.	975	1925	1150	1620
ARL										
Prof	596	701	665	908			663	1286	599	1120
Admin	567	150	610	291			487	300	503	261
Tech	397	143	437	171			428	265	434	200
Clerical	350	85	384	121			352	118	329	103
Other	352	10	443	18			184	21	201	16
Total	545	1089	604	1509			582	1990	545	1700
MRMC										
Prof	464	261	431	274			1283	215	1235	209
Admin	389	122	366	120			1263	60	1103	52
Tech	274	133	290	138			904	81	847	70
Clerical	288	96	319	92			839	52	821	54
Total	380	612	371	624			1148	408	1089	385

Table F-23 Cont. Mean Bonus Amounts by Lab										
Lab	**1996**		**1997**		**1998**		**1999**		**2000**	
	Mean	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**
NSWC										
Prof	717	5336	885	5954	733	2474	440	221	465	1010
Admin	630	2058	659	2247	719	1827	553	42	485	170
Tech	503	2373	514	2577	632	2007	792	22	377	155
Clerical	457	601	506	588	591	394	710	6	397	18
Other	360	245	359	296	491	214	208	1	233	24
Total	629	10613	727	11662	684	6916	488	292	453	1377
ERDC**										
Prof	594	1139	581	743			1203	760	915	142
Admin	525	299	497	242			837	121	538	29
Tech	298	337	273	248			563	118	431	22
Clerical	278	152	300	101			427	123	664	17
Other	256	26	260	14			460	22	150	1
Clerical	350	85	384	121			352	118	329	103
Other	352	10	443	18			184	21	201	16
Total	545	1089	604	1509			582	1990	545	1700
NRL										
Prof	1123	1349	1116	1294	1173	1251	2284	1283	2454	1210
Admin	886	291	901	295	1126	249	1562	301	1483	285
Tech	694	261	637	239	706	216	1062	246	1093	217
Clerical	570	232	563	188	699	175	1126	165	990	159
Other	434	52	581	47	598	36	609	17	472	20
Total	965	2185	967	2063	1061	1927	1918	2012	2007	1891
Army W2										
Prof	551	3416	547	3648			1281	4238	1338	2900
Admin	499	1081	463	1192			987	2928	985	2556
Tech	361	541	359	594			805	794	827	520

Table F-23 Cont. Mean Bonus Amounts by Lab										
Lab	**1996**		**1997**		**1998**		**1999**		**2000**	
	Mean	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**
Clerical	350	560	324	530			769	725	775	438
Other	217	84	187	82			506	129	503	108
Total	498	5682	488	6046			1087	8814	1107	6522

Table F-23 Cont. Mean Bonus Amounts by Lab										
Lab	**1996**		**1997**		**1998**		**1999**		**2000**	
	Mean	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**
NUWC-N										
Prof	919	1561	869	824	1091	1371	439	151	306	79
Admin	789	297	780	196	853	279	1023	131	1100	2
Tech	515	233	532	120	686	202	752	102	.	
Clerical	481	139	513	81	558	107	667	55	.	
Total	832	2230	798	1221	986	1959	714	439	325	81
NUWC-K										
Prof	170	622	549	383	552	376	649	331	683	192
Admin	122	374	496	243	479	248	510	222	505	141
Tech	124	251	396	160	398	153	448	155	408	82
Clerical	112	45	261	20	291	18	227	9	344	4
Other	102	31	200	1	.		.		.	
Total	144	1323	495	807	494	795	557	717	566	419

Note. This table reflects both special act and service awards, as well as performance and contribution awards.
* In 1998, Administrative data at AMRDEC includes administrative and technical employees.
** The data for ERDC include awards only.

Table F-24 Percentage of Employees Receiving a Bonus by Lab										
Lab	**1996**		**1997**		**1998**		**1999**		**2000**	
	N	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
AFRL										
Prof	2262	75.83	1162	40.01	999	39.38	1133	47.85	1080	46.55
AMRDEC*										
Prof	994	61.55	832	74.75	296	99.66	1400	98.11	1199	76.76
Admin	265	79.10	157	73.71	97	100	257	95.54	218	81.04
Tech	146	76.84	77	66.96	.	.	98	98.00	75	80.65
Clerical	179	74.90	97	64.24	56	100	170	96.59	128	80.00
Other	9	36.00	12	50.00	.	.				
ARL										
Prof	701	67.60	908	66.91			1286	98.02	1120	88.89
Admin	150	73.17	291	76.98			300	95.54	261	91.90
Tech	143	66.20	171	58.76			265	98.51	200	82.64
Clerical	85	77.98	121	81.21			118	97.52	103	91.15
Other	10	71.43	18	54.55			21	84.00	16	59.26
MRMC										
Prof	261	63.66	274	62.27			215	65.35	209	58.22
Admin	122	61.93	120	59.41			60	67.42	52	49.06
Tech	133	63.94	138	66.03			81	72.97	70	58.82
Clerical	96	56.47	92	54.76			52	73.24	54	60.67
NSWC										
Prof	5336	72.63	5954	80.90	2474	37.13	221	3.32	1010	15.02
Admin	2058	77.08	2247	86.39	1827	74.54	42	4.25	170	16.49
Tech	2373	78.81	2577	88.71	2007	78.49	22	3.29	155	22.69
Clerical	601	72.85	588	82.35	394	73.78	6	4.84	18	15.52
Other	245	50.62	296	62.98	214	69.26	1	1.28	24	34.78
ERDC**										
Prof	1139	85.00	743	63.61			760	90.58	142	15.01
Admin	299	87.68	242	81.48			121	89.63	29	18.13
Tech	337	82.00	248	69.27			118	93.65	22	14.77
Clerical	152	79.17	101	66.89			123	94.62	17	11.26
Other	26	65.00	14	41.18			22	68.75	1	3.45
NRL										
Prof	1349	77.53	1294	77.95	1251	80.04	1283	78.04	1210	76.78
Admin	291	81.28	295	85.26	249	77.81	301	86.25	285	88.24
Tech	261	74.15	239	71.56	216	66.46	246	63.73	217	56.36
Clerical	232	72.50	188	63.09	175	71.72	165	66.53	159	68.24
Other	52	42.62	47	46.08	36	39.56	17	29.82	20	29.41

Table F-24 Cont. Percentage of Employees Receiving a Bonus by Lab										
Lab	**1996**		**1997**		**1998**		**1999**		**2000**	
	N	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
NUWC – Newport										
Prof	1561	76.41	824	43.35	1371	72.31	151	8.04	79	4.52
Admin	297	80.93	196	54.29	279	75.82	131	35.60	2	2.30
Tech	233	74.20	120	44.12	202	70.63	102	36.17		
Clerical	139	77.22	81	54.73	107	75.35	55	48.67		
NUWC – Keyport										
Prof	622	100	383	77.22	376	76.27	331	74.55	192	65.53
Admin	374	100	243	85.87	248	86.41	222	79.00	141	70.85
Tech	251	100	160	84.66	153	83.61	155	84.70	82	50.31
Clerical	45	100	20	83.33	18	78.26	9	69.23	4	66.67
Other	31	88.57	1	100					32	74.42
Army Wave III										
Prof	3416	78.55	3648	77.11			4238	82.77	2900	59.40
Admin	1081	77.99	1192	79.73			2928	82.85	2556	61.92
Tech	541	73.91	594	76.55			794	85.47	520	56.89
Clerical	560	73.49	530	76.04			725	83.14	438	58.56
Other	84	62.22	82	57.75			129	72.47	108	54.27

Note. This reflects both special act and service awards, as well as performance and contribution awards.
* In 1998, Administrative data at AMRDEC includes administrative and technical employees.
** The data for ERDC include awards only.

Table F-25 Mean Organizational Commitment by Lab and Occupational Group												
	Prof		**Admin**		**Tech**		**Clerical**		**Other**		**Total**	
	M	**N**	**M**	**N**	**M**	**N**	**M**	**N**	**M**	**N**	**M**	**N**
AFRL	3.32	837	3.33	129	3.08	32	3.52	40	3.25	27	3.32	1067
AMRDEC	3.53	919	3.54	101	3.27	68	3.49	58	3.07	19	3.50	1176
ARL	2.89	187	3.25	53	2.97	44	3.20	23	3.07	9	2.99	319
MRMC	3.63	77	3.34	75	3.50	32	3.41	23	3.78	3	3.49	211
NSWC	3.28	1474	3.41	211	3.13	178	3.34	41	3.31	63	3.28	1970
ERDC	3.29	425	3.20	66	3.23	59	3.25	48	3.63	9	3.27	610
NRL	3.46	417	3.17	123	3.42	40	3.23	60	3.08	36	3.37	678
NUWC	3.15	612	3.36	130	3.29	137	3.02	18	3.67	22	3.20	968
CECOM	3.34	294	3.29	45	3.21	44	3.63	10	3.63	8	3.33	401
TACOM - Armaments	3.35	425	3.35	98	3.35	66	3.59	30	3.45	17	3.37	640
TACOM	3.34	338	3.30	380	3.26	144	3.21	44	3.31	100	3.30	1013
SBCCOM	3.55	139	3.55	58	3.49	21	3.52	16	3.22	9	3.53	247

Table F-26 Regression Results Predicting Organizational Commitment			
	Step 1	Step 2	Step 3
Pay and Advancement			
Advancement Opportunities	0.33***	0.18***	0.07***
External Pay Equity	-0.01	0.01	0.03***
Pay Satisfaction	0.27***	0.11***	0.08***
Performance Appraisal			
Performance Appraisal Fairness	--	0.22***	0.06***
Pay-Performance Link	--	0.16***	0.10***
Internal Pay Equity	--	0.08***	0.07***
Job Characteristics			
Job Challenge	--	--	0.01
Quality of Supervision	--	--	0.25***
Job Satisfaction	--	--	0.30***
R^2	.32	.39	.52

Note. Entries are standardized regression weights. *** $p < .001$.

Table F-27 Turnover of Permanent Employees by PATCO Across Time															
	1996			1997			1998			1999			2000		
Lab and Occupational Group	**Total N**	**Separations N**	**%**	**Total N**	**Separations N**	**%**	**Total N**	**Separations N**	**%**	**Total N**	**Separations N**	**%**	**Total N**	**Separations N**	**%**
AFRL*															
Professionals	2881	139	4.8%	2479	167	6.71%	2531	176	7.0%	2497	230	9.2%	2357	153	6.5%
AMRDEC															
Professionals	1635	33	2.0%	1722	62	3.6%	1672	62	3.7%	1592	138	8.7%	1631	29	1.8%
Administrative	334	12	3.6%	336	7	2.1%	303	10	3.3%	312	44	14.1%	283	7	2.5%
Technicians	188	2	1.1%	145	7	4.8%	112	1	0.9%	114	16	14.0%	93	1	1.1%
Clerical	221	11	5.0%	215	8	3.7%	220	17	7.7%	192	16	8.3%	156	1	0.6%
ARL															
Professionals	1110	38	3.4%	1453	120	8.3%	1399	39	2.8%	1409	49	3.5%	1333	38	2.9%
Administrative	198	0		360	23	6.4%	350	12	3.4%	340	10	2.9%	297	5	1.7%
Technicians	225	3	1.3%	305	26	8.5%	292	6	2.1%	286	10	3.5%	255	6	2.4%
Clerical	103	2	1.9%	146	11	7.5%	127	5	3.9%	130	4	3.1%	120	3	2.5%
MRMC															
Professionals	417	29	7.0%	439	18	4.1%	464	16	3.4%	357	20	5.6%	376	10	2.7%
Administrative	196	9	4.6%	204	4	2.0%	234	12	5.1%	96	3	3.1%	115	3	2.6%
Technicians	200	9	4.5%	203	12	5.9%	223	5	2.2%	142	9	6.3%	142	4	2.8%
Clerical	138	6	4.3%	136	12	8.8%	149	8	5.4%	83	4	4.8%	87	2	2.3%
NSWC															
Professionals	8153	659	8.1%	8045	568	7.1%	7368	553	7.5%	8013	690	8.6%	8184	557	6.8%
Administrative	3055	311	10.2%	2892	300	10.4%	2672	180	6.7%	2726	258	9.5%	2664	157	5.9%
Technicians	3424	364	10.6%	3158	258	8.2%	2771	181	6.5%	2785	249	8.9%	2652	141	5.3%
Clerical	954	144	15.1%	785	100	12.7%	570	35	6.1%	540	69	12.8%	482	37	7.7%

Table F-27 Cont. Turnover of Permanent Employees by PATCO Across Time															
	1996			1997			1998			1999			2000		
Lab and Occupational Group	Total N	Separations N	Separations %	Total N	Separations N	Separations %	Total N	Separations N	Separations %	Total N	Separations N	Separations %	Total N	Separations N	Separations %
ERDC															
Professionals	1414	60	4.2%	1255	71	5.7%	1278	71	5.6%	1230	42	3.4%	1183	27	2.3%
Administrative	361	18	5.0%	300	14	4.7%	299	14	4.7%	286	12	4.2%	270	8	3.0%
Technicians	424	18	4.2%	372	34	9.1%	397	22	5.5%	299	16	5.4%	262	4	1.5%
Clerical	183	12	6.6%	145	7	4.8%	127	4	3.1%	180	7	3.9%	181	5	2.8%
NRL**															
Professionals	1972	118	6.0%	1952	173	8.9%	1896	230	12.1%	1751	82	4.7%	1762	139	7.9%
Administrative	408	29	7.1%	411	36	8.8%	405	57	14.1%	386	35	9.1%	368	36	9.8%
Technicians	400	42	10.5%	361	35	9.7%	346	52	15.0%	345	15	4.3%	312	35	11.2%
Clerical	362	21	5.8%	339	40	11.8%	305	52	17.0%	239	26	10.9%	236	36	15.3%
NRL ***															
ES Employees	30	2	6.7%	29	0	0	29	0	0	28	2	7.1%	26	0	0
GM Employees	962	51	5.3%	832	64	7.7%	742	73	9.8%	NA	NA	NA	NA	NA	NA
GS Employees	2534	255	10.1%	2571	286	11.1%	2577	319	12.4%	NA	NA	NA	NA	NA	NA
NC Admin. Support	NA	NA	NA	NA	NA	NA	NA	NA	NA	475	3	0.6%	512	81	15.8%
NO Admin. S&P	NA	NA	NA	NA	NA	NA	NA	NA	NA	416	1	0.2%	452	47	10.4%
NP S&E Professional	NA	NA	NA	NA	NA	NA	NA	NA	NA	1695	4	0.2%	1778	171	9.6%
NR S&E Technical	NA	NA	NA	NA	NA	NA	NA	NA	NA	208	2	1.0%	286	64	22.4%
NUWC Newport															
Scientists & Engineers	2297	233	10.1%	2136	218	10.2%	1949	105	5.4%	1912	99	5.2%	1881	155	8.2%
S & E Technicians	297	46	15.5%	244	46	18.9%	195	15	7.7%	189	5	2.6%	197	14	7.1%
Other Technicians	54	8	14.8%	47	8	17.0%	48	3	6.3%	44	1	2.3%	46	5	10.9%
Admin. Professions	471	56	11.9%	442	57	12.9%	409	12	2.9%	430	22	5.1%	426	30	7.0%
Admin. Support	187	45	24.1%	143	27	18.9%	112	2	1.8%	100	6	6.0%	91	9	9.9%
Secretarial & Clerical	263	53	11.9%	211	48	12.9%	157	10	2.9%	141	9	5.1%	129	16	7.0%

Table F-27 Cont. Turnover of Permanent Employees by PATCO Across Time

Lab and	1996	1997	1998	1999	2000

Occupational Group	Total	Separations		Total	Separations		Total	Separations		Total	Separations		Total	Separations	
	N	N	%	N	N	%	N	N	%	N	N	%	N	N	%
NUWC Keyport															
Scientists & Engineers	711	40	5.6%	674	140	20.8%	529	45	8.5%	495	22	4.4%	481	45	9.4%
Technical Specialists	647	47	7.3%	626	179	28.6%	464	42	9.1%	445	34	7.6%	433	45	10.4%
Administrative	202	14	6.9%	190	66	34.7%	126	8	6.3%	123	43	35.0%	77	11	14.3%
TACOM															
Professionals	672	27	4.0%	698	23	3.3%	694	16	2.3%	622	24	3.9%	879	11	1.3%
Administrative	217	5	2.3%	218	11	5.0%	204	13	6.4%	1338	37	2.8%	2197	12	0.6%
Technicians	133	4	3.0%	147	6	4.1%	173	0		134	7	5.2%	190	2	1.1%
Clerical	122	11	9.0%	80	5	6.3%	53	5	9.4%	200	10	5.0%	229	5	2.2%
CECOM															
Professionals	1031	42	4.1%	1505	123	8.2%	1461	72	4.9%	1422	64	4.5%	1437	43	3.0%
Administrative	311	12	3.9%	395	63	15.9%	366	62	16.9%	1253	88	7.0%	1130	75	6.6%
Technicians	79	6	7.6%	138	15	10.9%	138	11	8.0%	175	5	2.9%	169	8	4.7%
Clerical	139	10	7.2%	183	21	11.5%	165	17	10.3%	199	16	8.0%	177	9	5.1%
SBCCOM															
Professionals	289	21	7.3%	426	28	6.6%	403	14	3.5%	1119	35	3.1%	694	24	3.5%
Administrative	110	12	10.9%	208	15	7.2%	168	8	4.8%	407	5	1.2%	240	6	2.5%
Technicians	63	11	17.5%	96	4	4.2%	82	4	4.9%	275	13	4.7%	197	4	2.0%
Clerical	56	4	7.1%	83	9	10.8%	82	2	2.4%	219	9	4.1%	126	6	4.8%
STRICOM															
Professionals	226	7	3.1%	223	8	3.6%	229	7	3.1%	217	5	2.3%	193	4	2.1%
Administrative	209	8	3.8%	205	11	5.4%	201	3	1.5%	181	11	6.1%	184	7	3.8%
Technicians	7	0	0	7	0	0	11	0	0	13	0	0	8	0	0
Clerical	59	7	11.9%	53	2	3.8%	52	4	7.7%	43	0	0	37	1	2.7%

Table F-27 Cont. Turnover of Permanent Employees by PATCO Across Time										
Lab and Occupational Group	1996		1997		1998		1999		2000	
	Total	Separations	Total	Separations	Total	Separations	Total	Separations	Total	Separations

	N	N	%	N	N	%	N	N	%	N	N	%	N	N	%
CPDF															
Professionals	33628	2033	6.0%	32424	2257	7.0%	31977	1887	5.9%	31678	1633	5.2%	.	.	.
Administrative	17917	1334	7.4%	17812	1714	9.6%	18203	1391	7.6%	18312	1107	6.0%	18917	?	?
Technicians	5339	404	7.6%	5001	426	8.5%	4664	335	7.2%	4619	296	6.4%	4564	?	?
Clerical	4655	485	10.4%	4013	514	12.8%	3358	399	11.9%	3147	282	9.0%	3023	?	?

Source. OPM Workforce Data

Note. AFRL numbers for 1996 and 1997 were taken from AFRL comments on the report, not from OPM's WFD. Turnover for NUWC (Keyport and Newport) were taken from spreadsheets submitted by these labs rather than from OPM's WFD file.

* Professionals Only

** Using OPM's WFD & PATCO definitions

*** by Pay Plan: NRL separation data were provided in a different format and could not be reported by PATCO category.

Table F-28 STARTURN Separations by Lab			
	N	**Number of Separated**	**Percentage Separated**
AFRL			
Lowest	100	28	28.0%
Medium	433	93	21.5%
Highest	619	117	18.9%
AMRDEC			
Lowest	93	9	9.7%
Medium	418	23	5.5%
Highest	398	23	5.8%
ARL			
Lowest	6	0	0.0%
Medium	52	0	0.0%
Highest	48	1	2.1%
MRMC			
Lowest	3	0	0.0%
Medium	13	0	0.0%
Highest	8	1	12.5%
NUWC Newport			
Lowest	3	0	0.0%
Medium	13	3	23.1%
Highest	13	0	0.0%
TACOM*			
Lowest	56	3	5.4%
Medium	345	24	7.0%
Highest	411	20	4.9%
CECOM*			
Lowest	31	1	3.2%
Medium	107	11	10.3%
Highest	62	9	14.5%
STRICOM*			
Lowest	2	0	0.0%
Medium	12	0	0.0%
Highest	42	3	7.1%

* Non-Starturn separation rates.

Table F-29 Highest Rated Starturn Employees Who Subsequently Separated						
Lab	**Rating**	**Occupation**	**Gender**	**Race**	**Age**	**Education**
AFRL	10	Physics	M	White	38	Doctorate
AFRL	10	Physics	F	White	37	Doctorate
AFRL	10	Electronics Engineering	M	White	32	Post Masters
AFRL	10	Electronics Engineering	M	White	39	Doctorate
AFRL	10	General Physical Science	M	White	45	Doctorate
AFRL	10	Physics	M	White	46	Doctorate
AFRL	10	Physics	M	White	60	Doctorate
AFRL	10	General Engineering	M	White	61	Doctorate
AFRL	10	Materials Engineering	F	White	37	Doctorate
AFRL	10	Aerospace Engineering	M	White	35	Doctorate
AFRL	10	Chemistry	M	White	41	Masters
AFRL	10	Aerospace Engineering	M	White	54	Masters
AFRL	10	Electronics Engineering	M	White	59	Bachelors
AFRL	10	Electronics Engineering	M	White	59	Post Masters
AFRL	10	Toxicology	M	White	48	Doctorate
AFRL	10	Electronics Engineering	M	White	39	Bachelors
AFRL	10	Electronics Engineering	M	White	52	Masters
AFRL	10	Electronics Engineering	M	White	60	Bachelors
AFRL	10	Aerospace Engineering	M	White	61	Post Bachelors
AFRL	10	Computer Science	M	White	41	Bachelors
AFRL	10	Materials Engineering	M	White	45	Doctorate
AFRL	10	Aerospace Engineering	M	White	34	Doctorate
AFRL	10	Aerospace Engineering	M	White	64	Post Bachelors
AFRL	10	Aerospace Engineering	M	White	56	Masters
AFRL	10	Electrical Engineering	M	White	59	Bachelors
AFRL	10	Electronics Engineering	M	White	51	Bachelors
AFRL	10	Aerospace Engineering	M	White	57	Masters
AFRL	10	Mechanical Engineering	M	White	33	Masters
AFRL	10	Electronics Engineering	M	White	59	Post Bachelors
AFRL	10	Electronics Engineering	M	White	45	Bachelors
AFRL	10	Aerospace Engineering	M	White	60	Doctorate
AFRL	10	Physics	M	White	35	Doctorate
AFRL	10	Chemistry	M	White	65	Doctorate
AFRL	9	General Physical Science	M	White	63	Bachelors
AFRL	9	Electronics Engineering	M	White	33	Masters
AFRL	9	General Physical Science	M	White	54	Masters
AFRL	9	General Physical Science	M	White	62	Doctorate
AFRL	9	Electronics Engineering	M	White	31	Masters
AFRL	9	Aerospace Engineering	M	White	72	Bachelors
AFRL	9	Physics	M	White	51	Doctorate
AFRL	9	Physics	M	White	34	Doctorate
AFRL	9	Aerospace Engineering	M	White	66	Bachelors
AFRL	9	Aerospace Engineering	M	White	32	Masters
AFRL	9	Electronics Engineering	M	Hispanic	34	Masters

Table F-29 Cont. Highest Rated Starturn Employees Who Subsequently Separated						
Lab	**Rating**	**Occupation**	**Gender**	**Race**	**Age**	**Education**
AFRL	9	General Physical Science	M	White	67	Doctorate
AFRL	9	General Physical Science	M	White	9	Doctorate
AFRL	9	General Engineering	M	White	60	Post Bachelors
AFRL	9	Computer Science	M	White	74	Doctorate
AFRL	9	General Physical Science	M	White	57	Post Bachelors
AFRL	9	Electronics Engineering	F	White	38	Masters
AFRL	9	Operations Research	M	White	57	Post Bachelors
AFRL	9	Electronics Engineering	M	White	66	Masters
AFRL	9	Electronics Engineering	M	White	41	Masters
AFRL	9	Computer Engineering	M	White	37	Bachelors
AFRL	9	Aerospace Engineering	M	Hispanic	61	Masters
AFRL	9	Aerospace Engineering	M	White	61	Doctorate
AFRL	9	Electronics Engineering	M	Asian	31	Doctorate
AFRL	9	Aerospace Engineering	M	White	63	Bachelors
AFRL	9	Psychologist	F	Asian	43	Doctorate
AFRL	9	Aerospace Engineering	M	White	30	Doctorate
AVRDEC	10	General Engineering	M	White	34	Post Bachelors
AVRDEC	10	General Engineering	M	White	29	Bachelors
AVRDEC	10	Aerospace Engineering	F	White	38	Post Masters
AVRDEC	10	Computer Engineering	M	Hispanic	31	Bachelors
AVRDEC	10	Computer Engineering	M	Asian	28	Masters
AVRDEC	9	Electronics Engineering	M	White	59	Bachelors
AVRDEC	9	General Engineering	M	White	57	Bachelors
AVRDEC	9	General Engineering	M	White	60	Bachelors
ARL	9	Mathematics	M	White	63	Bachelors
ARL	9	Mechanical Engineering	M	White	61	Masters
ARL	9	Electronics Engineering	M	White	36	Bachelors
ARL	9	Electronics Engineering	M	White	54	Maters

Table F-30 Summary of Statistics of Those Rated 9 or 10 in STARTURN												
	2000				1999				1998			
	Total		Separations		Total		Separations		Total		Separations	
Demographic Group	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Gender												
Female	4	4.9%	0	0	120	9.2%	2	3.8%	30	6.1%	6	7.2%
Male	77	95.1%	1	100%	1189	90.8%	50	96%	459	93.9%	77	93%
Total	81		1		1309		52		489		83	
Race												
American Indian/Alaskan					10	0.8%	0	0	1	0.2%	0	0
Asian/PI	3	3.8%	0	0	74	5.7%	2	3.8%	17	3.7%	1	1.2%
Black	1	1.3%	0	0	37	2.8%	0	0	4	0.9%	0	0
Hispanic	4	5.0%	0	0	36	2.8%	1	1.9%	13	2.9%	2	2.4%
White	72	90.0%	2	100%	1152	88.0%	49	94%	420	92.3%	80	96%
Total	80		2		1309		52		455		83	
Education												
High School	3	3.7%	0	0	13	1.0%	0	0	2	0.4%	2	0
Some College					12	0.9%	0	0	2	0.4%	0	0
Associate Degree					2	0.2%	0	0	0	0.0%	0	0
3 or 4 years college					7	0.5%	0	0	0	0.0%	0	0
Bachelors	10	12.3%	0	0	446	34.1%	21	40.4%	81	17.8%	15	18.1%
Post-Bachelors	1	1.2%	0	0	153	11.7%	6	11.5%	40	8.8%	11	13.3%
First Professional	1	1.2%	1	50%	6	0.5%	0	0%	0	0.0%	0	0%
Masters Degree	17	21.0%	1	50%	384	29.3%	13	25%	168	36.9%	28	34%
Post-Masters	4	4.9%	0	0	55	4.2%	3	5.8%	27	5.9%	2	2.4%
Doctorate	43	53.1%	0	0	207	15.8%	9	17.3%	130	28.6%	25	30.1%
Post-Doctorate	2	2.5%	0	0	24	1.8%	0	0	5	1.1%	0	0
Total	81		2		1309		52		455		83	
Job Series												
Intelligence									2	0.4%	1	1.3%
Psychologist	1	1.2%	0	0	26	2.0%	1	2.0%	8	1.6%	3	3.8%
General Anthropology					2	0.2%	0	0.0%	2	0.4%	0	0.0%
Misc Admin & Program					3	0.2%	0	0.0%	0	0.0%	0	0.0%
Computer Specialist					2	0.2%	0	0.0%	0	0.0%	0	0.0%
General Biological Science					2	0.2%	0	0.0%	1	0.2%	0	0.0%
Microbiology					10	0.8%	0	0.0%	0	0.0%	0	0.0%
Physiology	1	1.2%	0	0	8	0.6%	0	0.0%	1	0.2%	0	0.0%
Toxicology					2	0.2%	1	2.0%	2	0.4%	1	1.3%
Veterinary Science					1	0.1%	0	0.0%	0	0.0%	0	0.0%
General Engineering	11	13.4%	0	0	152	11.6%	0	0.0%	44	9.0%	5	0.0%
Safety Engineering					2	0.2%	0	0.0%	0	0.0%	0	0.0%
Materials Engineering					19	1.5%	1	2.0%	19	3.9%	5	6.4%
Civil Engineering					2	0.2%	0	0.0%	1	0.2%	0	0.0%
Environmental	1	1.2%	0	0	1	0.1%	0	0.0%	0	0.0%	0	0.0%

Table F-30 Summary of Statistics of Those Rated 9 or 10 in STARTURN												
	2000				1999				1998			
	Total		Separations		Total		Separations		Total		Separations	
Demographic Group	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Engineering												
Mechanical Engineering	6	7.3%	0	0	74	5.7%	2	4.0%	25	5.1%	3	3.8%
Nuclear Engineering	1	1.2%	0	0					1	0.2%	0	0.0%
Electrical Engineering	1	1.2%	0	0	8	0.6%	1	2.0%	4	0.8%	0	0.0%
Computer Engineering					143	10.9%	3	6.0%	12	2.5%	2	2.6%
Electronics Engineering	17	20.7%	2	100%	447	34.2%	20	40.0%	170	34.8%	23	29.5%
Electronics Technician					3	0.2%	0	0.0%	0	0.0%	0	0.0%
Biomedical Engineering	1	1.2%	0	0	3	0.2%	0	0.0%	3	0.6%	0	0.0%
Aerospace Engineering	3	3.7%	0	0	207	15.8%	14	28.0%	110	22.5%	15	19.2%
Ceramic Engineering									1	0.2%	0	0.0%
Chemical Engineering	1	1.2%	0	0	7	0.5%	0	0.0%	5	1.0%	0	0.0%
Industrial Engineering					2	0.2%	0	0.0%	1	0.2%	0	0.0%
General Arts & Inform.									1	0.2%	0	0.0%
General Physical Science	5	6.1%	0	0	25	1.9%	0	0.0%	22	4.5%	8	10.3%
Physics	24	29.3%	0	0	67	5.1%	1	2.0%	31	6.3%	8	10.3%
Chemistry	7	8.5%	0	0	20	1.5%	1	2.0%	12	2.5%	2	2.6%
Metallurgy					2	0.2%	0	0.0%	1	0.2%	0	0.0%
Meteorology					4	0.3%	0	0.0%	1	0.2%	0	0.0%
Cartography									1	0.2%	0	0.0%
Operations Research	1	1.2%	0	0	20	1.5%	2	4.0%	2	0.4%	1	1.3%
Mathematics					11	0.8%	1	2.0%	3	0.6%	0	0.0%
Mathematical Statistician					5	0.4%	1	2.0%	0	0.0%	0	0.0%
Computer Science	1	1.2%	0	0	28	2.1%	1	2.0%	3	0.6%	1	1.3%
Total	82		2		1308		50		489		78	
Age Group												
20-29	4	4.9%	0	2	33	2.5%	2	3.8%	33	2.5%	2	3.8%
30-39	30	36.6%	2	100%	490	37.4%	18	34.6%	490	37.4%	18	34.6%
40-49	27	32.9%	0	0	431	32.9%	5	9.6%	431	32.9%	5	9.6%
50-59	19	23.2%	0	0	283	21.6%	13	25.0%	283	21.6%	13	25.0%
60-69	2	2.4%	0	0	69	5.3%	14	26.9%	69	5.3%	14	26.9%
70 and above	0	0.0%	0	0	3	0.2%	0	0.0%	3	0.2%	0	0.0%
Total	82		2		1309		52		1309		52	

Appendix G

Table G-1 Lawler's Criteria for Effective Pay-for-Performance Systems			
	Navy Demo	**NIST Demo**	**DoD S&T Lab Demo: Wave 1**
1. Significant rewards can be given and tied to performance	Yes	Yes	Yes
2. Information is communicated to employees about how rewards are given	Yes	Yes	Yes
3. Supervisors are willing to explain and support the reward system	Yes	Yes	No
4. Rewards can vary widely, depending on performance	Yes	Yes	Yes
5. Meaningful performance appraisal sessions can take place	Yes	Yes	No
6 Performance can be objectively and inclusively measured	Yes	Partially	No
7. High levels of trust exist or can be developed between supervisors and subordinates	No	Yes	Yes
Total Number of Criteria Met	6	6	4

Note. For items 2, 3, 5, 6, 7 “yes” means agreement of 66 percent or more based on employee surveys.

Table G-2 Rating Distributions for AFRL 1996 – 2000*			
Year	**Rail Scores**	**N**	**%**
1997	A	89	4%
	B	421	17%
	C	1174	47%
	D	763	31%
	Total	2447	100%
1998	A	40	1%
	B	372	15%
	C	1376	55%
	D	700	28%
	Total	2488	100%
1999	A	19	0.80%
	B	289	12%
	C	1399	59%
	D	655	28%
	Total	2362	100%
2000	A	8	0.34%
	B	260	11%
	C	1510	65%
	D	535	23%
	Total	2313	100%

*Areas are as follows:

A: Delta-OCS of -.31 and beyond (over compensated)
B: Delta-OCS of -.01 to -.30 (within range)
C: Delta-OCS of 0 to .30 (within range)
D: Delta-OCS of .30 and beyond (under compensated)

OCS=Overall Contribution Score

Table G-2 AMRDEC Rating Distributions for 1996-2000			
Year	**Rating***	**N**	**%**
1996	Outstanding	1868	78%
	Exceeds Fully Successful	428	18%
	Fully Successful	104	4%
	Below Fully Successful	4	0%
	Total	2404	100%
1997	Outstanding	1301	81%
	Exceeds Fully Successful	250	16%
	Fully Successful	52	3%
	Total	1603	100%
1998	Outstanding	1640	74%
	Exceeds Fully Successful	494	22%
	Fully Successful	70	3%
	Below Fully Successful	1	0%
	Unacceptable	5	0%
	Total	2210	100%
1999	A	1396	71%
	B	500	25%
	C	67	3%
	U	5	0%
	Total	1968	100%
2000	A	1536	80%
	B	331	17%
	C	44	2%
	U	2	0%
	Total	1913	100%

* For Pre-demonstration years the general government-wide labels are used .

Table G-2 ARL Rating Distributions for 1996-2000			
Year	**Rating***	**N**	**%**
1996	Outstanding	817	53%
	Exceeds Fully Successful	547	35%
	Fully Successful	176	11%
	Below Fully Successful	7	0%
	Unacceptable	6	0%
	Total	1553	100%
1997	Outstanding	1199	56%
	Exceeds Fully Successful	695	33%
	Fully Successful	232	11%
	Below Fully Successful	9	0%
	Unacceptable	3	0%
	Total	2138	100%
1998	Outstanding	655	59%
	Exceeds Fully Successful	370	33%
	Fully Successful	87	8%
	Below Fully Successful	3	0%
	Unacceptable	3	0%
	Total	1118	100%
1999	A	736	36%
	B	1042	51%
	C	253	12%
	U	2	0%
		1	0%
	Total	2034	100%
2000	A	571	30%
	B	1089	58%
	C	223	12%
	Total	1883	100%

* For Pre-demonstration years the general government-wide labels are used.

Table G-2 MRMC Rating Distributions for 1996-2000			
Year	**Rating***	**N**	**%**
1996	Outstanding	737	79%
	Exceeds Fully Successful	146	16%
	Fully Successful	48	5%
	Below Fully Successful	1	0%
	Unacceptable	2	0%
	Total	934	100%
1997	Outstanding	761	81%
	Exceeds Fully Successful	142	15%
	Fully Successful	37	4%
	Below Fully Successful	3	0%
	Unacceptable	1	0%
	Total	944	100%
1998	Outstanding	488	84%
	Exceeds Fully Successful	66	11%
	Fully Successful	23	4%
	Below Fully Successful	6	1%
	Total	583	100%
1999	A	385	71%
	B	130	24%
	C	30	5%
	F	1	0%
	Total	546	100%
2000	A	378	61%
	B	215	34%
	C	31	5%
	Total	624	100%

* For Pre-demonstration years the general government-wide labels are used.

Table G-2 NSWC Combined Rating Distributions for 1996-2000			
Year	**Rating***	**N**	**%**
1996	Outstanding	4220	30%
	Exceeds Fully Successful	9102	64%
	Fully Successful	823	6%
	Below Fully Successful	14	0%
	Unacceptable	5	0%
	Total	14164	100%
1997	Outstanding	4436	32%
	Exceeds Fully Successful	8725	63%
	Fully Successful	678	5%
	Below Fully Successful	23	0%
	Unacceptable	7	0%
	Total	13869	100%
1998	Outstanding	2757	22%
	Exceeds Fully Successful	4402	35%
	Fully Successful	5326	43%
	Below Fully Successful	9	0%
	Unacceptable	2	0%
	Total	12496	100%
1999**	Two Levels Above Successful	1203	14%
	One Level Above Successful	2075	25%
	Acceptable	5166	61%
	Unacceptable	4	0%
	Total	8448	100%
2000**	Two Levels Above Successful	261	3%
	One Level Above Successful	46	1%
	Fully Successful	8288	96%
	Total	8595	100%

* For Pre-demonstration years the general government-wide labels are used.
**Data from 1999-2000 contains data from implemented and pre-implementation labs, exact labels cannot be determined.

Table G-2 ERDC Rating Distributions for 1996-2000			
Year	**Rating***	**N**	**%**
1996	Outstanding	1370	60%
	Exceeds Fully Successful	738	32%
	Fully Successful	173	8%
	Below Fully Successful	5	0%
	Total	2286	100%
1997	Outstanding	1298	66%
	Exceeds Fully Successful	558	28%
	Fully Successful	117	6%
	Below Fully Successful	3	0%
	Total	1976	100%
1998	Outstanding	1123	66%
	Exceeds Fully Successful	490	29%
	Fully Successful	70	4%
	Below Fully Successful	5	0%
	Unacceptable	1	0%
	Total	1689	100%
1999	Outstanding	107	10%
	Exceeds Fully Successful	699	62%
	Fully Successful	322	28%
	Below Fully Successful	4	.35%
	Total	1132	100%
2000**	Outstanding	81	6%
	Exceeds Fully Successful	1080	75%
	Fully Successful	275	19%
	Below Fully Successful	4	.27%
	Total	1440	100%

* For Pre-demonstration years the general government-wide labels are used.
** Updated data provided from demo site.

Table G-2 NRL Rating Distributions for 1996-2000			
Year	**Rating***	**N**	**%**
1996	Outstanding	1228	43%
	Exceeds Fully Successful	1311	46%
	Fully Successful	317	11%
	Below Fully Successful	11	0%
	Unacceptable	1	0%
	Total	2868	100%
1997	Outstanding	1203	45%
	Exceeds Fully Successful	1210	45%
	Fully Successful	253	9%
	Below Fully Successful	5	0%
	Unacceptable	1	0%
	Total	2672	100%
1998	Outstanding	1161	47%
	Exceeds Fully Successful	1090	44%
	Fully Successful	219	9%
	Below Fully Successful	8	0%
	Total	2478	100%
1999	Acceptable	2674	100%
	Unacceptable	3	0%
	Total	2677	100%
2000	Acceptable	2475	100%
	Unacceptable	1	0%
	Total	2476	100%

* For Pre-demonstration years the general government-wide labels are used.

Table G-2 NUWC Newport Rating Distributions for 1996-2000			
Year	**Rating***	**N**	**%**
1996	Outstanding	1145	40%
	Exceeds Fully Successful	1525	53%
	Fully Successful	218	8%
	Below Fully Successful	3	0%
	Total	2891	100%
1997	Outstanding	1232	45%
	Exceeds Fully Successful	1276	47%
	Fully Successful	201	7%
	Below Fully Successful	3	0%
	Total	2712	100%
1998	Outstanding	1277	48%
	Exceeds Fully Successful	1224	46%
	Fully Successful	184	7%
	Below Fully Successful	2	0%
	Total	2687	100%
1999	Outstanding	1460	56%
	Exceeds Fully Successful	1000	39%
	Fully Successful	129	5%
	Below Fully Successful	4	0%
	Unacceptable	1	0%
	Total	2594	100%
2000	2 Levels Above Acceptable	29	2%
	1 Level Above Acceptable	1	0%
	Fully Acceptable	1864	98%
	Total	1894	100%

* For Pre-demonstration years the general government-wide labels are used.

Table G-2 NUWC Keyport Rating Distributions for 1996-2000			
Year	**Rating***	**N**	**%**
1996	Outstanding	661	50%
	Exceeds Fully Successful	562	42%
	Fully Successful	98	7%
	Below Fully Successful	9	1%
	Unacceptable	2	0%
	Total	1332	100
1997	Outstanding	465	55%
	Exceeds Fully Successful	330	39%
	Fully Successful	53	6%
	Below Fully Successful	3	0%
	Unacceptable	1	0%
	Total	852	100%
1998	Outstanding	426	45%
	Exceeds Fully Successful	468	49%
	Fully Successful	53	6%
	Below Fully Successful	6	1%
	Unacceptable	2	0%
	Total	955	100%
1999	Outstanding	505	55%
	Exceeds Fully Successful	337	36%
	Fully Successful	81	9%
	Below Fully Successful	2	0%
	Total	925	100%
2000	2 Levels Above Acceptable	2	0%
	Acceptable	660	100%
	Total	662	100%

* For Pre-demonstration years the general government-wide labels are used.

Table G-3 Item 38. I understand the performance appraisal system being used in this organization.									
Lab Group	**Year**	**Disagree**		**Neither**		**Agree**		**Total**	
		N	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Wave 1	1996	1388	11%	1813	14%	9159	74%	12360	100%
	1998	1136	16%	1124	15%	4829	68%	7089	100%
	1999	918	14%	939	14%	4672	71%	6529	100%
	2001	482	11%	479	11%	3197	76%	4158	100%
Wave 2	1996	345	10%	488	14%	2532	75%	3365	100%
	1998	146	8%	200	12%	1299	78%	1645	100%
	1999	96	14%	115	17%	447	67%	658	100%
	2001	212	12%	242	14%	1188	72%	1642	100%
Non-Implemented	1996	527	10%	790	15%	3699	73%	5016	100%
	1998	379	7%	601	12%	3953	80%	4933	100%
	1999	320	8%	496	13%	2898	78%	3714	100%
	2001	275	7%	469	13%	2862	79%	3606	100%
"China Lake"	1996	120	6%	195	11%	1447	82%	1762	100%
	1998	159	7%	226	11%	1653	81%	2038	100%

Table G-4 Item 39. The factors or performance elements on which I am rated take into account the most important parts of my job.									
Lab Group	**Year**	**Disagree**		**Neither**		**Agree**		**Total**	
		N	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Wave 1	1996	2463	19%	2129	17%	7744	62%	12336	100
	1998	1598	22%	1470	20%	4001	56%	7069	100
	1999	1528	23%	1334	20%	3639	55%	6501	100
	2001	908	21%	793	19%	2454	59%	4155	100
Wave 2	1996	603	17%	521	15%	2235	66%	3359	100
	1998	272	16%	289	17%	1083	65%	1644	100
	1999	108	16%	176	26%	371	56%	655	100
	2001	402	24%	355	21%	885	53%	1642	100
Non-Implemented	1996	800	15%	831	16%	3387	67%	5018	100
	1998	757	15%	853	17%	3316	67%	4926	100
	1999	572	15%	698	18%	2441	65%	3711	100
	2001	584	16%	730	20%	2288	63%	3602	100
"China Lake"	1996	308	17%	299	16%	1152	65%	1759	100
	1998	379	18%	359	17%	1295	63%	2033	100

Table G-5 Item 133. My supervisor gives me adequate information on how well I am performing.									
Lab Group	**Year**	**Disagree**		**Neither**		**Agree**		**Total**	
		N	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Wave 1	1996	3192	26%	2838	23%	6169	50%	12199	100%
	1998	1840	26%	1720	24%	3514	49%	7074	100%
	1999	1718	26%	1552	23%	3243	49%	6513	100%
	2001	937	22%	885	21%	2330	56%	4152	100%
Wave 2	1996	822	24%	697	21%	1795	54%	3314	100%
	1998	347	21%	340	20%	954	58%	1641	100%
	1999	139	21%	131	19%	389	59%	659	100%
	2001	418	25%	347	21%	877	53%	1642	100%
Non-Implemented	1996	1228	24%	1199	24%	2537	51%	4964	100%
	1998	1090	22%	1142	23%	2673	54%	4905	100%
	1999	806	21%	909	24%	1999	53%	3714	100%
	2001	796	22%	743	20%	2054	57%	3593	100%
"China Lake"	1996	417	23%	422	24%	901	51%	1740	100%
	1998	478	23%	462	22%	1093	53%	2033	100%

Table G-6 Item 131. I have trust and confidence in my supervisor.									
Lab Group	**Year**	**Disagree**		**Neither**		**Agree**		**Total**	
		N	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Wave 1	1996	2622	21%	2352	19%	7228	59%	12202	100%
	1998	1442	20%	1477	21%	4145	58%	7064	100%
	1999	1362	21%	1255	19%	3883	59%	6500	100%
	2001	684	16%	711	17%	2757	66%	4152	100%
Wave 2	1996	666	20%	667	20%	1982	59%	3315	100%
	1998	322	19%	323	19%	996	60%	1641	100%
	1999	115	17%	126	19%	415	63%	656	100%
	2001	294	17%	295	18%	1052	64%	1641	100%
Non-Implemented	1996	1036	20%	1037	21%	2892	58%	4965	100%
	1998	973	19%	1031	21%	2891	59%	4895	100%
	1999	690	18%	789	21%	2232	60%	3711	100%
	2001	658	18%	657	18%	2273	63%	3588	100%
"China Lake"	1996	338	19%	350	20%	1051	60%	1739	100%
	1998	409	20%	395	19%	1222	60%	2026	100%

Table G-6A Wave by Minority Status Item 131. I have trust and confidence in my supervisor.									
Lab Group	**Year**	**Disagree**		**Neither**		**Agree**		**Total**	
		N	**%**	**N**	**%**	**N**	**%**	**N**	%
Wave 1, 2	1996	465	22.9%	493	24.3%	1,073	52.8%	2,031	100%
Minority	2001	164	22.9%	151	21.1%	401	56.0%	716	100%
Wave 1, 2	1996	2,753	20.9%	2,473	16.7%	7,969	60.4%	13,195	100%
White	2001	794	15.9%	845	16.9%	3,360	67.2%	4,999	100%
Minority	1996	143	21.2%	146	21.7%	385	57.1%	674	100%
Non- Demo	2001	61	19.9%	65	21.2%	181	59.0%	307	100%
White	1996	757	20.5%	754	20.4%	2,180	59.1%	3,691	100%
Non-Demo	2001	329	16.9%	354	18.2%	1,267	65.0%	1,950	100%

Table G-7 Item 32. My performance rating represents a fair and accurate picture of my actual performance.									
Lab Group	**Year**	**Disagree**		**Neither**		**Agree**		**Total**	
		N	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Wave 1	1996	2883	23%	1990	16%	7469	61%	12342	100%
	1998	1662	24%	1122	16%	4283	61%	7067	100%
	1999	1739	27%	1148	18%	3616	56%	6503	100%
	2001	973	23%	721	17%	2466	59%	4160	100%
Wave 2	1996	754	23%	469	14%	2127	64%	3350	100%
	1998	307	19%	239	15%	1098	67%	1644	100%
	1999	106	16%	112	17%	440	67%	658	100%
	2001	409	25%	337	21%	900	55%	1646	100%
Non- Implemented	1996	865	17%	743	15%	3408	68%	5016	100%
	1998	750	15%	612	12%	3569	72%	4931	100%
	1999	587	16%	578	16%	2557	69%	3722	100%
	2001	551	15%	586	16%	2472	69%	3609	100%
“China Lake”	1996	464	26%	296	17%	1000	57%	1760	100%
	1998	500	25%	314	15%	1219	60%	2033	100%

Table G-7A Performance Rating by Minority Status Item 32. My performance rating represents a fair and accurate picture of my actual performance.									
Lab Group	**Year**	**Disagree**		**Neither**		**Agree**		**Total**	
		N	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Demo Minority	1996	575	27.9%	333	16.2%	1,152	55.9%	2,060	100%
	2001	209	29.0%	160	22.2%	352	48.8%	721	100%
Demo White	1996	2,987	22.4%	2,069	15.5%	8,279	62.1%	13,335	100%
	2001	1,147	22.9%	881	17.6%	2,979	59.5%	5,007	100%
Non- Demo Minority	1996	123	18.1%	125	18.4%	432	63.5%	680	100%
	2001	45	14.4%	49	15.7%	218	69.9%	312	100%
Non-Demo White	1996	585	15.7%	515	13.8%	2,631	70.5%	3,731	100%
	2001	221	11.3%	271	13.8%	1,465	74.9%	1,957	100%

Table G-8 Item 41. The weights assigned to the factors or performance elements on which I am rated are fair.									
Lab Group	**Year**	**Disagree**		**Neither**		**Agree**		**Total**	
		N	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Wave 1	1998	1597	22%	2271	32%	3122	44%	6990	100%
	1999	1561	24%	2014	315%	2873	44%	6448	100%
	2001	885	21%	1116	26%	2138	51%	4139	100%
Wave 2	1998	266	16%	504	31%	845	52%	1615	100%
	1999	109	17%	263	41%	264	41%	636	100%
	2001	375	22%	524	32%	738	45%	1637	100%
Non-Implemented	1998	757	15%	1411	29%	2664	55%	4832	100%
	1999	553	15%	1196	32%	1893	51%	3642	100%
	2001	505	14%	1196	33%	1871	52%	3572	100%
"China Lake"	1998	423	21%	588	29%	993	49%	2004	100%

Table G-9 Item 33. There are adequate procedures to get my performance rating reconsidered, if necessary.									
Lab Group	**Year**	**Disagree**		**Neither**		**Agree**		**Total**	
		N	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Wave 1	1996	3074	24%	5029	40%	4214	34%	12317	100%
	1998	1658	23%	2937	41%	2458	34%	7053	100%
	1999	1641	25%	2508	38%	2343	36%	6492	100%
	2001	997	24%	1604	38%	1549	37%	4150	100%
Wave 2	1996	747	22%	1485	44%	1115	33%	3347	100%
	1998	348	21%	664	40%	624	38%	1636	100%
	1999	122	18%	271	41%	263	40%	656	100%
	2001	379	23%	657	40%	606	36%	1642	100%
Non-Implemented	1996	1110	22%	1972	39%	1930	38%	5012	100%
	1998	884	17%	1880	38%	2155	43%	4919	100%
	1999	695	18%	1523	41%	1492	40%	3710	100%
	2001	596	16%	1463	40%	1540	42%	3599	100%
"China Lake"	1996	257	14%	458	26%	1041	59%	1756	100%
	1998	314	15%	512	25%	1199	59%	2025	100%

Table G-10 Item 45. Pay raises depend on how well I perform.									
Lab Group	**Year**	**Disagree**		**Neither**		**Agree**		**Total**	
		N	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Wave 1	1996	6248	51%	2765	23%	3247	27%	12260	100%
	1998	2214	31%	1506	21%	3362	48%	7082	100%
	1999	1986	30%	1252	19%	3290	50%	6528	100%
	2001	1083	26%	707	17%	2360	57%	4150	100%
Wave 2	1996	1451	43%	741	22%	1150	34%	3342	100%
	1998	782	48%	350	21%	511	31%	1643	100%
	1999	222	34%	161	24%	275	42%	658	100%
	2001	460	28%	300	18%	887	54%	1647	100%
Non-Implemented	1996	2660	53%	1157	23%	1172	24%	4989	100%
	1998	2307	47%	1104	22%	1508	31%	4919	100%
	1999	1706	46%	928	25%	1089	29%	3723	100%
	2001	1528	42%	822	23%	1250	35%	3600	100%
"China Lake"	1996	462	27%	318	18%	966	55%	1746	100%
	1998	561	28%	318	16%	1155	57%	2034	100%

Table G-11 Item 44. Pay raises depend on my contribution to the accomplishment of my organization's mission.									
Lab Group	**Year**	**Disagree**		**Neither**		**Agree**		**Total**	
		N	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Wave 1	1996	6382	52%	3205	26%	2650	22%	1227	100%
	1998	2369	34%	1693	24%	3016	43%	7078	100%
	1999	2096	32%	1565	24%	2863	44%	6524	100%
	2001	1139	27%	880	21%	2135	51%	4154	100%
Wave 2	1996	1507	45%	931	28%	896	27%	3334	100%
	1998	838	51%	400	24%	401	25%	1639	100%
	1999	236	36%	182	28%	239	36%	657	100%
	2001	467	28%	357	22%	822	50%	1646	100%
Non-Implemented	1996	2758	55%	1325	27%	896	18%	4979	100%
	1998	2504	51%	1183	24%	1229	25%	4916	100%
	1999	1860	50%	992	27%	871	23%	3723	100%
	2001	1656	46%	908	25%	1034	29%	3598	100%
"China Lake"	1996	485	28%	442	25%	815	47%	1742	100%
	1998	613	30%	448	22%	972	48%	2033	100%

Table G-12 AFRL Separations by Rail Position 1997 - 2000			
Year	**Rating**	**N**	**%***
1998	A	22	23%
	B	34	8%
	C	79	6%
	D	32	4%
Total		167	100%
1999	A	10	23%
	B	39	10%
	C	83	6%
	D	44	6%
Total		176	100%
2000	A	10	37%
	B	79	22%
	C	112	7%
	D	29	4%
Total		230	100%
2001	A	6	55%
	B	46	16%
	C	85	5%
	D	16	3%
Total		153	100%

* Percentages are calculated as percent of total in rail category

Areas are as follows:

A: Delta-OCS of -.31 and beyond (over compensated)
B: Delta-OCS of -.01 to -.30 (within range)
C: Delta-OCS of 0 to .30 (within range)
D: Delta-OCS of .30 and beyond (under compensated)

OCS=Overall Contribution Score

Table G-12 AMRDEC Turnover by Performance Rating 1996 - 2000			
Year	**Rating***	**N**	**%**
1996	Outstanding	17	65%
	Exceeds Fully Successful	5	19%
	Fully Successful	4	15%
Total		26	100%
1997	Outstanding	54	77%
	Exceeds Fully Successful	11	16%
	Fully Successful	4	6%
	Below Fully Successful	1	1%
Total		70	100%
1998	Outstanding	23	61%
	Exceeds Fully Successful	12	32%
	Fully Successful	3	8%
Total		38	100%
1999	A	78	45%
	B	73	42%
	C	20	12%
Total		172	100%
2000	A	18	58%
	B	13	42%
Total		31	100%

* For Pre-demonstration years the general government-wide labels are used.

Table G-12 ARL Turnover by Performance Rating 1996 - 2000			
Year	**Rating***	**N**	**%**
1996	Outstanding	13	56%
	Exceeds Fully Successful	5	22%
	Fully Successful	5	22%
Total		23	100%
1997	Outstanding	38	38%
	Exceeds Fully Successful	32	32%
	Fully Successful	27	27%
	Below Fully Successful	2	2%
	Unacceptable	2	2%
Total		101	100%
1998	Outstanding	10	67%
	Exceeds Fully Successful	2	13%
	Fully Successful	3	20%
Total		15	100%
1999	A	13	33%
	B	18	46%
	C	8	21%
Total		39	100%
2000	A	15	29%
	B	24	46%
	C	12	23%
	U	1	2%
Total		52	100%

* For Pre-demonstration years the general government-wide labels are used.

Table G-12 MRMC Turnover by Performance Rating 1996 - 2000			
Year	**Rating***	**N**	**%**
1996	Outstanding	21	75%
	Exceeds Fully Successful	4	14%
	Fully Successful	2	7%
	Below Fully Successful	1	4%
Total		28	100%
1997	Outstanding	15	75%
	Exceeds Fully Successful	2	10%
	Fully Successful	3	15%
Total		20	100%
1998	Outstanding	15	75%
	Exceeds Fully Successful	2	10%
	Fully Successful	3	15%
Total		20	100%
1999	A	18	75%
	B	4	17%
	C	1	4%
	F	1	4%
Total		24	100%
2000	A	7	37%
	B	8	42%
	C	4	21%
Total		19	100%

* For Pre-demonstration years the general government-wide labels are used

Table G-12 NSWC (Combined) Turnover by Performance Rating 1996 - 2000			
Year	**Rating***	**N**	**%**
1996	Outstanding	229	14%
	Exceeds Fully Successful	1192	75%
	Fully Successful	165	10%
	Below Fully Successful	5	.3%
	Unacceptable	1	.1%
Total		1592	100%
1997	Outstanding	286	25%
	Exceeds Fully Successful	704	62%
	Fully Successful	146	13%
	Below Fully Successful	6	.5%
	Unacceptable	2	.2%
Total		1144	100%
1998	Outstanding	196	23%
	Exceeds Fully Successful	450	54%
	Fully Successful	184	22%
	Below Fully Successful	5	.6%
	Unacceptable	3	.4%
Total		838	100%
1999	Two Above Acceptable	97	16%
	One Above Acceptable	197	32%
	Acceptable	324	52%
Total		619	100%
2000	Two Above Acceptable	69	11%
	One Above Acceptable	75	12%
	Acceptable	477	77%
	Unacceptable	1	0.2%
		1	0.2%
Total		623	100%

* For Pre-demonstration years the general government-wide labels are used.

Table G-12 NSWC (Dahlgren, Indian Head, Carderock) Turnover by Performance Rating 1996 - 2000			
Year	**Rating***	**N**	**%**
1996	Outstanding	185	24%
	Exceeds Fully Successful	463	60%
	Fully Successful	123	16%
	Below Fully Successful	4	.5%
	Unacceptable	1	.1%
Total		776	100%
1997	Outstanding	218	29%
	Exceeds Fully Successful	428	56%
	Fully Successful	110	14%
	Below Fully Successful	5	.7%
	Unacceptable	1	.1%
Total		762	100%
1998	Outstanding	146	26%
	Exceeds Fully Successful	252	44%
	Fully Successful	166	29%
	Below Fully Successful	4	.7%
	Unacceptable	3	.5%
Total		571	100%
1999	Two Above Acceptable	59	12%
	One Above Acceptable	132	28%
	Acceptable	283	60%
Total		474	100%
2000	Two Above Acceptable	42	9%
	One Above Acceptable	49	11%
	Acceptable	375	80%
	Unacceptable	1	0.2%
Total		467	100%

* For Pre-demonstration years the general government-wide labels are used.

Table G-12 NSWC (Crane, Pt. Hueneme, Corona) Turnover by Performance Rating 1996 - 2000			
Year	**Rating***	N	**%**
1996	Outstanding	44	5%
	Exceeds Fully Successful	729	89%
	Fully Successful	42	5%
	Below Fully Successful	1	.1%
Total		816	100%
1997	Outstanding	68	18%
	Exceeds Fully Successful	276	72%
	Fully Successful	36	9%
	Below Fully Successful	1	.3%
	Unacceptable	1	.3%
Total		382	100%
1998	Outstanding	50	19%
	Exceeds Fully Successful	198	74%
	Fully Successful	18	7%
	Below Fully Successful	1	.4%
Total		267	100%
1999	Two Levels Above Acceptable	38	26%
	One Level Above Acceptable	65	45%
	Acceptable	41	28%
	Unacceptable	1	0.7%
Total		145	100%
2000	Two Levels Above Acceptable	27	17%
	One Level Above Acceptable	26	17%
	Acceptable	102	65%
	Unacceptable	1	0.6%
Total		156	100%

* For Pre-demonstration years the general government-wide labels are used.

Table G-12 ERDC Turnover by Performance Rating 1996 - 2000			
Year	**Rating***	**N**	**%**
1996	Outstanding	36	53%
	Exceeds Fully Successful	20	29%
	Fully Successful	11	16%
	Below Fully Acceptable	1	2%
Total		68	100%
1997	Outstanding	44	57%
	Exceeds Fully Successful	27	35%
	Fully Successful	5	7%
	Below Fully Successful	1	1%
Total		77	100%
1998	Outstanding	35	53%
	Exceeds Fully Successful	22	33%
	Fully Successful	9	14%
Total		66	100%
1999**	Outstanding	16	50%
	Exceeds Fully Successful	12	38%
	Fully Successful	4	13%
Total		32	100%
2000**	Outstanding	8	19%
	Exceeds Fully Successful	16	37%
	Fully Successful	19	44%
	Unsatisfactory		0.0%
Total		43	100%

*For Pre-demonstration years, the general government-wide labels are used.
**Updated data provided by ERDC.

Table G-12 NRL Turnover by Performance Rating 1996 - 2000			
Year	**Rating***	**N**	**%**
1996	Outstanding	48	21%
	Exceeds Fully Successful	115	50%
	Fully Successful	64	28%
	Below Fully Successful	3	1%
	Unacceptable	1	.4%
Total		231	100%
1997	Outstanding	70	28%
	Exceeds Fully Successful	118	47%
	Fully Successful	62	25%
	Below Fully Successful	2	.8%
	Unacceptable	1	.4%
Total		252	100%
1998	Outstanding	93	31%
	Exceeds Fully Successful	132	44%
	Fully Successful	70	24%
	Below Fully Successful	3	1%
Total		298	100%
1999	Two Levels Above Acceptable	12	21%
	One Level Above Acceptable	27	47%
	Acceptable	19	33%
Total		58	100%
2000	Acceptable	337	99%
	Unacceptable	1	0.3%
Total		338	100%

* For Pre-demonstration years the general government-wide labels are used.

Table G-12 NUWC (Newport) Turnover by Performance Rating 1996 - 2000			
Year	**Rating***	**N**	**%**
1996	Outstanding	119	24%
	Exceeds Fully Successful	280	56%
	Fully Successful	93	19%
	Below Fully Successful	6	1%
Total		498	100%
1997	Outstanding	81	25%
	Exceeds Fully Successful	194	60%
	Fully Successful	45	14%
	Below Fully Successful	3	.9%
Total		323	100%
1998	Outstanding	57	35%
	Exceeds Fully Successful	81	50%
	Fully Successful	20	12%
	Below Fully Successful	4	3%
Total		162	100%
1999	Two Levels Above Acceptable	69	32%
	One Level Above Acceptable	110	51%
	Acceptable	37	17%
	Unacceptable	1	.5%
Total		217	100%
2000	Two Above Acceptable	31	23%
	One Level Above Acceptable	30	22%
	Acceptable	77	56%
Total		138	100%

* For Pre-demonstration years the general government-wide labels are used.

Table G-12 NUWC (Keyport) Turnover by Performance Rating 1996 - 2000			
Year	**Rating***	**N**	**%**
1996	Outstanding	37	36%
	Exceeds Fully Successful	53	51%
	Fully Successful	10	10%
	Below Fully Successful	4	4%
Total		104	100%
1997	Outstanding	176	44%
	Exceeds Fully Successful	179	44%
	Fully Successful	43	11%
	Below Fully Successful	5	1%
	Unacceptable	1	.2%
Total		404	100%
1998	Outstanding	32	47%
	Exceeds Fully Successful	31	46%
	Fully Successful	5	7%
Total		68	100%
1999	None reported		
2000	None reported		

* For Pre-demonstration years the general government-wide labels are used.

Appendix H

STARTURN:
A METHODOLOGY FOR MEASURING
LOSSES AMONG THE MOST MISSION-CRITICAL EMPLOYEES

The Problem

Managers throughout Federal organizations that employ highly specialized technical, scientific, and other professional employees continually complain that they cannot keep their most valuable employees, their "stars." Remarkably, while the complaints are consistent and anecdotes are common, available objective data have never confirmed that a problem actually exists.

STARTURN and Criticality to Mission

The U. S. Office of Personnel Management's Personnel Resources and Development Center (PRDC/OPM) developed STARTURN and is using it in evaluation research to document the degree to which such loss of critical employees is a problem. STARTURN measures the criticality of an individual's contribution to accomplishment of the organization's mission. Criticality encompasses technical competency, importance to mission, and ease/difficulty of replacing the individual. Criticality to mission is **not** performance appraisal. It is possible for an employee to receive an outstanding performance rating, yet score very low on criticality because the employee performs a job well, but the job is only peripherally related to mission accomplishment.

Data Confidentiality and Use

The STARTURN score of criticality to mission is stored in a confidential research database and is used for statistical analyses. It does not have any effect on the individual's pay, promotion potential, or job security. The data are seen by only the researchers analyzing the data. **To ensure the confidentiality of the information, supervisors should not retain copies of the ratings.** A special provision under law [5 U.S.C. 552a(k) (4)] for this type of research rating, enables PRDC/OPM to collect this data and ensures that the data cannot become public information or be shared with anyone. The criticality scores will be analyzed with data on employee turnover across years, and only aggregated results will be reported.

Data Collection Methodology

The assessments are to be done by first-line supervisors, those who have the best opportunity to observe the criticality of the employee to mission accomplishment. These first-line supervisors are the same people who prepare the annual performance rating. First-line supervisors will make an annual criticality assessment of each scientist's or engineer's criticality to mission accomplishment using the form on the back of this page. For simplicity and ease of use, the definition of criticality is given at the top of the form and a rating is on a 10-point scale with benchmarks at 1, 5, and 10.

Please complete the form on the back of this page for each of your scientists and engineers and return your completed forms in an office envelope to Dr. Jacqueline Caldwell using the attached mailing label. If you have questions, contact [*name, PRDC/OPM]*; e-mail: fax: (202) 606-1399]. **Thank you.**

STARTURN Rating Form

Complete this form for each of your scientists and engineers by responding to items A, B, C, and D. In assessing each employee's criticality to mission accomplishment, use the following definition of criticality.

Definition: Criticality refers to the ease or difficulty of replacing an employee with specialized expertise in science and engineering necessary for mission accomplishment. Criticality may go beyond technical competencies required for the specific job. For example, a highly critical individual may be particularly creative, innovative, or have unique problem solving ability.

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A. **Employee's social security number** ___ ___ ___ ___ ___ ___ ___ ___ ___ ***(mandatory)***

B. **STARTURN Criticality Rating** (Indicate the employee's criticality by circling the appropriate number on the following 10-point rating scale.)

1 -- This person is not critical to the mission. If this person were to leave tomorrow, he/she could be easily replaced or would not need to be replaced at all.

2

3

4

5 -- This person is a solid contributor to the mission. If this person were to leave tomorrow, he/she could be replaced in time.

6

7

8

9

10 --This person is extremely critical to the mission. If this person were to leave tomorrow, it would be impossible to find a replacement.

C. **Which type of supervisor are you?** Military G Civilian G.

D. **Supervisor's social security number** ___ ___ ___ ___ ___ ___ ___ ___ ___
(required to verify that your completed forms have been returned)

Appendix I

Table I-1
Regression Results Predicting Support for the Demo

	Step 1	Step 2	Step 3
Climate	-.003	-.016	-.034
Supervision Satisfaction	-.025	-.029	-.033
Performance Management Satisfaction	.559***	.552***	.545***
Labor-Management Relations	.100***	.100***	.099***
Job Satisfaction	--	.041***	.029
Organizational Commitment	--	--	.047
R^2	.355	.357	.358

Note. Entries are standardized regression weights. *** $p < .001$. Climate includes: Communication, Teamwork, Cross-functional Coordination, Customer Orientation, Flexibility, Innovation, Strategic Orientation, and Diversity. Supervision Satisfaction includes: Supervision Satisfaction, Trust in Supervisor, and Performance Communication. Performance Management Satisfaction includes: Advancement Satisfaction, Pay Satisfaction, Internal Pay Equity, Pay-Performance Link, Performance Appraisal Satisfaction, and Rewards and Recognition. Labor Management Relations: same as shown in Table B-8. Job Satisfaction: same as shown in Table B-8. Organizational Commitment: same as shown in Table B-8.

Table I-2 Intercorrelations of Survey Scales and Key Items for 2001 Wave 1 and 2 Demonstration Labs

	1	2	3	4	5	6	7	8	9	10	11	12
1. Demo Support	1.00	0.56	0.51	-0.10	0.33	0.15	0.50	0.52	0.43	0.55	0.37	0.21
2. Advancement Satisfaction	0.56	1.00	0.82	-0.17	0.52	0.30	0.70	0.67	0.63	0.73	0.54	0.32
3. Pay Satisfaction	0.51	0.82	1.00	-0.26	0.56	0.31	0.68	0.66	0.64	0.75	0.52	0.33
4. External Pay Equity†	-0.10	-0.17	-0.26	1.00	-0.17	-0.08	-0.10	-0.11	-0.10	-0.13	-0.08	-0.10
5. Internal Pay Equity†	0.33	0.52	0.56	-0.17	1.00	0.39	0.52	0.46	0.52	0.51	0.38	0.32
6. Negative Performance Consequences	0.15	0.30	0.31	-0.08	0.39	1.00	0.34	0.29	0.37	0.33	0.29	0.28
7. Pay-Performance Link	0.50	0.70	0.68	-0.10	0.52	0.34	1.00	0.69	0.74	0.73	0.59	0.33
8. Performance Appraisal Satisfaction	0.52	0.67	0.66	-0.11	0.46	0.29	0.69	1.00	0.65	0.97	0.65	0.34
9. Rewards and Recognition	0.43	0.63	0.64	-0.10	0.52	0.37	0.74	0.65	1.00	0.69	0.61	0.37
10. Procedural Justice	0.55	0.73	0.75	-0.13	0.51	0.33	0.73	0.97	0.69	1.00	0.66	0.37
11. Performance Communication	0.37	0.54	0.52	-0.08	0.38	0.29	0.59	0.65	0.61	0.66	1.00	0.33
12. Personnel Services Satisfaction	0.21	0.32	0.33	-0.10	0.32	0.28	0.33	0.34	0.37	0.37	0.33	1.00
13. Staffing Fairness	0.31	0.49	0.48	-0.10	0.44	0.34	0.46	0.42	0.48	0.46	0.39	0.31
14. Recruitment Quality	0.25	0.37	0.39	-0.16	0.36	0.32	0.38	0.38	0.42	0.40	0.38	0.33
15. Classification Satisfaction†	0.33	0.42	0.42	-0.13	0.38	0.28	0.40	0.44	0.43	0.46	0.35	0.38
16. Training Adequacy	0.28	0.39	0.36	-0.06	0.30	0.22	0.36	0.43	0.40	0.45	0.42	0.29
17. Red Tape†	0.01**	-0.05	-0.08	0.09	-0.13	-0.23	-0.03**	-0.02**	-0.03*	-0.03*	0.01**	-0.19
18. Supervisor Authority	0.27	0.38	0.38	-0.11	0.37	0.36	0.40	0.41	0.41	0.44	0.33	0.31
19. Communication	0.38	0.55	0.53	-0.09	0.43	0.36	0.56	0.60	0.63	0.64	0.68	0.37
20. Teamwork	0.25	0.39	0.36	0.01**	0.28	0.23	0.38	0.41	0.43	0.43	0.47	0.28
21. Cross-functional Coordination	0.28	0.42	0.41	-0.10	0.39	0.37	0.43	0.46	0.49	0.48	0.48	0.38
22. Customer Orientation	0.22	0.34	0.34	-0.06	0.30	0.28	0.37	0.40	0.40	0.42	0.41	0.32
23. Flexibility†	0.32	0.48	0.48	-0.13	0.40	0.36	0.48	0.50	0.55	0.53	0.48	0.35
24. Innovation	0.32	0.47	0.45	-0.08	0.37	0.32	0.48	0.51	0.54	0.54	0.48	0.34
25. Physical Work Environment	0.19	0.28	0.31	-0.08	0.22	0.21	0.29	0.31	0.33	0.33	0.28	0.29
26. Strategic Orientation	0.31	0.47	0.47	-0.10	0.43	0.38	0.51	0.54	0.54	0.57	0.53	0.40
27. Labor-Management Relations	0.36	0.41	0.42	-0.17	0.35	0.29	0.43	0.44	0.43	0.47	0.38	0.36
28. Diversity	0.30	0.44	0.42	-0.03*	0.30	0.22	0.43	0.43	0.45	0.47	0.43	0.27
29. Supervision Satisfaction	0.30	0.47	0.46	-0.08	0.35	0.33	0.52	0.54	0.57	0.55	0.82	0.34
30. Trust in Supervisor†	0.31	0.46	0.46	-0.05	0.31	0.26	0.49	0.51	0.53	0.52	0.78	0.27
31. Job Satisfaction†	0.30	0.46	0.41	-0.03*	0.26	0.17	0.38	0.43	0.36	0.44	0.44	0.25
32. Intrinsic Motivation	0.21	0.32	0.25	0.09	0.16	0.10	0.28	0.32	0.28	0.33	0.32	0.17
33. Performance Motivation†	0.17	0.23	0.21	0.02**	0.15	0.12	0.23	0.26	0.23	0.27	0.26	0.17
34. Turnover Intention†	-0.27	-0.45	-0.43	0.17	-0.30	-0.22	-0.36	-0.35	-0.38	-0.38	-0.37	-0.26
35. Organizational Commitment	0.37	0.54	0.53	-0.11	0.40	0.33	0.52	0.53	0.53	0.56	0.53	0.34

Note. Correlations significant at .01 level unless otherwise noted. * significant at .05 level. ** not significant. † 1 item scale.

Table I-2 Intercorrelations of Survey Scales and Key Items for 2001 Wave 1 and 2 Demonstration Labs continued

	13	14	15	16	17	18	19	20	21	22	23	24
1. Demo Support	0.31	0.25	0.33	0.28	0.01**	0.27	0.38	0.25	0.28	0.22	0.32	0.32
2. Advancement Satisfaction	0.49	0.37	0.42	0.39	-0.05	0.38	0.55	0.39	0.42	0.34	0.48	0.47
3. Pay Satisfaction	0.48	0.39	0.42	0.36	-0.08	0.38	0.53	0.36	0.41	0.34	0.48	0.45
4. External Pay Equity†	-0.10	-0.16	-0.13	-0.06	0.09	-0.11	-0.09	-0.01**	-0.10	-0.06	-0.13	-0.08
5. Internal Pay Equity†	0.44	0.36	0.38	0.30	-0.13	0.37	0.43	0.28	0.39	0.30	0.40	0.37
6. Negative Performance Consequences	0.34	0.32	0.28	0.22	-0.23	0.36	0.36	0.23	0.37	0.28	0.36	0.32
7. Pay-Performance Link	0.46	0.38	0.40	0.36	-0.03**	0.40	0.56	0.38	0.43	0.37	0.48	0.48
8. Performance Appraisal	0.42	0.38	0.44	0.43	-0.02**	0.41	0.60	0.41	0.46	0.40	0.50	0.51
9. Rewards and Recognition	0.48	0.42	0.43	0.40	-0.03*	0.41	0.63	0.43	0.49	0.40	0.55	0.54
10. Procedural Justice	0.46	0.40	0.46	0.45	-0.03*	0.44	0.64	0.43	0.48	0.42	0.53	0.54
11. Performance Communication	0.39	0.38	0.35	0.42	0.01**	0.33	0.68	0.47	0.48	0.41	0.48	0.48
12. Personnel Services Satisfaction	0.31	0.33	0.38	0.29	-0.19	0.31	0.37	0.28	0.38	0.32	0.35	0.34
13. Staffing Fairness	1.00	0.54	0.38	0.28	-0.08	0.38	0.45	0.32	0.40	0.29	0.44	0.42
14. Recruitment Quality	0.54	1.00	0.34	0.29	-0.10	0.33	0.43	0.34	0.41	0.36	0.39	0.40
15. Classification Satisfaction†	0.38	0.34	1.00	0.34	-0.17	0.63	0.39	0.30	0.32	0.27	0.33	0.32
16. Training Adequacy	0.28	0.29	0.34	1.00	-0.04	0.32	0.46	0.34	0.39	0.36	0.37	0.39
17. Red Tape†	-0.08	-0.10	-0.17	-0.04	1.00	-0.22	-0.03**	-0.00**	-0.10	-0.07	-0.10	-0.04
18. Supervisor Authority	0.38	0.33	0.63	0.32	-0.22	1.00	0.38	0.29	0.34	0.29	0.33	0.37
19. Communication	0.45	0.43	0.39	0.46	-0.03**	0.38	1.00	0.58	0.59	0.47	0.57	0.57
20. Teamwork	0.32	0.34	0.30	0.34	-0.00**	0.29	0.58	1.00	0.56	0.43	0.39	0.44
21. Cross-functional Coordination	0.40	0.41	0.32	0.39	-0.10	0.34	0.59	0.56	1.00	0.54	0.52	0.53
22. Customer Orientation	0.29	0.36	0.27	0.36	-0.07	0.29	0.47	0.43	0.54	1.00	0.44	0.50
23. Flexibility†	0.44	0.39	0.33	0.37	-0.10	0.33	0.57	0.39	0.52	0.44	1.00	0.69
24. Innovation	0.42	0.40	0.32	0.39	-0.04	0.37	0.57	0.44	0.53	0.50	0.69	1.00
25. Physical Work Environment	0.24	0.24	0.26	0.32	-0.05	0.25	0.33	0.31	0.35	0.30	0.29	0.30
26. Strategic Orientation	0.43	0.46	0.38	0.44	-0.08	0.39	0.61	0.49	0.68	0.70	0.58	0.61
27. Labor-Management Relations	0.40	0.39	0.33	0.36	-0.01**	0.36	0.47	0.30	0.43	0.38	0.42	0.42
28. Diversity	0.38	0.30	0.32	0.34	0.03**	0.29	0.46	0.40	0.39	0.34	0.37	0.38
29. Supervision Satisfaction	0.39	0.41	0.34	0.39	0.01**	0.35	0.66	0.46	0.50	0.43	0.50	0.48
30. Trust in Supervisor†	0.37	0.37	0.31	0.33	0.02**	0.29	0.62	0.45	0.43	0.33	0.44	0.42
31. Job Satisfaction†	0.29	0.27	0.25	0.34	0.01**	0.29	0.41	0.39	0.38	0.32	0.35	0.39
32. Intrinsic Motivation	0.19	0.16	0.17	0.30	0.04	0.20	0.31	0.33	0.29	0.29	0.26	0.34
33. Performance Motivation†	0.15	0.16	0.17	0.22	-0.01**	0.22	0.26	0.25	0.26	0.27	0.22	0.27
34. Turnover Intention†	-0.33	-0.29	-0.25	-0.28	0.08	-0.26	-0.38	-0.31	-0.35	-0.29	-0.36	-0.34
35. Organizational Commitment	0.41	0.41	0.35	0.40	-0.05	0.38	0.57	0.47	0.54	0.46	0.52	0.54

Note. Correlations significant at .01 level unless otherwise noted. * significant at .05 level. ** not significant. † 1 item scale.

Table I-2 Intercorrelations of Survey Scales and Key Items for 2001 Wave 1 and 2 Demonstration Labs continued

	25	26	27	28	29	30	31	32	33	34	35
1. Demo Support	0.19	0.31	0.36	0.30	0.30	0.31	0.30	0.21	0.17	-0.27	0.37
2. Advancement Satisfaction	0.28	0.47	0.41	0.44	0.47	0.46	0.46	0.32	0.23	-0.45	0.54
3. Pay Satisfaction	0.31	0.47	0.42	0.42	0.46	0.46	0.41	0.25	0.21	-0.43	0.53
4. External Pay Equity†	-0.08	-0.10	-0.17	-0.03*	-0.08	-0.05	-0.03*	0.09	0.02**	0.17	-0.11
5. Internal Pay Equity†	0.22	0.43	0.35	0.30	0.35	0.31	0.26	0.16	0.15	-0.30	0.40
6. Negative Performance Consequences	0.21	0.38	0.29	0.22	0.33	0.26	0.17	0.10	0.12	-0.22	0.33
7. Pay-Performance Link	0.29	0.51	0.43	0.43	0.52	0.49	0.38	0.28	0.23	-0.36	0.52
8. Performance Appraisal	0.31	0.54	0.44	0.43	0.54	0.51	0.43	0.32	0.26	-0.35	0.53
9. Rewards and Recognition	0.33	0.54	0.43	0.45	0.57	0.53	0.36	0.28	0.23	-0.38	0.53
10. Procedural Justice	0.33	0.57	0.47	0.47	0.55	0.52	0.44	0.33	0.27	-0.38	0.56
11. Performance Communication	0.28	0.53	0.38	0.43	0.82	0.78	0.44	0.32	0.26	-0.37	0.53
12. Personnel Services Satisfaction	0.29	0.40	0.36	0.27	0.34	0.27	0.25	0.17	0.17	-0.26	0.34
13. Staffing Fairness	0.24	0.43	0.40	0.38	0.39	0.37	0.29	0.19	0.15	-0.33	0.41
14. Recruitment Quality	0.24	0.46	0.39	0.30	0.41	0.37	0.27	0.16	0.16	-0.29	0.41
15. Classification Satisfaction†	0.26	0.38	0.33	0.32	0.34	0.31	0.25	0.17	0.17	-0.25	0.35
16. Training Adequacy	0.32	0.44	0.36	0.34	0.39	0.33	0.34	0.30	0.22	-0.28	0.40
17. Red Tape†	-0.05	-0.08	-0.01**	0.03**	0.01**	0.02**	0.01**	0.04	-0.01**	0.08	-0.05
18. Supervisor Authority	0.25	0.39	0.36	0.29	0.35	0.29	0.29	0.20	0.22	-0.26	0.38
19. Communication	0.33	0.61	0.47	0.46	0.66	0.62	0.41	0.31	0.26	-0.38	0.57
20. Teamwork	0.31	0.49	0.30	0.40	0.46	0.45	0.39	0.33	0.25	-0.31	0.47
21. Cross-functional Coordination	0.35	0.68	0.43	0.39	0.50	0.43	0.38	0.29	0.26	-0.35	0.54
22. Customer Orientation	0.30	0.70	0.38	0.34	0.43	0.33	0.32	0.29	0.27	-0.29	0.46
23. Flexibility†	0.29	0.58	0.42	0.37	0.50	0.44	0.35	0.26	0.22	-0.36	0.52
24. Innovation	0.30	0.61	0.42	0.38	0.48	0.42	0.39	0.34	0.27	-0.34	0.54
25. Physical Work Environment	1.00	0.37	0.34	0.30	0.27	0.23	0.23	0.19	0.19	-0.24	0.33
26. Strategic Orientation	0.37	1.00	0.48	0.43	0.55	0.46	0.45	0.38	0.36	-0.40	0.63
27. Labor-Management Relations	0.34	0.48	1.00	0.37	0.39	0.33	0.29	0.22	0.22	-0.27	0.42
28. Diversity	0.30	0.43	0.37	1.00	0.44	0.42	0.32	0.29	0.24	-0.31	0.45
29. Supervision Satisfaction	0.27	0.55	0.39	0.44	1.00	0.83	0.38	0.28	0.25	-0.37	0.52
30. Trust in Supervisor†	0.23	0.46	0.33	0.42	0.83	1.00	0.39	0.28	0.23	-0.37	0.50
31. Job Satisfaction†	0.23	0.45	0.29	0.32	0.38	0.39	1.00	0.60	0.34	-0.42	0.57
32. Intrinsic Motivation	0.19	0.38	0.22	0.29	0.28	0.28	0.60	1.00	0.58	-0.25	0.48
33. Performance Motivation†	0.19	0.36	0.22	0.24	0.25	0.23	0.34	0.58	1.00	-0.22	0.51
34. Turnover Intention†	-0.24	-0.40	-0.27	-0.31	-0.37	-0.37	-0.42	-0.25	-0.22	1.00	-0.56
35. Organizational Commitment	0.33	0.63	0.42	0.45	0.52	0.50	0.57	0.48	0.51	-0.56	1.00

Note. Correlations significant at .01 level unless otherwise noted. * significant at .05 level. ** not significant. † 1 item scale.

Table I-3 Mean 2001 Survey Scale Rankings for Wave 1 and 2 Demonstration Labs																
	AFRL		**AMRDEC**		**ARL**		**MRMC**		**NSWC**		**ERDC**		**NRL**		**NUWC**	
	mean	**rank**	**mean**	**rank**	**mean**	**rank**	**Mean**	**rank**	**mean**	**rank**	**mean**	**rank**	**mean**	**rank**	**mean**	**rank**
Performance Management																
Advancement Satisfaction	3.18	2	3.21	1	2.75	7	2.93	6	2.94	5	3.01	4	3.02	3	2.68	8
Pay Satisfaction	3.21	2	3.32	1	2.83	7	2.98	6	3.00	4	2.99	5	3.03	3	2.75	8
External Pay Equity†**	4.00	6	3.66	2	3.86	5	3.76	4	3.71	3	3.58	1	4.11	8	4.07	7
Internal Pay Equity†	2.69	3	2.77	2	2.49	7	2.53	4	2.50	6	2.53	4	2.81	1	2.33	8
Negative Performance Consequences	2.62	3	2.59	4	2.49	5	2.79	1	2.38	6	2.26	8	2.73	2	2.27	7
Pay-Performance Link	3.33	2	3.32	3	2.99	8	3.23	4	3.21	5	3.14	6	3.38	1	3.06	7
Performance Communication	3.51	3	3.62	1	3.27	7	3.53	2	3.39	5	3.26	8	3.51	3	3.31	6
Performance Appraisal Satisfaction	3.23	7	3.63	1	3.26	6	3.45	2	3.33	4	3.13	8	3.39	3	3.32	5
Rewards and Recognition	3.36	1	3.22	3	3.00	8	3.09	7	3.19	4	3.13	6	3.34	2	3.14	5
Procedural Justice	3.25	5	3.53	1	3.17	7	3.35	2	3.26	4	3.10	8	3.33	3	3.22	6
Mean	3.24		3.29		3.01		3.16		3.09		3.01		3.27		3.01	
Lab Ranking for Performance Management		3		1		6		4		5		6		2		6
Human Resources Administration																
Personnel Services Satisfaction	3.19	4	3.08	7	3.16	5	3.13	6	3.25	3	2.98	8	3.29	2	3.54	1
Staffing Fairness	3.23	4	3.29	3	2.93	8	3.33	2	3.14	5	3.12	6	3.42	1	3.04	7
Recruitment Quality	3.51	6	3.73	1	3.39	8	3.62	3	3.55	5	3.49	7	3.63	2	3.56	4
Classification Satisfaction†	3.14	2	2.98	5	2.79	8	2.84	7	3.00	4	2.94	6	3.06	3	3.25	1
Training Adequacy	3.69	2	3.70	1	3.46	7	3.69	2	3.43	8	3.61	4	3.60	5	3.47	6
Red Tape†**	3.44	4	3.39	1	3.53	8	3.48	4	3.41	6	3.52	6	3.39	1	3.52	6
Supervisor Authority	2.94	1	2.70	7	2.52	8	2.91	3	2.83	4	2.82	5	2.92	2	2.73	6
Mean	3.31		3.27		3.11		3.28		3.23		3.21		3.33		3.30	
Lab Ranking for Human Resources		2		5		8		4		6		7		1		3
Organizational Climate																
Communication	3.26	2	3.25	3	2.82	8	3.29	1	3.11	5	3.04	7	3.15	4	3.09	6
Cooperation (Teamwork)	3.76	2	3.74	3	3.57	8	3.86	1	3.70	5	3.64	6	3.74	3	3.62	7
Cross-functional Coordination	3.21	5	3.43	1	3.14	6	3.38	2	3.22	4	3.14	6	3.31	3	3.02	8
Customer Orientation	3.64	6	3.87	1	3.70	4	3.68	5	3.81	2	3.77	3	3.58	8	3.64	6

Table I-3 Mean 2001 Survey Scale Rankings for Wave 1 and 2 Demonstration Labs																
	AFRL		**AMRDEC**		**ARL**		**MRMC**		**NSWC**		**ERDC**		**NRL**		**NUWC**	
	mean	**rank**	**mean**	**rank**	**mean**	**rank**	**Mean**	**rank**	**mean**	**rank**	**mean**	**rank**	**mean**	**rank**	**mean**	**rank**
Flexibility†	3.13	5	3.43	1	2.84	8	3.20	4	3.25	2	3.02	7	3.25	2	3.05	6
Innovation	3.43	7	3.59	2	3.20	8	3.64	1	3.49	4	3.48	5	3.50	3	3.45	6
Strategic Orientation	3.65	3	3.74	2	3.50	7	3.82	1	3.63	5	3.55	6	3.62	4	3.47	8
Labor-Management Relations	2.97	4	3.18	1	2.75	8	2.96	6	2.97	4	3.03	3	3.13	2	2.77	7
Diversity	3.88	1	3.72	7	3.61	8	3.82	3	3.79	5	3.76	6	3.80	4	3.84	2
Supervision Satisfaction	3.68	4	3.71	2	3.45	7	3.72	1	3.62	5	3.45	7	3.69	3	3.53	6
Trust in Supervisor†	3.76	1	3.73	2	3.22	8	3.70	3	3.63	5	3.44	7	3.69	4	3.51	6
Mean	3.49		3.61		3.20		3.55		3.47		3.39		3.50		3.36	
Lab Ranking for Climate		4		1		8		2		5		6		3		7
Job Satisfaction /Commitment																
Job Satisfaction†	3.87	4	3.94	2	3.61	8	4.00	1	3.81	5	3.81	3	3.91	3	3.67	7
Intrinsic Motivation	4.26	4	4.18	5	4.05	7	4.32	1	4.14	6	4.27	2	4.27	2	4.05	7
Performance Motivation†	3.98	4	3.98	4	3.84	7	4.17	1	3.88	6	4.01	3	3.99	3	3.69	8
Turnover Intention†**	2.52	1	2.63	4	2.81	8	2.55	2	2.59	3	2.64	6	2.72	6	2.75	7
Organizational Commitment	3.57	3	3.68	2	3.25	8	3.70	1	3.50	6	3.55	4	3.56	4	3.33	7
Mean	3.64		3.68		3.51		3.75		3.58		3.66		3.69		3.50	
Lab Ranking for Job Satisfaction		5		3		7		1		6		4		2		8
Demonstration Project Support		2		1		8		6		4		3		5		6
Lawler's Criteria for Pay-for-Performance		2		1		8		4		3		7		4		6

Note: † single item, **reverse-coded (negative item)

Table I-4 ANOVA Results for Performance Management Scales

Advancement Satisfaction				
	N	M	SD	Sig. diff.
NUWC	461	2.68	1.14	a
ARL	319	2.75	1.18	a,b
MRMC	211	2.93	1.11	b,c
NSWC	1642	2.94	1.11	b,c
ERDC	469	3.01	1.11	c,d
NRL	679	3.02	1.11	c,d
AFRL	729	3.18	1.16	d
AMRDEC	1178	3.21	1.13	d

Negative Performance Consequences				
	N	M	SD	Sig. diff.
ERDC	415	2.26	0.82	a
NUWC	404	2.27	0.89	a
NSWC	1417	2.38	0.88	a,b
ARL	284	2.49	0.92	b,c
AMRDEC	915	2.59	0.95	c,d
AFRL	616	2.62	0.96	c,d,e
NRL	540	2.73	0.93	d,e
MRMC	178	2.79	1.05	e

Pay Satisfaction				
	N	M	SD	Sig. diff.
NUWC	461	2.75	1.07	a
ARL	319	2.83	1.08	a,b
MRMC	211	2.98	1.06	b
ERDC	469	2.99	1.00	b
NSWC	1642	3.00	1.01	b
NRL	679	3.03	1.04	b,c
AFRL	730	3.21	1.03	c,d
AMRDEC	1178	3.32	1.00	d

Pay-Performance Link				
	N	M	SD	Sig. diff.
ARL	319	2.99	1.01	a
NUWC	461	3.06	1.04	a,b
ERDC	469	3.14	1.00	a,b,c
NSWC	1642	3.21	0.98	b,c,d
MRMC	211	3.23	0.99	b,c,d
AMRDEC	1177	3.32	0.94	c,d
AFRL	729	3.33	0.97	d
NRL	679	3.38	0.96	d

External Pay Equity				
	N	M	SD	Sig. diff.
ERDC	469	3.58	1.07	a
AMRDEC	1174	3.66	0.97	a,b
NSWC	1641	3.71	1.06	a,b
MRMC	211	3.76	1.08	a,b
ARL	317	3.86	0.93	b,c
AFRL	728	4.00	0.94	c,d
NUWC	459	4.07	0.89	d
NRL	677	4.11	0.95	d

Performance Communication				
	N	M	SD	Sig. diff.
ERDC	467	3.26	1.02	a
ARL	319	3.27	1.08	a
NUWC	460	3.31	1.07	a
NSWC	1638	3.39	0.96	a,b
AFRL	727	3.51	0.95	b,c
NRL	676	3.51	1.00	b,c
MRMC	211	3.53	0.98	b,c
AMRDEC	1175	3.62	0.92	c

Internal Pay Equity				
	N	M	SD	Sig. diff.
NUWC	368	2.33	1.04	a
ARL	258	2.49	1.09	a,b
NSWC	1361	2.50	1.06	a,b
ERDC	383	2.53	1.09	a,b
MRMC	167	2.53	1.03	a,b,c
AFRL	578	2.69	1.17	b,c,d
AMRDEC	938	2.77	1.16	c,d
NRL	542	2.81	1.07	d

Performance Appraisal Satisfaction				
	N	M	SD	Sig. diff.
ERDC	469	3.13	0.86	a
AFRL	730	3.23	0.83	a,b
ARL	319	3.26	0.83	a,b,c
NUWC	461	3.32	0.81	b,c,d
NSWC	1642	3.33	0.80	b,c,d
NRL	679	3.39	0.79	c,d
MRMC	211	3.45	0.83	d
AMRDEC	1178	3.63	0.72	e

Note. Labs not sharing a common letter are significantly different at alpha .05.

Rewards and Recognition				
	N	M	SD	Sig. diff.
ARL	318	3.00	0.95	a
MRMC	211	3.09	0.94	a,b
ERDC	467	3.13	0.90	a,b
NUWC	461	3.14	0.90	a,b
NSWC	1639	3.19	0.87	b,c
AMRDEC	1175	3.22	0.92	b,c
NRL	679	3.34	0.89	c
AFRL	728	3.36	0.88	c

Procedural Justice (PA system)				
	N	M	SD	Sig. diff.
ERDC	469	3.10	0.83	a
ARL	319	3.17	0.81	a,b
NUWC	461	3.22	0.80	a,b,c
AFRL	730	3.25	0.83	b,c
NSWC	1642	3.26	0.80	b,c
NRL	679	3.33	0.77	c
MRMC	211	3.35	0.82	c
AMRDEC	1178	3.53	0.73	d

Table I-5 ANOVA Results for Human Resources Scales

Personnel Services Satisfaction				
	N	M	SD	Sig. diff.
ERDC	467	2.98	0.98	a
AMRDEC	1174	3.08	1.01	a,b
MRMC	211	3.13	0.96	a,b,c
ARL	319	3.16	0.96	b,c
AFRL	727	3.19	0.95	b,c
NSWC	1637	3.25	0.87	b,c
NRL	678	3.29	0.91	c
NUWC	461	3.54	0.86	d

Training Adequacy				
	N	M	SD	Sig. diff.
NSWC	1640	3.43	1.00	a
ARL	319	3.46	1.00	a,b
NUWC	461	3.47	1.04	a,b
NRL	677	3.60	0.96	a,b,c
ERDC	469	3.61	0.98	b,c
AFRL	728	3.69	0.87	c
MRMC	211	3.69	0.93	c
AMRDEC	1177	3.70	0.89	c

Staffing Fairness				
	N	M	SD	Sig. diff.
ARL	318	2.93	1.37	a
NUWC	459	3.04	1.37	a,b
ERDC	469	3.12	1.30	a,b,c
NSWC	1638	3.14	1.32	a,b,c
AFRL	725	3.23	1.32	b,c,d
AMRDEC	1173	3.29	1.29	b,c,d
MRMC	209	3.33	1.31	c,d
NRL	673	3.42	1.39	e

Red Tape				
	N	M	SD	Sig. diff.
NRL	495	3.39	1.05	a
AMRDEC	893	3.39	1.06	a
NSWC	1213	3.41	0.99	a
AFRL	546	3.44	1.10	a
MRMC	172	3.48	1.07	a
NUWC	303	3.52	1.01	a
ERDC	341	3.52	0.94	a
ARL	245	3.53	1.10	a

Recruitment Quality				
	N	M	SD	Sig. diff.
ARL	319	3.39	1.04	a
ERDC	469	3.49	0.92	a,b
AFRL	728	3.51	0.88	a,b
NSWC	1640	3.55	0.83	a,b
NUWC	461	3.56	0.89	a,b,c
MRMC	211	3.62	0.82	b,c
NRL	678	3.63	0.87	b,c
AMRDEC	1176	3.73	0.90	c

Supervisor Authority				
	N	M	SD	Sig. diff.
ARL	57	2.52	0.80	a
AMRDEC	218	2.70	0.78	a,b
NUWC	78	2.73	0.87	a,b
ERDC	98	2.82	0.85	a,b
NSWC	429	2.83	0.82	a,b
MRMC	67	2.91	0.80	b
NRL	193	2.92	0.74	b
AFRL	173	2.94	0.86	b

Note. Labs not sharing a common letter are significantly different at alpha .05.

Classification Satisfaction				
	N	**M**	**SD**	**Sig. diff.**
ARL	53	2.79	0.99	a
MRMC	62	2.84	1.10	a,b
ERDC	95	2.94	1.04	a,b
AMRDEC	209	2.98	0.88	a,b
NSWC	414	3.00	1.00	a,b
NRL	190	3.06	0.97	a,b
AFRL	166	3.14	0.97	a,b
NUWC	69	3.25	1.10	b

Table I-6 ANOVA Results for Climate Scales

Communication				
	N	**M**	**SD**	**Sig. diff.**
ARL	319	2.82	1.02	a
ERDC	469	3.04	0.98	b
NUWC	459	3.09	0.98	b,c
NSWC	1639	3.11	0.91	b,c,d
NRL	678	3.15	0.96	b,c,d
AMRDEC	1175	3.25	0.96	c,d
AFRL	728	3.26	0.95	c,d
MRMC	211	3.29	0.92	d

Flexibility				
	N	**M**	**SD**	**Sig. diff.**
ARL	312	2.84	1.26	a
ERDC	457	3.02	1.15	a,b
NUWC	442	3.05	1.17	a,b,c
AFRL	709	3.13	1.18	b,c
MRMC	204	3.20	1.18	b,c
NSWC	1578	3.25	1.12	c,d
NRL	633	3.25	1.15	c,d
AMRDEC	1131	3.43	1.11	d

Teamwork				
	N	**M**	**SD**	**Sig. diff.**
ARL	319	3.57	0.91	a
NUWC	461	3.62	0.90	a,b
ERDC	469	3.64	0.85	a,b
NSWC	1640	3.70	0.81	a,b
NRL	678	3.74	0.87	b,c
AMRDEC	1176	3.74	0.82	b,c
AFRL	728	3.76	0.85	b,c
MRMC	211	3.86	0.74	c

Innovation				
	N	**M**	**SD**	**Sig. diff.**
ARL	314	3.20	1.08	a
AFRL	720	3.43	0.99	b
NUWC	453	3.45	1.03	b,c
ERDC	459	3.48	0.96	b,c
NSWC	1606	3.49	1.00	b,c
NRL	654	3.50	1.03	b,c
AMRDEC	1137	3.59	0.99	b,c
MRMC	207	3.64	0.97	c

Cross-functional Coordination				
	N	**M**	**SD**	**Sig. diff.**
NUWC	461	3.02	0.90	a
ARL	319	3.14	0.95	a,b
ERDC	469	3.14	0.92	a,b,c
AFRL	728	3.21	0.92	b,c,d
NSWC	1638	3.22	0.85	b,c,d
NRL	678	3.31	0.89	c,d,e
MRMC	211	3.38	0.83	d,e
AMRDEC	1174	3.43	0.86	e

Strategic Orientation				
	N	**M**	**SD**	**Sig. diff.**
NUWC	461	3.47	0.74	a
ARL	319	3.50	0.75	a,b
ERDC	469	3.55	0.72	a,b,c
NRL	678	3.62	0.72	b,c,d
NSWC	1638	3.63	0.66	b,c,d
AFRL	728	3.65	0.75	c,d
AMRDEC	1174	3.74	0.67	d,e
MRMC	211	3.82	0.65	e

Note. Labs not sharing a common letter are significantly different at alpha .05.

Customer Orientation				
	N	M	SD	Sig. diff.
NRL	675	3.58	0.77	a
AFRL	728	3.64	0.82	a,b
NUWC	461	3.64	0.79	a,b
MRMC	211	3.68	0.76	a,b,c
ARL	319	3.70	0.75	a,b,c
ERDC	469	3.77	0.70	b,c,d
NSWC	1638	3.81	0.67	c,d
AMRDEC	1174	3.87	0.67	d

Labor-Management Relations				
	N	M	SD	Sig. diff.
ARL	157	2.75	0.98	a
NUWC	327	2.77	0.94	a
MRMC	76	2.96	0.90	a,b
AFRL	198	2.97	0.97	a,b
NSWC	832	2.97	0.96	a,b
ERDC	264	3.03	1.02	a,b
NRL	172	3.13	0.75	b
AMRDEC	626	3.18	0.88	b

Diversity				
	N	M	SD	Sig. diff.
ARL	318	3.61	0.94	a
AMRDEC	1173	3.72	0.86	a,b
ERDC	466	3.76	0.89	a,b
NSWC	1632	3.79	0.83	b
NRL	676	3.80	0.88	b
MRMC	211	3.82	0.79	b
NUWC	457	3.84	0.79	b
AFRL	724	3.88	0.84	b

Trust in Supervisor				
	N	M	SD	Sig. diff.
ARL	319	3.22	1.32	a
ERDC	466	3.44	1.22	a,b
NUWC	459	3.51	1.25	b,c
NSWC	1637	3.63	1.10	b,c,d
NRL	674	3.69	1.17	c,d
MRMC	211	3.70	1.07	c,d
AMRDEC	1173	3.73	1.08	d
AFRL	726	3.76	1.09	d

Supervision Satisfaction				
	N	M	SD	Sig. diff.
ARL	319	3.45	0.92	a
ERDC	467	3.45	0.86	a
NUWC	460	3.53	0.88	a,b
NSWC	1638	3.62	0.74	b,c
AFRL	727	3.68	0.76	b,c
NRL	676	3.69	0.79	c
AMRDEC	1175	3.71	0.78	c
MRMC	211	3.72	0.76	c

Table I-7 ANOVA Results for Job Satisfaction/Commitment Scales

Job Satisfaction				
	N	M	SD	Sig. diff.
ARL	317	3.61	1.17	a
NUWC	461	3.67	1.04	a,b
ERDC	465	3.81	0.97	b,c
NSWC	1639	3.81	0.92	b,c
AFRL	728	3.87	0.97	c,d
NRL	677	3.91	0.95	c,d
AMRDEC	1177	3.94	0.92	c,d
MRMC	211	4.00	0.80	d

Turnover Intention				
	N	M	SD	Sig. diff.
AFRL	727	2.52	1.22	a
MRMC	211	2.55	1.20	a
NSWC	1638	2.59	1.27	a,b
AMRDEC	1176	2.63	1.25	a,b
ERDC	468	2.64	1.24	a,b
NRL	676	2.72	1.29	a,b
NUWC	459	2.75	1.28	a,b
ARL	318	2.81	1.27	b

Note. Labs not sharing a common letter are significantly different at alpha .05.

Intrinsic Motivation				
	N	M	SD	Sig. diff.
ARL	319	4.05	0.77	a
NUWC	461	4.05	0.66	a
NSWC	1642	4.14	0.61	a,b
AMRDEC	1178	4.18	0.63	b,c
AFRL	729	4.26	0.62	b,c,d
ERDC	469	4.27	0.63	c,d
NRL	679	4.27	0.65	c,d
MRMC	211	4.32	0.54	d

Organizational Commitment				
	N	M	SD	Sig. diff.
ARL	319	3.25	0.93	a
NUWC	460	3.33	0.85	a
NSWC	1640	3.50	0.79	b
ERDC	469	3.55	0.81	b,c
NRL	678	3.56	0.84	b,c
AFRL	728	3.57	0.86	b,c
AMRDEC	1177	3.68	0.78	c
MRMC	211	3.70	0.76	c

Performance Motivation				
	N	M	SD	Sig. diff.
NUWC	727	3.69	1.01	a
ARL	211	3.84	1.02	a,b
NSWC	1638	3.88	0.87	b
AFRL	1176	3.98	0.92	b
AMRDEC	468	3.98	0.83	b
NRL	676	3.99	0.88	b
ERDC	459	4.01	0.88	b,c
MRMC	318	4.17	0.71	c

Table I-8 ANOVA Results for Macro Scales

Performance Management				
	N	M	SD	Sig. diff.
ERDC	469	3.01	0.66	a
ARL	319	3.01	0.68	a
NUWC	461	3.01	0.64	a
NSWC	1643	3.09	0.64	a,b
MRMC	211	3.16	0.66	b,c
AFRL	730	3.24	0.67	c
NRL	679	3.27	0.63	c
AMRDEC	1179	3.29	0.62	c

Organizational Climate				
	N	M	SD	Sig. diff.
ARL	319	3.26	0.72	a
NUWC	461	3.36	0.69	a,b
ERDC	469	3.39	0.64	b,c
NSWC	1643	3.47	0.59	b,c,d
AFRL	730	3.49	0.63	c,d
NRL	679	3.50	0.62	c,d
MRMC	211	3.55	0.57	d
AMRDEC	1179	3.58	0.63	d

Human Resources Administration				
	N	M	SD	Sig. diff.
ARL	319	3.11	0.50	a
ERDC	469	3.21	0.48	b
NSWC	1643	3.23	0.45	b,c
AMRDEC	1179	3.27	0.44	b,c,d
MRMC	211	3.29	0.45	b,c,d
NUWC	461	3.30	0.47	c,d
AFRL	730	3.31	0.46	c,d
NRL	679	3.33	0.45	d

Job Satisfaction/Commitment				
	N	M	SD	Sig. diff.
NUWC	461	3.50	0.50	a
ARL	319	3.51	0.56	a
NSWC	1643	3.58	0.44	a,b
AFRL	730	3.64	0.49	b,c
ERDC	469	3.66	0.46	b,c
AMRDEC	1179	3.68	0.45	c,d
NRL	679	3.69	0.46	c,d
MRMC	211	3.75	0.38	d

Note. Labs not sharing a common letter are significantly different at alpha .05.

Appendix J

Table J-1 Perceptions of Diversity

Item 132. In this organization, differences among individuals (gender, race, national origin, religion age, cultural background, disability) are respected.

Year	Lab Group		Disagree		Neither		Agree		Total	
			N	%	N	%	N	%	N	%
1996	Wave 1	Minority	324	24.9%	330	25.4%	645	49.7%	1299	100%
		White	741	7.7%	1519	15.8%	7343	76.5%	9603	100%
	Wave 2	Minority	78	25.4%	83	27.0%	146	47.6%	307	100%
		White	102	7.3%	219	15.7%	1072	77.0%	1393	100%
	Non-Implemented	Minority	93	15.1%	142	23.1%	379	61.7%	614	100%
		White	256	7.0%	566	15.4%	2855	77.6%	3677	100%
	"China Lake"	Minority	49	22.3%	51	23.2%	120	54.5%	220	100%
		White	92	6.4%	210	14.5%	1144	79.1%	1446	100%
1998	Wave 1	Minority	182	23.4%	174	22.4%	421	54.2%	777	100%
		White	381	6.3%	923	15.2%	4777	78.6%	6081	100%
	Wave 2	Minority	20	19.0%	23	21.9%	62	59.0%	105	100%
		White	90	6.0%	171	11.4%	1234	82.5%	1495	100%
	Non-Implemented	Minority	119	17.3%	159	23.1%	410	59.6%	688	100%
		White	248	6.1%	510	12.6%	3285	81.3%	4043	100%
	"China Lake"	Minority	53	16.2%	76	232%	199	60.7%	328	100%
		White	80	5.1%	240	15.4%	1242	79.5%	1562	100%

Table J-1 Perceptions of Diversity (continued)

Item 132. In this organization, differences among individuals (gender, race, national origin, religion age, cultural background, disability) are respected.

Year	**Lab Group**		**Disagree**		**Neither**		**Agree**		**Total**	
			N	**%**	**N**	**%**	**N**	**%**	**N**	**%**
1999	Wave 1	Minority	182	24.8%	146	19.9%	405	55.3%	733	100%
		White	356	6.4%	741	13.3%	4484	80.3%	5581	100%
	Wave 2	Minority	9	18.4%	10	20.4%	30	61.2%	49	100%
		White	18	3.5%	62	12.0%	435	84.5%	515	100%
	Non-Implemented	Minority	88	15.3%	133	23.2%	353	61.5%	574	100%
		White	188	6.2%	416	13.7%	2432	80.1%	3036	100%
2001	Wave 1	Minority	77	20.1%	65	16.9%	242	63.0%	384	100%
		White	181	5.0%	360	10.0%	3059	85.0%	3600	100%
	Wave 2	Minority	31	15.7%	36	18.2%	131	66.2%	198	100%
		White	58	4.6%	146	11.5%	1062	83.9%	1266	100%
	Non-Implemented	Minority	63	15.4%	67	16.4%	278	68.1%	408	100%
		White	129	4.1%	362	11.5%	2649	84.4%	3140	100%

Table J-2 Perceptions of Diversity

Item 139. In this organization, advancement opportunities are available for highly-qualified individuals regardless of gender, race, national origin, religion age, cultural background, or disability.

Year	Lab Group		Disagree		Neither		Agree		Total	
			N	%	N	%	N	%	N	%
1996	Wave 1	Minority	497	38.4%	347	26.8%	451	34.8%	1295	100%
		White	1965	20.5%	1983	20.7%	5646	58.8%	9594	100%
	Wave 2	Minority	110	35.7%	98	31.8%	100	32.5%	308	100%
		White	233	16.8%	233	16.8%	924	66.5%	1390	100%
	Non-Implemented	Minority	193	31.4%	189	30.7%	233	37.9%	615	100%
		White	966	26.3%	783	21.3%	1923	52.4%	3672	100%
	"China Lake"	Minority	69	31.4%	54	24.5%	97	44.1%	220	100%
		White	190	13.2%	249	17.3%	1003	69.6%	1442	100%
1998	Wave 1	Minority	291	37.5%	187	24.1%	299	38.5%	777	100%
		White	1054	17.4%	1153	19.0%	3867	63.7%	6074	100%
	Wave 2	Minority	40	38.1%	24	22.9%	41	39.0%	105	100%
		White	256	17.1%	300	20.1%	939	62.8%	1495	100%
	Non-Implemented	Minority	234	34.2%	208	30.4%	243	35.5%	685	100%
		White	857	21.2%	752	18.6%	2429	60.2%	4038	100%
	"China Lake"	Minority	96	29.3%	79	24.1%	153	46.6%	328	100%
		White	203	13.0%	292	18.7%	1064	68.2%	1559	100%

Table J-2 Perceptions of Diversity (continued)

Item 139. In this organization, advancement opportunities are available for highly-qualified individuals regardless of gender, race, national origin, religion age, cultural background, or disability.

Year	Lab Group		Disagree		Neither		Agree		Total	
			N	%	N	%	N	%	N	%
1999	Wave 1	Minority	283	38.5%	177	24.1%	275	37.4%	735	100%
		White	904	16.2%	1029	18.5%	3640	65.3%	5573	100%
	Wave 2	Minority	15	31.3%	15	31.3%	18	37.5%	48	100%
		White	83	16.1%	100	19.4%	333	64.5%	516	100%
	Non-Implemented	Minority	167	29.0%	194	33.7%	214	37.2%	575	100%
		White	607	20.0%	635	20.9%	1792	59.1%	3034	100%
2001	Wave 1	Minority	121	31.7%	92	24.1%	169	44.2%	382	100%
		White	491	13.6%	516	14.3%	2593	72.0%	3600	100%
	Wave 2	Minority	55	27.8%	42	21.2%	101	51.0%	198	100%
		White	179	14.1%	197	15.6%	890	70.3%	1266	100%
	Non-Implemented	Minority	128	31.3%	93	22.7%	188	46.0%	409	100%
		White	510	16.3%	506	16.1%	2121	67.6%	3137	100%

Table J-3 Perceptions of Adverse Actions Item 76. In general, disciplinary actions taken in the organization are fair and justified.									
Lab Group	**Year**	**Disagree**		**Neither**		**Agree**		**Total**	
		N	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Wave 1	1996	3098	32.2%	2908	30.3%	3601	37.5%	9607	100%
	1998	1450	28.7%	1549	30.7%	2049	40.6%	5048	100%
	1999	1295	28.3%	1429	31.3%	1846	40.4%	4570	100%
	2001	685	26.9%	660	26.0%	1197	47.1%	2542	100%
Wave 2	1996	777	31.4%	750	30.3%	945	38.2%	2472	100%
	1998	397	31.3%	365	30.1%	467	38.6%	1211	100%
	1999	123	26.7%	134	29.1%	203	44.1%	460	100%
	2001	284	28.3%	250	24.9%	469	46.8%	1003	100%
Non-Implemented	1996	1229	31.6%	1284	33.0%	1373	35.3%	3886	100%
	1998	1059	28.3%	1142	30.5%	1543	41.2%	3744	100%
	1999	834	30.2%	8898	32.1%	1043	37.7%	2766	100%
	2001	771	31.0%	586	23.6%	1128	45.4%	2485	100%
"China Lake"	1996	340	23.6%	426	29.6%	673	46.8%	1439	100%
	1998	358	22.9%	481	30.8%	722	46.3%	1561	100%

Table J-4 Perceptions of Adverse Actions
Item 79. Corrective actions are taken when employees do not meet performance standards.

Year	Lab Group		Disagree		Neither		Agree		Total	
			N	%	N	%	N	%	N	%
1998	Wave 1	Minority	315	51.5%	192	31.4%	105	17.2%	612	100%
		White	2964	57.4%	1399	27.1%	805	15.6%	5169	100%
	Wave 2	Minority	55	61.8%	20	22.5%	14	15.7%	89	100%
		White	776	59.4%	328	25.1%	203	15.5%	1307	100%
	Non-Implemented	Minority	267	45.3%	200	33.9%	123	20.8%	590	100%
		White	2016	57.8%	835	23.9%	636	18.2%	3487	100%
	"China Lake"	Minority	128	47.2%	81	29.9%	62	22.9%	271	100%
		White	638	47.3%	409	30.3%	303	22.4%	1350	100%
1999	Wave 1	Minority	249	43.0%	191	33.0%	139	24.0%	579	100%
		White	2271	49.8%	1348	29.6%	938	20.6%	4557	100%
	Wave 2	Minority	15	40.5%	17	45.9%	5	13.5%	37	100%
		White	234	52.9%	121	27.4%	87	19.7%	442	100%
	Non-Implemented	Minority	174	38.6%	160	35.5%	117	25.9%	451	100%
		White	1283	50.5%	727	28.6%	530	20.9%	2540	100%
2001	Wave 1	Minority	102	36.8%	102	36.6%	73	26.4%	277	100%
		White	1277	46.8%	728	26.7%	726	26.6%	2731	100%
	Wave 2	Minority	58	39.7%	38	26.0%	50	34.2%	146	100%
		White	466	4806%	242	25.2%	251	26.2%	959	100%
	Non-Implemented	Minority	143	44.3%	89	27.6%	91	28.2%	323	100%
		White	1243	49.5%	631	25.1%	639	25.4%	2531	100%

Table J-5 Number of Adverse Actions: Lab by Year										
	Prior to Demo	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001 YTD**	**All Demo**	**Trend**
AFRL	6		8		1		5			n.s.
AMRDEC			1	3	4	2	0	1		n.s.
ARL					18	6				
MRMC						0	4	5		increase
NSWC Dahlgren					3	5	4	2		n.s.
NSWC Indian Head									3	
NSWC Carderock										
NSWC Crane	0				0	0	0	0	0	
NSWC Port Hueneme									0	
NSWC Corona										
ERDC					0	5	6	4		increase
NRL	18						12	16		
NUWC Newport				5		0	1	0		decrease
NUWC Keyport										
CECOM					10					
TACOM										
SBCCOM							13			
STRICOM										

Table J-6 Number of Grievances: Lab by Year										
	Prior to Demo	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001 YTD**	**All Demo**	**Trend**
AFRL			9	*	8		16			increase
AMRDEC		5	4	2	1	2	0	2		decrease
ARL					3	1				n.s.
MRMC				0	0	2	1	30		increase
NSWC Dahlgren					0	0	0	1		
NSWC Indian Head									0	
NSWC Carderock										
NSWC Crane	0						0	0	0	
NSWC Port Hueneme									1	
NSWC Corona										
ERDC					0	0	10	4		decrease
NRL	7						6	7		n.s.
NUWC Newport				8		9	5	1		decrease
NUWC Keyport										
CECOM					5					
TACOM										
SBCCOM							1			
STRICOM										

* reported only as grievances per employee in 2000 implementation report.

Table J-7 Number of Unfair Labor Practices: Lab by Year									
	Prior to Demo	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001 YTD**	**All Demo**
AFRL	0		0		0		0		
AMRDEC		0	0	0	0	0	0	0	
ARL					0	0			
MRMC					0	2	2	0	
NSWC Dahlgren					0	0	0	0	
NSWC Indian Head									0
NSWC Carderock									
NSWC Crane	0						0	0	
NSWC Port Hueneme									0
NSWC Corona									
ERDC					0	0	0	2	
NRL	0						0	0	
NUWC Newport				0		0	2	0	
NUWC Keyport									
CECOM					0		2		
TACOM									
SBCCOM							0		
STRICOM									

Table J-8 Veterans Hired in Labs with Categorical Ratings vs. CPDF Group					
	1996	**1997**	**1998**	**1999**	**2000**
AMRDEC	9% (n=21) N=225	22% (n=309) N=1394	36% (n=9) N=25	29% (n=4) N=14	9% (n=17) N=195
ARL	17% (n=87) N=502	10% (n=38) N=381	15% (n=19) N=127	15% (n=29) N=191	13% (n=10) N=80
NSWC – Dahlgren, Indian Head, Carderock	16% (n=312) N=1914	12% (n=194) N=1666	18% (n=292) N=1584	15% (n=147) N=996)	10% (n=49) N=478
NSWC – Crane, Port Hueneme, Corona	30% (n=113) N=379	33% (n=350) N=1069	30% (n=178) N=605	17% (n=72) N=425	20% (n=41) N=206
ERDC	19% (n=82) N=441	15% (n=44) N=290	17% (n=56) N=338	16% (n=25) N=160	20% (n=37) N=184
NUWC	11% (n=42) N=380	18% (n=59) N=330	22% (n=67) N=306	24% (n=52) N=218	22% (n=23) N=106
CPDF	9% (n=733) N=8100	7% (n=834) N=11366	7% (n=707) N=10375	7% (n=419) N=6052	10% (n=61) N=612

Appendix K

Table K-1 Wave 1 Quality of New Scientists & Engineers: AIR FORCE					
		1996 N = 31	**1997 (Data not Reported)**	**1999 (Data not Reported)**	**2000 N = 86**
Highest Degree Achieved					(N=83)
	PhD	70%	*	*	46%
	MS/MA	13%	*	*	37%
	BS/BA	17%	*	*	17%
	MD	0%	*	*	0%
	AA/AS	0%	*	*	0%
Average GPA	4.0 Scale	3.42	*	*	3.49 (N=50)
	5.0 Scale	*	*	*	4.43 (N=3)
Percentage of New Hires Having Participated in a Post Doc Program		16%	*	*	15%
Percentage of New Hires Professionally Licensed/Certified		16%	*	*	9%
Percentage of New Hires Holding 1 or More Professional Memberships	One or More Memberships	*	*	*	57%
	International	32%	*	*	26%
	National	68%	*	*	47%
	Local	6%	*	*	11%
Percentage of New Hires Producing Publications	One or More Publications	*	*	*	65%
	Books & Chapters	10%	*	*	12%
	Refereed Journal	58%	*	*	*
	Other Journal	19%	*	*	*
	Journal Publications	*	*	*	37%
	Article Publications	*	*	*	21%
	Technical Reports	*	*	*	38%
	Monographs	3%	*	*	4%
	Conference Papers	*	*	*	54%
	Book Review	3%	*	*	1%
Percentage of New Hires with Patents Granted		6%	*	*	14%

Note. N equals column N unless otherwise identified.
* Data not reported

Table K-2 Wave 1 and 2 Quality of New Scientists & Engineers: NAVY						
		All Navy (1997) N = 196	**NSWC Crane (1998-2001) N = 244**	**NSWC Dahlgren (2000) N = 254**	**NSWC Port Hueneme (2001) N = 8**	**NRL (1999-2001) N=165**
Highest Degree Achieved			(N=210)	(N=234)	(N=4)	(N=126)
	PhD	10%	2%	2%	0%	53%
	MS/MA	20%	5%	21%	0%	19%
	BS/BA	70%	92%	76%	100%	26%
	MD	0%	*	*	0%	0%
	AA/AS	0%	*	*	0%	2%
Average GPA	4.0 Scale	3.31 (N=111)	3.16 (N=210)	*	3.08 (N=4)	3.46 (N=114)
	5.0 Scale	*	*	*	*	*
	8.0 Scale	*	*	*	*	7.80 (N=1)
	10.0 Scale	*	*	*	*	8.90 (N=1)
Percentage of New Hires Having Participated in a Post Doc Program		7%	*	*	0%	33%
Percentage of New Hires Professionally Licensed/Certified		16%	3%	*	0%	2%
Percentage of New Hires Holding 1 or More Professional Memberships	One or More Membership	28%	*	*	0%	47%
	International	*	5%	*	0%	18%
	National	*	14%	*	0%	38%
	Local	*	3%	*	0%	4%

Table K-2 Wave 1 and 2 Quality of New Scientists & Engineers: NAVY (continued)						
		All Navy (1997) N = 196	**NSWC Crane (1998-2001) N = 244**	**NSWC Dahlgren (2000) N = 254**	**NSWC Port Hueneme (2001) N = 8**	**NRL (1999-2001) N=165**
Percentage of New Hires Producing Publications	One or More Publications	12%	*	*	*	55%
	Books & Chapters	*	*	*	*	9%
	Refereed Journal	*	*	*	*	*
	Other Journal	*	*	*	*	*
	Journal Publications	*	*	*	*	40%
	Article Publications	*	*	*	*	13%
	Technical Reports	*	*	*	*	21%
	Monographs	*	*	*	*	1%
	Conference Papers	*	*	*	*	43%
	Book Review	*	*	*	*	2%
Percentage of New Hires with Patents Granted		1%	0%	*	*	7%

Note. N equals column N unless otherwise identified.
* Data not reported

Table K-3 Wave 1 and 2 Quality of New Scientists & Engineers: ARMY						
		All Army 1996/1997 N=66	**AMRDEC (2000/2001) N=124**	**ERDC (1998/2000-2001) N=32**	**MRMC (2001) N=36**	**ARL (Data Not Reported)**
Highest Degree Achieved			(N=119)			
	PhD	15%	2%	19%	53%	*
	MS/MA	25%	34%	47%	14%	*
	BS/BA	60%	64%	34%	30%	*
	MD	0%	0%	0%	3%	*
	AA/AS	0%	0%	0%	0%	*
Average GPA	4.0 Scale	3.32 (N=48)	3.25 (N=109)	3.58 (N=22)	3.48 (N=27)	*
	5.0 Scale	*	4.5 (N=1)	*	4.7 (N=1)	*
	6.0 Scale	*	4.8 (N=1)	72.0 (N=1)	*	*
Percentage of New Hires Having Participated in a Post Doc Program		9%	2%	9%	42%	*
Percentage of New Hires Professionally Licensed/Certified		9%	11%	16%	17%	*
Percentage of New Hires Holding 1 or More Professional Memberships	One or More Membership	41%	29%	25%	53%	*
	International	*	10%	9%	25%	*
	National	*	26%	16%	42%	*
	Local	*	9%	3%	6%	*
Percentage of New Hires Producing Publications	One or More Publications	27%	25%	47%	83%	*
	Books & Chapters	*	1%	13%	22%	*
	Refereed Journal	*	*	*	*	*
	Other Journal	*	*	*	*	*
	Journal Publications	*	3%	19%	44%	*
	Article Publications	*	5%	25%	33%	
	Technical Reports	*	15%	34%	31%	*
	Monographs	*	0%	0%	3%	*
	Conference Papers	*	18%	19%	56%	*
	Book Review	*	0%	6%	3%	*
Percentage of New Hires with Patents Granted		2%	0%	3%	3%	*

Note. N equals column N unless otherwise identified.
* Data not reported

Table K-4 Wave 2 Quality of New Scientists & Engineers: NAVY			
		All Navy (1997) N = 196	**NUWC Newport (2000 - 2001) N=94**
Highest Degree Achieved	PhD MS/MA BS/BA MD AA/AS	10% 20% 70% 0% 0%	1% 25% 74% 0% 0%
Average GPA	4.0 Scale 5.0 Scale	3.31 (N=111) *	3.14 (N=59) 4.10 (N=1)
Percentage of New Hires Having Participated in a Post Doc Program		7%	0%
Percentage of New Hires Professionally Licensed/Certified		16%	4%
Percentage of New Hires Holding 1 or More Professional Memberships	One or More Membership	28%	32%
	International National Local	* * *	0% 29% 3%
Percentage of New Hires Producing Publications:	One or More Publications	12%	7%
	Books & Chapters Refereed Journals Other Journals	* * *	2% * *
	Journal Publications	*	1%
	Article Publications	*	3%
	Technical Reports	*	4%
	Monographs	*	0%
	Conference Papers	*	1%
	Book Review	*	0%
Percentage of New Hires with Patents Granted		1%	0%

Note. N equals column N unless otherwise identified.
* Data not reported

Table K-5 Wave 3 Quality of New Scientists & Engineers: NAVY			
		All Navy (1997) N = 196	**NUWC Keyport (Data not Reported)**
Highest Degree Achieved	PhD	10%	*
	MS/MA	20%	*
	BS/BA	70%	*
	MD	0%	*
	AA/AS	0%	*
Average GPA	4.0 Scale	3.31 (N=111)	*
Percentage of New Hires Having Participated in a Post Doc Program		7%	*
Percentage of New Hires Professionally Licensed/Certified		16%	*
Percentage of New Hires Holding 1 or More Professional Memberships	One or More Membership	28%	*
	International	*	*
	National	*	*
	Local	*	*
Percentage of New Hires Producing Publications:	One or More Publications	12%	*
	Books & Chapters	*	*
	Refereed Journals	*	*
	Other Journals	*	*
	Journal Publications	*	*
	Article Publications	*	*
	Technical Reports	*	*
	Monographs	*	*
	Conference Papers	*	*
	Book Review	*	*
Percentage of New Hires with Patents Granted		1%	*

Note. N equals column N unless otherwise identified.
* Data not reported

Table K-6 Wave 3 Quality of New Scientists & Engineers: ARMY						
		All Army 1996/1997 N=66	**CECOM (1998/2000-2001) N=159**	**SBCCOM (2000) N=15**	**STRICOM (Data not Reported)**	**TACOM (Data not Reported)**
Highest Degree Achieved			(N=127)			
	PhD	15%	2%	20%	*	*
	MS/MA	25%	23%	13%	*	*
	BS/BA	60%	75%	60%	*	*
	MD	0%	0%	0%	*	*
	AA/AS	0%	0%	7%	*	*
Average GPA	4.0 Scale	3.32 (N=48)	3.10 (N=127)	3.27 (N=11)	*	*
	5.0 Scale	*	4.60 (N=1)	*	*	*
Percentage of New Hires Having Participated in a Post Doc Program		9%	0%	0%	*	*
Percentage of New Hires Professionally Licensed/Certified		9%	0%	13%	*	*
Percentage of New Hires Holding 1 or More Professional Memberships	One or More Membership	41%	6%	47%	*	*
	International	*	2%	13%	*	*
	National	*	3%	33%	*	*
	Local	*	1%	7%	*	*
Percentage of New Hires Producing Publications:	One or More Publications	27%	6%	47%	*	*
	Books & Chapters	*	1%	13%	*	*
	Refereed Journals	*	*	*	*	*
	Other Journals	*	*	*	*	*
	Journal Publications	*	1%	13%	*	*
	Article Publications	*	1%	20%	*	*
	Technical Reports	*	3%	27%	*	*
	Monographs	*	0%	0%	*	*
	Conference Paper	*	4%	27%	*	*
	Book Review	*	0%	0%	*	*
Percentage of New Hires with Patents Granted		2%	1%	13%	*	*

Note. N equals column N unless otherwise identified.
* Data not reported

Table K-7 Hiring Timeliness Reported in Days									
Lab	**Prior to Demo**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001 YTD**	**All Demo**
AFRL			90						65
AMRDEC			no hiring done		no hiring done			226	
ARL									
MRMC	120	120 +	120 +	120 +	70	65	60	55	
NSWC Dahlgren	54						1*		
NSWC Indian Head ***									40
NSWC Carderock									
NSWC Crane **									30
NSWC Port Hueneme									16
NSWC Corona									
ERDC	62				53			71	
NRL	75						84	79	
NUWC Newport				38				11	
NUWC Keyport									
CECOM					77		70		
TACOM									
SBCCOM							65		
STRICOM									

Note. Although hiring timeliness was defined as the number of days from receipt of the SF-52 request in the personnel office to the date of offer, there is some reason to believe that not all labs used the definition given to them at data collection.

* For non-competitive hires only

** S&E's only

*** Average of "6-8 weeks" and "6 weeks""

Table K-8 Perceived Hiring Timeliness for Lab-Based Examining
67. It takes too long to process the paperwork needed to fill vacancies here.

				Disagree		Neither		Agree		Total	
				N	%	N	%	N	%	N	%
NAVSEA Labs with	1996	Non-Demo	NSWC – Dahlgren	112	10.40	494	45.87	471	43.73	1077	100.00
Lab-Based Examining	1996	Non-Demo	NSWC – Indian Head	65	11.23	235	40.59	279	48.19	579	100.00
	1996	Non-Demo	NSWC - Port Hueneme	58	11.58	187	37.33	256	51.10	501	100.00
	1998	Non-Demo	NSWC – Dahlgren	3	10.00	16	53.33	11	36.67	30	100.00
	1998	Demo	NSWC – Dahlgren	164	16.63	453	45.94	369	37.42	986	100.00
	1998	Non-Demo	NSWC – Indian Head	6	12.24	14	28.57	29	59.18	49	100.00
	1998	Demo	NSWC – Indian Head	19	8.12	90	38.46	125	53.42	234	100.00
	1998	Non-Demo	NSWC - Port Hueneme	1	8.33	6	50.00	5	41.67	12	100.00
	1998	Demo	NSWC - Port Hueneme	33	17.46	78	41.27	78	41.27	189	100.00
	1999	Non-Demo	NSWC – Dahlgren	7	35.00	5	25.00	8	40.00	20	100.00
	1999	Demo	NSWC – Dahlgren	134	15.84	380	44.92	332	39.24	846	100.00
	1999	Non-Demo	NSWC – Indian Head			7	70.00	3	30.00	10	100.00
	1999	Demo	NSWC – Indian Head	30	10.79	98	35.25	150	53.96	278	100.00
	1999	Non-Demo	NSWC - Port Hueneme			6	60.00	4	40.00	10	100.00
	1999	Demo	NSWC - Port Hueneme	20	8.93	82	36.61	122	54.46	224	100.00
	2001	Non-Demo	NSWC – Dahlgren	10	13.89	30	41.67	32	44.44	72	100.00
	2001	Demo	NSWC – Dahlgren	85	14.86	220	38.46	267	46.68	572	100.00
	2001	Non-Demo	NSWC – Indian Head			1	33.33	2	66.67	3	100.00
	2001	Demo	NSWC – Indian Head	13	8.90	45	30.82	88	60.27	146	100.00
	2001	Non-Demo	NSWC - Port Hueneme	22	16.18	45	33.09	69	50.74	136	100.00
	2001	Demo	NSWC - Port Hueneme	8	8.70	26	28.26	58	63.04	92	100.00

Table K-8 Perceived Hiring Timeliness for Lab-Based Examining (continued) 67. It takes too long to process the paperwork needed to fill vacancies here.											
				Disagree		**Neither**		**Agree**		**Total**	
				N	**%**	**N**	**%**	**N**	**%**	**N**	**%**
NAVSEA Labs Without	1996	Non-Demo	NSWC - Carderock	73	7.16	415	40.73	531	52.11	1019	100.00
Lab-Based Examining	1996	Non-Demo	NSWC – Corona	11	11.58	45	47.37	39	41.05	95	100.00
	1996	Non-Demo	NSWC – Crane	96	8.89	408	37.78	576	53.33	1080	100.00
	1996	Non-Demo	NUWC – Keyport	77	16.11	232	48.54	169	35.36	478	100.00
	1996	Non-Demo	NUWC – Newport	104	13.15	364	46.02	323	40.83	791	100.00
	1998	Non-Demo	NSWC - Carderock	8	13.11	26	42.62	27	44.26	61	100.00
	1998	Demo	NSWC - Carderock	88	11.80	298	39.95	360	48.26	746	100.00
	1998	Non-Demo	NSWC – Corona	2	13.33	8	53.33	5	33.33	15	100.00
	1998	Non-Demo	NSWC – Crane	4	11.76	9	26.47	21	61.76	34	100.00
	1998	Demo	NSWC – Crane	39	8.97	145	33.33	251	57.70	435	100.00
	1998	Non-Demo	NUWC – Keyport	40	15.81	117	46.25	96	37.94	253	100.00
	1998	Non-Demo	NUWC – Newport	184	19.85	396	42.72	347	37.43	927	100.00
	1999	Non-Demo	NSWC - Carderock			7	77.78	2	22.22	9	100.00
	1999	Demo	NSWC - Carderock	52	11.63	171	38.26	224	50.11	447	100.00
	1999	Non-Demo	NSWC – Corona	35	10.42	156	46.43	145	43.15	336	100.00
	1999	Non-Demo	NSWC – Crane	3	21.43	7	50.00	4	28.57	14	100.00
	1999	Demo	NSWC – Crane	47	10.59	168	37.84	229	51.58	444	100.00
	1999	Non-Demo	NUWC – Keyport	20	12.05	88	53.01	58	34.94	166	100.00
	1999	Non-Demo	NUWC – Newport	11	18.64	28	47.46	20	33.90	59	100.00
	1999	Demo	NUWC – Newport	87	20.23	184	42.79	159	36.98	430	100.00
	2001	Non-Demo	NSWC - Carderock			1	33.33	2	66.67	3	100.00
	2001	Demo	NSWC - Carderock	1	50.00			1	50.00	2	100.00
	2001	Demo	NSWC – Corona	25	15.15	68	41.21	72	43.64	165	100.00
	2001	Non-Demo	NSWC – Crane	3	23.08	4	30.77	6	46.15	13	100.00
	2001	Demo	NSWC – Crane	24	10.91	63	28.64	133	60.45	220	100.00
	2001	Non-Demo	NUWC – Keyport	30	12.82	100	42.74	104	44.44	234	100.00
	2001	Demo	NUWC – Keyport	2	3.85	12	23.08	38	73.08	52	100.00
	2001	Non-Demo	NUWC – Newport	18	18.18	41	41.41	40	40.40	99	100.00
	2001	Demo	NUWC – Newport	80	24.10	123	37.05	129	38.86	332	100.00

Table K-9 Perceived Satisfaction with Hiring Process for Lab-Based Examining 66. I am satisfied with the process used to fill vacancies here.											
				Disagree		**Neither**		**Agree**		**Total**	
				N	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Labs with Lab-Based Examining	1996	Non-Demo	NSWC – Dahlgren	536	46.81	387	33.80	222	19.39	1145	100.00
	1996	Non-Demo	NSWC – Indian Head	325	53.72	165	27.27	115	19.01	605	100.00
	1996	Non-Demo	NSWC - Port Hueneme	267	49.44	145	26.85	128	23.70	540	100.00
	1998	Non-Demo	NSWC – Dahlgren	10	33.33	8	26.67	12	40.00	30	100.00
	1998	Non-Demo	NSWC – Indian Head	18	36.73	8	16.33	23	46.94	49	100.00
	1998	Non-Demo	NSWC - Port Hueneme	4	33.33	4	33.33	4	33.33	12	100.00
	1998	Demo	NSWC – Dahlgren	381	33.16	380	33.07	388	33.77	1149	100.00
	1998	Demo	NSWC – Indian Head	114	42.70	84	31.46	69	25.84	267	100.00
	1998	Demo	NSWC - Port Hueneme	86	40.19	59	27.57	69	32.24	214	100.00
	1999	Non-Demo	NSWC - Port Hueneme	5	50.00	3	30.00	2	20.00	10	100.00
	1999	Demo	NSWC – Dahlgren	304	30.34	346	34.53	352	35.13	1002	100.00
	1999	Demo	NSWC – Indian Head	139	42.77	99	30.46	87	26.77	325	100.00
	1999	Demo	NSWC - Port Hueneme	96	38.55	77	30.92	76	30.52	249	100.00
	2001	Non-Demo	NSWC – Dahlgren	35	42.17	30	36.14	18	21.69	83	100.00
	2001	Non-Demo	NSWC – Indian Head	1	25.00	2	50.00	1	25.00	4	100.00
	2001	Non-Demo	NSWC - Port Hueneme	78	49.06	38	23.90	43	27.04	159	100.00
	2001	Demo	NSWC – Dahlgren	274	37.74	222	30.58	230	31.68	726	100.00
	2001	Demo	NSWC – Indian Head	83	49.70	44	26.35	40	23.95	167	100.00
	2001	Demo	NSWC - Port Hueneme	46	47.42	25	25.77	26	26.80	97	100.00

Table K-9 Perceived Satisfaction with Hiring Process for Lab-Based Examining (continued) 66. I am satisfied with the process used to fill vacancies here.											
Labs without Lab-Based Examining				**Disagree**		**Neither**		**Agree**		**Total**	
				N	**%**	**N**	**%**	**N**	**%**	**N**	**%**
	1996	Non-Demo	NSWC – Corona	51	50.50	31	30.69	19	18.81	101	100.00
	1996	Non-Demo	NSWC – Crane	750	65.96	257	22.60	130	11.43	1137	100.00
	1996	Non-Demo	NUWC – Keyport	306	59.42	125	24.27	84	16.31	515	100.00
	1996	Non-Demo	NUWC – Newport	443	51.39	261	30.28	158	18.33	862	100.00
	1998	Non-Demo	NSWC - Carderock	25	37.88	25	37.88	16	24.24	66	100.00
	1998	Demo	NSWC - Carderock	341	41.53	264	32.16	216	26.31	821	100.00
	1998	Non-Demo	NSWC – Corona	7	46.67	4	26.67	4	26.67	15	100.00
	1998	Non-Demo	NSWC – Crane	22	59.46	8	21.62	7	18.92	37	100.00
	1998	Demo	NSWC – Crane	253	52.27	130	26.86	101	20.87	484	100.00
	1998	Non-Demo	NUWC – Keyport	136	45.95	90	30.41	70	23.65	296	100.00
	1998	Non-Demo	NUWC – Newport	529	49.03	268	24.84	282	26.14	1079	100.00
	1999	Demo	NSWC - Carderock	191	38.12	178	35.53	132	26.35	501	100.00
	1999	Non-Demo	NSWC – Corona	166	45.48	105	28.77	94	25.75	365	100.00
	1999	Demo	NSWC – Crane	222	43.19	152	29.57	140	27.24	514	100.00
	1999	Non-Demo	NUWC – Keyport	114	56.44	54	26.73	34	16.83	202	100.00
	1999	Non-Demo	NUWC – Newport	18	27.69	24	36.92	23	35.38	65	100.00
	1999	Demo	NUWC – Newport	218	43.00	146	28.80	143	28.21	507	100.00
	2001	Non-Demo	NSWC - Carderock	3	75.00	1	25.00			4	100.00
	2001	Demo	NSWC - Carderock	1	50.00			1	50.00	2	100.00
	2001	Demo	NSWC – Corona	92	46.23	44	22.11	63	31.66	199	100.00
	2001	Non-Demo	NSWC – Crane	3	20.00	3	20.00	9	60.00	15	100.00
	2001	Demo	NSWC – Crane	96	35.82	76	28.36	96	35.82	268	100.00
	2001	Non-Demo	NUWC – Keyport	137	50.93	65	24.16	67	24.91	269	100.00
	2001	Demo	NUWC – Keyport	20	37.74	11	20.75	22	41.51	53	100.00
	2001	Non-Demo	NUWC – Newport	49	42.61	27	23.48	39	33.91	115	100.00
	2001	Demo	NUWC – Newport	169	40.92	109	26.39	135	32.69	413	100.00

Table K-10 Perceptions of Categorical Rating for Wave 1 Labs 154. Compared to the rule of three, the current categorical rating system provides me with more qualified candidates per job announcement.								
2001	**Disagree**		**Neither**		**Agree**		**Totals**	
	N	**%**	**N**	**%**	**N**	**%**	**N**	**%**
AMRDC	23	27.06	28	32.94	34	40.00	85	100.00
ARL	2	18.18	7	63.64	2	18.18	11	100.00
NSWC – Dahlgren	17	19.10	53	59.55	19	21.35	89	100.00
NSWC – Indian Head	4	21.05	10	52.63	5	26.32	19	100.00
NSWC - Carderock	1	100.00					1	100.00
NSWC – Crane	10	18.52	33	61.11	11	20.37	54	100.00
NSWC - Port Hueneme	6	23.08	15	57.69	5	19.23	26	100.00
ERDC (WES only)	1	2.94	19	55.88	14	41.18	34	100.00
Total for all labs:	64	20.06%	165	51.72%	90	28.21%	319	100.00%

Table K-11 Perceptions of Categorical Rating for Wave 1 Labs 160. I prefer the following system for evaluating job candidates:								
2001	**Rating and ranking under the "rule of three"**		**Grouping of candidates into three categories**		**No basis to judge, don't use categorical rating**		**Totals**	
	N	**%**	**N**	**%**	**N**	**%**	**N**	**%**
AMRDC	8	8.08	41	41.41	50	50.51	99	100.00
ARL	1	4.35	8	34.78	14	60.87	23	100.00
NSWC – Dahlgren	3	2.44	48	39.02	72	58.54	123	100.00
NSWC – Indian Head	1	3.57	11	39.29	16	57.14	28	100.00
NSWC - Carderock			1	100.00			1	100.00
NSWC – Crane	2	3.17	33	52.38	28	44.44	63	100.00
NSWC - Port Hueneme	4	13.79	19	65.52	6	20.69	29	100.00
ERDC (WES only)	3	7.32	18	43.90	20	48.78	41	100.00
Total for all labs:	22	5.41%	179	43.98%	206	50.61%	407	100.00

Table K-12 Hiring Activity by Year 1996-2000									
	AFRL			**Army**			**Navy**		
1996	**Hires**	**Pop**	**%**	**Hires**	**Pop**	**%**	**Hires**	**Pop**	**%**
Prof.	362	3166	11.4%	649	4627	14.0%	2884	13325	21.6%
Admin.				122	1139	10.7%	476	4369	10.9%
Tech.				101	1129	8.9%	443	4654	9.5%
Clerical				237	881	26.9%	504	1835	27.5%
Other W/C*				44	101	43.6%	443	876	50.6%
Total	362	3166	11.4%	1153	7877	14.6%	4750	25059	19.0%
1997									
Prof.	460	3179	14.5%	1147	4383	26.2%	2243	12924	17.4%
Admin.				271	1153	23.5%	375	4161	9.0%
Tech.				125	1081	11.6%	530	4260	12.4%
Clerical				191	774	24.7%	303	1554	19.5%
Other W/C				30	104	28.8%	331	838	39.5%
Total	460	3179	14.5%	1764	7495	23.5%	3782	23737	15.9%
1998									
Prof.	393	2718	14.5%	696	3666	19.0%	1993	11935	16.7%
Admin.				200	923	21.7%	328	3802	8.6%
Tech.				199	859	23.2%	433	3774	11.5%
Clerical				200	658	30.4%	143	1207	11.8%
Other W/C				40	65	61.5%	155	610	25.4%
Total	393	2718	14.5%	1335	6171	21.6%	3052	21328	14.3%
1999									
Prof.	174	2629	6.6%	252	4197	6.0%	1511	11368	13.3%
Admin.				35	874	4.0%	140	2132	6.6%
Tech.				57	658	8.7%	225	1635	13.8%
Clerical				59	567	10.4%	95	565	16.8%
Other W/C				28	81	34.6%	114	180	63.3%
Total	174	2629	6.6%	431	6377	6.8%	2085	15880	13.1%
2000									
Prof.	76	2467	3.1%	325	4341	7.5%	743	11478	6.5%
Admin.				31	856	3.6%	72	1799	4.0%
Tech.				52	657	7.9%	154	1452	10.6%
Clerical				31	558	5.6%	62	468	13.2%
Other W/C				19	76	25.0%	51	198	25.8%
Total	76	2467	3.1%	458	6488	7.1%	1082	15395	7.0%

Table K-13 Wave 1 Term Appointments As Percentage of New Hires					
	1996	**1997**	**1998**	**1999**	**2000**
AMRDEC					
Demo	N/A	N/A	-- (n=0/4)	-- (n=0/4)	0.5% (n=1/195)
Non-Demo	13% (n=3/23)*	22% (n=2/9)	N/A	N/A	N/A
ARL					
Demo	N/A	N/A	-- (n=0/34)	-- (n=0/112)	-- (n=0/74)
Non-Demo	12% (n=8/68)	-- (n=0/115)	N/A	N/A	N/A
MRMC					
Demo	N/A	N/A	N/A	-- (n=0/70)	-- (n=0/61)
Non-Demo	29% (n=18/62)	15% (n=13/87)	6% (n=10/175)	N/A	N/A
ERDC					
Demo	N/A	N/A	N/A	2% (n=1/44)	5% (n=3/58)
Non-Demo	35% (n=44/125)	31% (n=22/72)	17% (n=17/100)	N/A	N/A

Table K-14 Perceptions of Extended Probationary Period in Wave 1 Labs, Supervisors Only 156. Have you ever officially terminated an employee during the probationary period?						
2001	**Yes**		**No**		**Total**	
	N	**%**	**N**	**%**	**N**	**%**
AFRL	8	5.06	150	94.94	158	100.00
AMRDEC	5	4.85	98	95.15	103	100.00
ARL	1	4.35	22	95.65	23	100.00
MRMC	2	4.00	48	96.00	50	100.00

Table K-15 Perceptions of Extended Probationary Period in Wave 1 Labs, Supervisors Only 157. Have you ever encouraged an employee to leave voluntarily during the probationary period?						
2001	**Yes**		**No**		**Total**	
	N	**%**	**N**	**%**	**N**	**%**
AFRL	10	6.37	147	93.63	157	100.00
AMRDEC	10	9.71	93	90.29	103	100.00
ARL	4	17.39	19	82.61	23	100.00
MRMC	8	16.00	42	84.00	50	100.00

Table K-16 Perceptions of Extended Probationary Period in Wave 1 Labs 70. I am in favor of a 3-year probation period for scientists and engineers.									
2001		**Disagree**		**Neither**		**Agree**		**Total**	
		N	**%**	**N**	**%**	**N**	**%**	**N**	**%**
AFRL	Non-Supervisor	222	24.78	230	25.67	444	49.55	896	100.00
	Supervisor	28	17.07	27	16.46	109	66.46	164	100.00
AMRDEC	Non-Supervisor	291	27.25	275	25.75	502	47.00	1068	100.00
	Supervisor	24	23.08	18	17.31	62	59.62	104	100.00
ARL	Non-Supervisor	63	21.36	89	30.17	143	48.47	295	100.00
	Supervisor	3	13.04	3	13.04	17	73.91	23	100.00
MRMC	Non-Supervisor	39	25.32	56	36.36	59	38.31	154	100.00
	Supervisor	6	11.54	18	34.62	28	53.85	52	100.00

Table K-17 Perceptions of Extended Probationary Period in Wave 1 Labs 71. I am in favor of a 3-year probation period for other occupations.									
2001		**Disagree**		**Neither**		**Agree**		**Total**	
		N	**%**	**N**	**%**	**N**	**%**	**N**	**%**
AFRL	Non-Supervisor	202	22.57	244	27.26	449	50.17	895	100.00
	Supervisor	31	19.02	23	14.11	109	66.87	163	100.00
AMRDEC	Non-Supervisor	285	26.79	289	27.16	490	46.05	1064	100.00
	Supervisor	24	23.30	23	22.33	56	54.37	103	100.00
ARL	Non-Supervisor	64	21.77	93	31.63	137	46.60	294	100.00
	Supervisor	1	4.35	1	4.35	21	91.30	23	100.00
MRMC	Non-Supervisor	51	32.90	50	32.26	54	34.84	155	100.00
	Supervisor	13	24.53	13	24.53	27	50.94	53	100.00

Table K-18 Perceptions of Extended Probationary Period in Wave 1 Labs 72. Do you feel the current length of the probation period for research scientists is											
2001		**Too Long**		**About Right**		**Too Short**		**Don't Know**		**Total**	
		N	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
AFRL	Non-Supervisor	85	9.50	323	36.09	134	14.97	353	39.44	895	100.00
	Supervisor	6	3.66	76	46.34	35	21.34	47	28.66	164	100.00
AMRDEC	Non-Supervisor	88	8.26	386	36.24	171	16.06	420	39.44	1065	100.00
	Supervisor	2	1.92	38	36.54	31	29.81	33	31.73	104	100.00
ARL	Non-Supervisor	21	7.14	82	27.89	64	21.77	127	43.20	294	100.00
	Supervisor	2	8.70	8	34.78	8	34.78	5	21.74	23	100.00
MRMC	Non-Supervisor	13	8.23	47	29.75	16	10.13	82	51.90	158	100.00
	Supervisor	5	9.62	14	26.92	12	23.08	21	40.38	52	100.00

Table K-19 Perceptions of Extended Probationary Period in Wave 1 Labs 73. Do you feel the current length of the probation period for other employees is											
2001		**Too Long**		**About Right**		**Too Short**		**Don't Know**		**Total**	
		N	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
AFRL	Non-Supervisor	52	5.83	314	35.20	165	18.50	361	40.47	892	100.00
	Supervisor	6	3.66	69	42.07	51	31.10	38	23.17	164	100.00
AMRDEC	Non-Supervisor	67	6.32	388	36.60	178	16.79	427	40.28	1060	100.00
	Supervisor	2	1.92	36	34.62	33	31.73	33	31.73	104	100.00
ARL	Non-Supervisor	22	7.59	94	32.41	60	20.69	114	39.31	290	100.00
	Supervisor			8	34.78	12	52.17	3	13.04	23	100.00
MRMC	Non-Supervisor	15	9.55	66	42.04	17	10.83	59	37.58	157	100.00
	Supervisor	5	9.43	19	35.85	15	28.30	14	26.42	53	100.00

Table K-20 Distinguished Scholastic Achievement Appointments by Lab							
Lab	**1996**	**1997**	**1998**	**1999**	**2000**	**2001 YTD**	**All Demo**
AFRL	*	*	*	*	*	*	*
AMRDEC				0	6		
ARL		0	0				
MRMC			*	*	*	*	
NSWC Dahlgren							
NSWC Indian Head							
NSWC Carderock							
NSWC Crane							
NSWC Port Hueneme							
NSWC Corona							
ERDC (CERL, CRREL, & WES)		*	*	1	3	5	
NRL	*	*	*	*	*	*	*
NUWC Newport							
NUWC Keyport							
CECOM	*	*	*	*	*	*	*
TACOM	*	*	*	*	*	*	*
SBCCOM	*	*	*	*	*	*	*
STRICOM	*	*	*	*	*	*	*

*Not applicable

Table K-21 Volunteer Scientist Emeritus Corps: Total Number of Participants by Calendar Year							
Lab	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001 YTD**
AFRL*			4	8	5	2	1
AMRDEC			1	15	7	18	
ARL			0	0			
MRMC			0	1	2	3	3
NSWC Dahlgren	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NSWC Indian Head	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NSWC Carderock	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NSCW Crane	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NSWC Port Heuneme	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NSWC Corona	N/A	N/A	N/A	N/A	N/A	N/A	N/A
ERDC			0	0	1	2	2
NRL	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NUWC Newport	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NUWC Keyport	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CECOM							
TACOM							
SBCCOM							
STRICOM							

* Figures for AFRL represent new Volunteer Scientists by start year. Numbers are also reported by fiscal, as opposed to calendar year.

Table K-22 Perceptions of Staffing & Recruitment: Supervisors Only, Wave by Year 66. I am satisfied with the process used to fill vacancies here.									
		Disagree		**Neither**		**Agree**		**Total**	
		N	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Wave 1	1996	6079	52.98	3357	29.25	2039	17.77	11475	100.00
	1998	3005	46.95	1875	29.30	1520	23.75	6400	100.00
	1999	2593	44.32	1798	30.73	1460	24.95	5851	100.00
	2001	1554	41.77	955	25.67	1211	32.55	3720	100.00
Wave 2	1996	1467	47.05	967	31.01	684	21.94	3118	100.00
	1998	735	47.76	401	26.06	403	26.19	1539	100.00
	1999	257	42.06	181	29.62	173	28.31	611	100.00
	2001	605	42.28	353	24.67	473	33.05	1431	100.00
Non-Implemented	1996	2703	56.37	1278	26.65	814	16.98	4795	100.00
	1998	2292	48.83	1196	25.48	1206	25.69	4694	100.00
	1999	1612	45.74	1009	28.63	903	25.62	3524	100.00
	2001	1477	44.58	816	24.63	1020	30.79	3313	100.00

Table K-23 Perceptions of Staffing & Recruitment: Supervisors Only, Wave by Year 147. In this organization, management has the flexibility to reduce the workforce, when necessary.									
		Disagree		**Neither**		**Agree**		**Total**	
		N	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Wave 1	1996	1005	45.29	526	23.70	688	31.00	2219	100.00
	1998	485	41.52	277	23.72	406	34.76	1168	100.00
	1999	362	37.05	248	25.38	367	37.56	977	100.00
	2001	210	38.18	166	30.18	174	31.64	550	100.00
Wave 2	1996	257	39.06	163	24.77	238	36.17	658	100.00
	1998	64	46.04	38	27.34	37	26.62	139	100.00
	1999	37	52.11	14	19.72	20	28.17	71	100.00
	2001	73	32.59	68	30.36	83	37.05	224	100.00
Non-Implemented	1996	257	41.59	158	25.57	203	32.85	618	100.00
	1998	198	36.07	124	22.59	227	41.35	549	100.00
	1999	135	39.71	77	22.65	128	37.65	340	100.00
	2001	112	35.22	76	23.90	130	40.88	318	100.00

Table K-24 Perceptions of Staffing & Recruitment: Supervisors Only, Wave by Year 65. Competition for jobs here is fair and open.									
		Disagree		**Neither**		**Agree**		**Total**	
		N	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Wave 1	1996	5869	50.23	3253	27.84	2562	21.93	11684	100.00
	1998	2898	44.63	1916	29.50	1680	25.87	6494	100.00
	1999	2528	42.70	1752	29.59	1641	27.71	5921	100.00
	2001	1379	37.12	909	24.47	1427	38.41	3715	100.00
Wave 2	1996	1459	46.03	905	28.55	806	25.43	3170	100.00
	1998	771	49.61	358	23.04	425	27.35	1554	100.00
	1999	275	44.14	162	26.00	186	29.86	623	100.00
	2001	557	39.09	323	22.67	545	38.25	1425	100.00
Non-Implemented	1996	2646	54.78	1160	24.02	1024	21.20	4830	100.00
	1998	2164	45.94	1199	25.46	1347	28.60	4710	100.00
	1999	1537	43.41	938	26.49	1066	30.10	3541	100.00
	2001	1377	41.46	763	22.98	1181	35.56	3321	100.00

Table K-25Perceptions of Staffing & Recruitment: Supervisors Only, Wave by Year 64. In this organization, when there is a promotion opportunity, the best-qualified applicant is chosen.									
		Disagree		**Neither**		**Agree**		**Total**	
		N	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Wave 1	1996	5768	49.93	3275	28.35	2509	21.72	11552	100.00
	1998	2954	46.51	1932	30.42	1465	23.07	6351	100.00
	1999	2505	43.36	1848	31.99	1424	24.65	5777	100.00
	2001	1396	39.04	963	26.93	1217	34.03	3576	100.00
Wave 2	1996	1436	46.41	897	28.99	761	24.60	3094	100.00
	1998	738	48.52	427	28.07	356	23.41	1521	100.00
	1999	274	45.59	173	28.79	154	25.62	601	100.00
	2001	571	41.56	366	26.64	437	31.80	1374	100.00
Non-Implemented	1996	2522	52.67	1270	26.52	996	20.80	4788	100.00
	1998	2133	45.92	1257	27.06	1255	27.02	4645	100.00
	1999	1521	43.61	985	28.24	982	28.15	3488	100.00
	2001	1428	44.10	774	23.90	1036	32.00	3238	100.00

Table K-26 Perceptions of Staffing & Recruitment: Supervisors Only, Wave by Year 67. It takes too long to process the paperwork needed to fill vacancies here.									
		Disagree		**Neither**		**Agree**		**Total**	
		N	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Wave 1	1996	934	8.62	3996	36.87	5909	54.52	10839	100.00
	1998	580	10.15	2091	36.60	3042	53.25	5713	100.00
	1999	519	10.08	1899	36.89	2730	53.03	5148	100.00
	2001	348	10.71	810	24.94	2090	64.35	3248	100.00
Wave 2	1996	315	10.69	1069	36.26	1564	53.05	2948	100.00
	1998	242	17.91	555	41.08	554	41.01	1351	100.00
	1999	101	19.17	219	41.56	207	39.28	527	100.00
	2001	183	14.52	367	29.13	710	56.35	1260	100.00
Non-Implemented	1996	472	10.52	1797	40.04	2219	49.44	4488	100.00
	1998	517	12.00	1486	34.50	2304	53.49	4307	100.00
	1999	377	11.85	1272	39.99	1532	48.16	3181	100.00
	2001	437	14.86	848	28.83	1656	56.31	2941	100.00

Table K-27 Perceptions of Staffing & Recruitment: Supervisors Only, Wave by Year 68. This organization is able to attract high-quality candidates.									
		Disagree		**Neither**		**Agree**		**Total**	
		N	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Wave 1	1996	3814	32.88	3830	33.02	3955	34.10	11599	100.00
	1998	2490	37.82	2113	32.10	1980	30.08	6583	100.00
	1999	2235	36.95	1925	31.83	1888	31.22	6048	100.00
	2001	1208	31.60	1032	26.99	1583	41.41	3823	100.00
Wave 2	1996	752	23.79	923	29.20	1486	47.01	3161	100.00
	1998	547	35.78	434	28.38	548	35.84	1529	100.00
	1999	268	42.54	199	31.59	163	25.87	630	100.00
	2001	540	36.14	409	27.38	545	36.48	1494	100.00
Non-Implemented	1996	1869	39.62	1694	35.91	1154	24.46	4717	100.00
	1998	1922	41.52	1464	31.63	1243	26.85	4629	100.00
	1999	1464	42.04	1129	32.42	889	25.53	3482	100.00
	2001	1215	37.13	937	28.64	1120	34.23	3272	100.00

Table K-28 Perceptions of Staffing & Recruitment: Supervisors Only, Wave by Year (Data collected in 1999 and 2001 only) 74a. How satisfied are you with the competence of the new hires who are Scientists?									
		Dissatisfied		**Neither**		**Satisfied**		**Total**	
		N	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Wave 1	1999	299	7.90	1109	29.28	2379	62.82	3787	100.00
	2001	165	7.12	522	22.52	1631	70.36	2318	100.00
Wave 2	1999	37	9.02	128	31.22	245	59.76	410	100.00
	2001	64	6.75	206	21.73	678	71.52	948	100.00
Non-Implemented	1999	173	9.94	711	40.84	857	49.22	1741	100.00
	2001	145	9.49	437	28.60	946	61.91	1528	100.00

Table K-29 Perceptions of Staffing & Recruitment: Supervisors Only, Wave by Year (Data collected in 1999 and 2001 only) 74b. How satisfied are you with the competence of the new hires who are Engineers?									
		Dissatisfied		**Neither**		**Satisfied**		**Total**	
		N	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Wave 1	1999	421	9.34	1095	24.29	2992	66.37	4508	100.00
	2001	243	8.10	501	16.71	2255	75.19	2999	100.00
Wave 2	1999	52	10.34	124	24.65	327	65.01	503	100.00
	2001	91	8.57	214	20.15	757	71.28	1062	100.00
Non-Implemented	1999	313	12.71	743	30.18	1406	57.11	2462	100.00
	2001	286	12.72	512	22.77	1451	64.52	2249	100.00

Table K-30 Perceptions of Staffing & Recruitment: Supervisors Only, Wave by Year 74c. How satisfied are you with the competence of the new hires who are other professionals?									
		Dissatisfied		**Neither**		**Satisfied**		**Total**	
		N	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Wave 1	1996	895	11.23	3278	41.12	3799	47.65	7972	100.00
	1998	405	10.25	1574	39.82	1974	49.94	3953	100.00
	1999	318	9.30	1400	40.92	1703	49.78	3421	100.00
	2001	193	8.87	660	30.34	1322	60.78	2175	100.00
Wave 2	1996	204	9.40	794	36.59	1172	54.01	2170	100.00
	1998	96	9.21	392	37.62	554	53.17	1042	100.00
	1999	36	9.81	141	38.42	190	51.77	367	100.00
	2001	75	8.62	260	29.89	535	61.49	870	100.00
Non-Implemented	1996	422	13.38	1447	45.88	1285	40.74	3154	100.00
	1998	318	11.81	1140	42.33	1235	45.86	2693	100.00
	1999	194	9.90	882	45.02	883	45.07	1959	100.00
	2001	209	10.79	655	33.82	1073	55.39	1937	100.00

Table K-31 Perceptions of Staffing & Recruitment: Supervisors Only, Wave by Year 74d. How satisfied are you with the competence of the new hires who are Scientific or Engineering Technicians?									
		Dissatisfied		**Neither**		**Satisfied**		**Total**	
		N	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Wave 1	1996	756	10.09	3035	40.52	3699	49.39	7490	100.00
	1998	309	8.45	1393	38.09	1955	53.46	3657	100.00
	1999	287	8.98	1235	38.63	1675	52.39	3197	100.00
	2001	194	10.02	530	27.38	1212	62.60	1936	100.00
Wave 2	1996	144	7.23	728	36.53	1121	56.25	1993	100.00
	1998	58	6.39	344	37.89	506	55.73	908	100.00
	1999	33	10.00	130	39.39	167	50.61	330	100.00
	2001	59	7.38	215	26.91	525	65.71	799	100.00
Non-Implemented	1996	359	12.40	1277	44.13	1258	43.47	2894	100.00
	1998	271	11.08	1044	42.70	1130	46.22	2445	100.00
	1999	166	9.46	751	42.79	838	47.75	1755	100.00
	2001	171	10.04	522	30.65	1010	59.31	1703	100.00

Table K-32 Perceptions of Staffing & Recruitment: Supervisors Only, Wave by Year (No data collected in 1996) 74e. How satisfied are you with the competence of the new hires who are other Technicians?									
		Dissatisfied		**Neither**		**Satisfied**		**Total**	
		N	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Wave 1	1998	272	8.43	1506	46.70	1447	44.87	3225	100.00
	1999	242	8.77	1305	47.28	1213	43.95	2760	100.00
	2001	167	9.69	596	34.57	961	55.74	1724	100.00
Wave 2	1998	53	6.59	364	45.27	387	48.13	804	100.00
	1999	18	6.47	136	48.92	124	44.60	278	100.00
	2001	51	7.66	221	33.18	394	59.16	666	100.00
Non-Implemented	1998	234	10.26	1085	47.57	962	42.17	2281	100.00
	1999	136	8.43	785	48.64	693	42.94	1614	100.00
	2001	181	10.77	554	32.96	946	56.28	1681	100.00

Table K-33 Perceptions of Staffing & Recruitment: Supervisors Only, Wave by Year 74f. How satisfied are you with the competence of the new hires who are Administrative (financial, personnel, contracting, etc.)?									
		Dissatisfied		**Neither**		**Satisfied**		**Total**	
		N	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Wave 1	1996	1957	22.71	3297	38.26	3364	39.03	8618	100.00
	1998	938	22.31	1555	36.99	1711	40.70	4204	100.00
	1999	829	22.01	1387	36.82	1551	41.17	3767	100.00
	2001	484	20.00	704	29.09	1232	50.91	2420	100.00
Wave 2	1996	496	20.67	848	35.33	1056	44.00	2400	100.00
	1998	173	16.52	372	35.53	502	47.95	1047	100.00
	1999	61	16.94	136	37.78	163	45.28	360	100.00
	2001	173	17.73	292	29.92	511	52.36	976	100.00
Non-Implemented	1996	677	20.63	1383	42.14	1222	37.23	3282	100.00
	1998	555	19.47	1059	37.16	1236	43.37	2850	100.00
	1999	401	18.96	791	37.40	923	43.64	2115	100.00
	2001	378	17.08	633	28.60	1202	54.32	2213	100.00

Table K-34 Perceptions of Staffing & Recruitment: Supervisors Only, Wave by Year 74g. How satisfied are you with the competence of the new hires who are Support staff or Clerical?									
		Dissatisfied		**Neither**		**Satisfied**		**Total**	
		N	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Wave 1	1996	2341	24.69	2966	31.28	4175	44.03	9482	100.00
	1998	1099	23.88	1480	32.16	2023	43.96	4602	100.00
	1999	972	23.62	1347	32.73	1797	43.66	4116	100.00
	2001	528	20.56	681	26.52	1359	52.92	2568	100.00
Wave 2	1996	678	25.03	786	29.01	1245	45.96	2709	100.00
	1998	245	20.68	338	28.52	602	50.80	1185	100.00
	1999	93	23.02	128	31.68	183	45.30	404	100.00
	2001	233	21.47	267	24.61	585	53.92	1085	100.00
Non-Implemented	1996	803	22.22	1225	33.90	1586	43.88	3614	100.00
	1998	641	21.13	998	32.89	1395	45.98	3034	100.00
	1999	395	17.73	750	33.66	1083	48.61	2228	100.00
	2001	408	17.59	634	27.34	1277	55.07	2319	100.00

Table K-35 Perceptions of Staffing & Recruitment: Supervisors Only, Wave by Year 74h. How satisfied are you with the competence of the new hires who are Skilled trades (WG or WL or WS)?									
		Dissatisfied		**Neither**		**Satisfied**		**Total**	
		N	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Wave 1	1996	654	10.62	3121	50.69	2382	38.69	6157	100.00
	1998	247	9.07	1403	51.51	1074	39.43	2724	100.00
	1999	225	9.47	1262	53.14	888	37.39	2375	100.00
	2001	135	9.61	599	42.63	671	47.76	1405	100.00
Wave 2	1996	203	12.82	795	50.19	586	36.99	1584	100.00
	1998	61	8.48	346	48.12	312	43.39	719	100.00
	1999	22	9.87	122	54.71	79	35.43	223	100.00
	2001	50	8.85	237	41.95	278	49.20	565	100.00
Non-Implemented	1996	251	10.12	1335	53.81	895	36.07	2481	100.00
	1998	200	10.09	1013	51.11	769	38.80	1982	100.00
	1999	111	8.48	701	53.55	497	37.97	1309	100.00
	2001	109	8.15	516	38.57	713	53.29	1338	100.00

Table K-36 Perceptions of Staffing & Recruitment: Supervisors Only, Wave by Year 74i. How satisfied are you with the competence of the new hires who are Security?									
		Dissatisfied		**Neither**		**Satisfied**		**Total**	
		N	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Wave 1	1996	1281	18.95	3221	47.64	2259	33.41	6761	100.00
	1998	678	20.17	1475	43.87	1209	35.96	3362	100.00
	1999	574	18.96	1356	44.78	1098	36.26	3028	100.00
	2001	294	15.97	645	35.04	902	49.00	1841	100.00
Wave 2	1996	450	23.34	841	43.62	637	33.04	1928	100.00
	1998	192	21.01	362	39.61	360	39.39	914	100.00
	1999	63	20.72	140	46.05	101	33.22	304	100.00
	2001	145	19.52	280	37.69	318	42.80	743	100.00
Non-Implemented	1996	549	19.59	1326	47.31	928	33.11	2803	100.00
	1998	432	18.13	1073	45.03	878	36.84	2383	100.00
	1999	380	20.84	774	42.46	669	36.70	1823	100.00
	2001	313	18.44	593	34.94	791	46.61	1697	100.00

Table K-37 Perceptions of Staffing & Recruitment: Supervisors Only, Wave by Year 150. The skills and abilities of the most recent candidate I hired were a good match for the job.									
		Disagree		**Neither**		**Agree**		**Total**	
		N	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Wave 1	1996	139	7.77	297	16.59	1354	75.64	1790	100.00
	1998	52	5.70	124	13.58	737	80.72	913	100.00
	1999	48	6.13	106	13.54	629	80.33	783	100.00
	2001	14	2.99	46	9.81	409	87.21	469	100.00
Wave 2	1996	40	6.96	68	11.83	467	81.22	575	100.00
	1998	4	3.39	15	12.71	99	83.90	118	100.00
	1999	2	3.70	2	3.70	50	92.59	54	100.00
	2001	5	2.63	18	9.47	167	87.89	190	100.00
Non-Implemented	1996	28	6.17	96	21.15	330	72.69	454	100.00
	1998	35	8.66	68	16.83	301	74.50	404	100.00
	1999	23	8.75	36	13.69	204	77.57	263	100.00
	2001	9	3.32	35	12.92	227	83.76	271	100.00

Table K-38 Perceptions of Staffing & Recruitment: Supervisors Only, Wave by Year

158. If you have hired a scientist, engineer, or other professional in the past year, what was your assessment of the overall capabilities of the person hired compared to the rest of your workforce?

		Top 1% World Class		Top 10% Out-standing		Top 25% VeryGood		Average		Below Average		Poor		Not Applicable		Total	
		N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Wave 1	1996	29	1.36	152	7.12	263	12.32	185	8.67	22	1.03	7	0.33	1477	69.18	2135	100.00
	1998	9	0.80	135	11.96	216	19.13	92	8.15	13	1.15	2	0.18	662	58.64	1129	100.00
	1999	13	1.38	124	13.12	227	24.02	104	11.01	4	0.42	3	0.32	470	49.74	945	100.00
	2001	6	1.12	110	20.60	134	25.09	62	11.61	7	1.31	3	0.56	212	39.70	534	100.00
Wave 2	1996	16	2.51	100	15.70	113	17.74	50	7.85	2	0.31	2	0.31	354	55.57	637	100.00
	1998	2	1.49	15	11.19	33	24.63	12	8.96	1	0.75			71	52.99	134	100.00
	1999	1	1.52	11	16.67	15	22.73	5	7.58	1	1.52			33	50.00	66	100.00
	2001	1	0.46	34	15.74	62	28.70	14	6.48	3	1.39	1	0.46	101	46.76	216	100.00
Non-Implemented	1996	3	0.50	41	6.83	57	9.50	39	6.50			2	0.33	458	76.33	600	100.00
	1998	4	0.76	31	5.89	56	10.65	43	8.17	4	0.76	4	0.76	384	73.00	526	100.00
	1999	3	0.91	29	8.79	73	22.12	36	10.91	5	1.52	3	0.91	181	54.85	330	100.00
	2001	4	1.31	36	11.76	74	24.18	28	9.15	6	1.96			158	51.63	306	100.00

Table K-39 Proportion of New Hire Offers Accepted										
Lab	**Prior to Demo**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001 YTD**	**All Demo**	**Trend**
AFRL			.94				.94			n.s.
AMRDEC					No offers made			.85	.85	
ARL										
MRMC					1.00	1.00	.99	.95	.98	n.s.
NSWC Dahlgren	.67						.66			n.s.
NSWC Indian Head									.48	
NSWC Carderock										
NSCW Crane									.55	
NSWC Port Heuneme									1.00	
NSWC Corona										
ERDC	1.00				1.00			1.00	1.00	
NRL								.86		
NUWC Newport				.92				.63	.63	decrease
NUWC Keyport										
CECOM							.73			
TACOM										
SBCCOM							.94			
STRICOM										
All Services	**.87**								**.75**	**Overall decrease**

Note. AFRL = aggregate of responses from 11 directorates
AMRDEC = 139/164 (164 offers is estimated)
MRMC = 16/16 and 249/261 respectively
NSWC Dahlgren reported "baseline" and "now": no ratio provided
NSWC Indian Head = 52/109
NSWC Crane uses S&E's only: no ratio provided
NSWC Port Heuneme = 16/16
ERDC = 7/7 and 44/44 respectively
NRL = 177/206
NUWC Newport = 36/39 and 35/56 respectively
CECOM = 109/150
SBCCOM = 306/324

Appendix L

Table L-1 Training and Development Interventions by Lab			
Labs	**Critical Skills Training / Training for Degrees**	**Sabbatical**	**Expanded Developmental Opportunity Program**
AFRL	N/A	N/A	Complements existing developmental opportunities. Available for S&E professionals in the demonstration plan as well as all S&E's in the laboratory.
AMRDEC	Expanded authority to provide degree payment to employees in all occupational families.	This demo considers sabbatical and expanded developmental opportunities to be one and the same.	Complements existing developmental opportunities. Covers demo employees in the S&E and Tech & Business Support occupational families.
ARL	Expanded authority to provide degree payment to employees in all occupational families.	Paid sabbaticals will be granted for a 3-12 month period once per 10 year period. Opportunity must result in a product, service, report, or study to benefit ARL's mission.	Classroom and on-the-job developmental opportunities are granted by an employee development panel. Performance plans must be established and ratings given upon completion.
MRMC	N/A	Sabbaticals reviewed on a case-by-case basis.	Complements existing developmental opportunities. Covers all demo employees.
NSWC/ NUWC	N/A	N/A	N/A
ERDC	Expanded authority to provide degree payment to all ERDC employees. This is intended primarily for the obtainment of advanced degrees.	Paid sabbaticals will be granted for all career employees. Employee must agree to remain with ERDC for three times the length of the sabbatical after its completion.	Complements existing developmental opportunities. Covers all ERDC employees.
NRL	N/A	N/A	N/A
CECOM	Expanded authority to provide degree payment to employees in all occupational families.	Paid or unpaid sabbaticals will be granted for all career employees. Opportunity must result in a product, service, report, or study to benefit the lab's mission.	Complements existing developmental opportunities. Covers all demo employees. Each opportunity must result in a product, service, report, or study to benefit the lab's mission
TACOM	Expanded authority to provide degree payment to employees in all occupational families.	Paid sabbaticals will be granted for a 3-12 month period. Opportunity must result in a product, service, report, or study to benefit ARL's mission. Employee must agree to remain with TACOM for three times the length of the sabbatical after its completion.	Complements existing developmental opportunities. Covers all permanent employees.

Table L-2 Perceptions of Training & Development 92. I have all the skills I need in order to do my job.									
		Disagree		**Neither**		**Agree**		**Total**	
		N	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Wave 1	1996	2775	22.58	1960	15.95	7557	61.48	12292	100.00
	1998	1423	20.06	1041	14.68	4628	65.26	7092	100.00
	1999	1394	21.40	1083	16.63	4037	61.97	6514	100.00
	2001	751	18.04	576	13.84	2835	68.12	4162	100.00
Wave 2	1996	665	19.90	502	15.03	2174	65.07	3341	100.00
	1998	324	19.70	250	15.20	1071	65.11	1645	100.00
	1999	144	21.79	117	17.70	400	60.51	661	100.00
	2001	301	18.26	231	14.02	1116	67.72	1648	100.00
Non-Implemented	1996	1059	21.17	771	15.41	3172	63.41	5002	100.00
	1998	994	20.20	747	15.18	3180	64.62	4921	100.00
	1999	869	23.33	674	18.09	2182	58.58	3725	100.00
	2001	714	19.82	542	15.05	2346	65.13	3602	100.00

Table L-3 Perceptions of Training & Development 94. Employees are provided with training when new technologies and tools are introduced.									
		Disagree		**Neither**		**Agree**		**Total**	
		N	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Wave 1	1996	3530	28.77	2586	21.08	6152	50.15	12268	100.00
	1998	1854	26.25	1639	23.20	3571	50.55	7064	100.00
	1999	1575	24.19	1533	23.54	3403	52.27	6511	100.00
	2001	828	20.03	861	20.83	2444	59.13	4133	100.00
Wave 2	1996	834	25.01	664	19.91	1837	55.08	3335	100.00
	1998	487	29.73	384	23.44	767	46.83	1638	100.00
	1999	175	26.60	148	22.49	335	50.91	658	100.00
	2001	366	22.44	381	23.36	884	54.20	1631	100.00
Non-Implemented	1996	1364	27.35	1054	21.13	2569	51.51	4987	100.00
	1998	1184	24.13	992	20.22	2730	55.65	4906	100.00
	1999	925	24.91	817	22.00	1971	53.08	3713	100.00
	2001	702	19.64	654	18.29	2219	62.07	3575	100.00

L-4 Critical Skills Training Personnel Data Results								
Lab	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001 YTD**	**All Demo**
AFRL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
AMRDEC				1210**	13581**	13452**	8592**	36835**
ARL			0	0				
MRMC	*	*	*	*	*	*	*	*
NSWC Dahlgren	*	*	*	*	*	*	*	1
NSWC Indian Head	*	*	*	*	*	*	*	*
NSWC Carderock	*	*	*	*	*	*	*	*
NSWC Crane	*	*	*	*	*	*	*	*
NSWC Port Hueneme	*	*	*	*	*	*	*	6
NSWC Corona	*	*	*	*	*	*	*	*
ERDC (CERL, CRREL, & WES)			0**	0**	900**	563**	119**	1582**
NRL	*	*	*	*	*	*	*	*
NUWC Newport	*	*	*	*	*	*	*	*
NUWC Keyport	*	*	*	*	*	*	*	*
CECOM								
TACOM	*	*	*	*	*	*	*	*
SBCCOM	*	*	*	*	*	*	*	*
STRICOM	*	*	*	*	*	*	*	*

* Reported as "various" only
** Reported in hours

Table L-5 Perceptions of Critical Skills Training 93. I am given adequate opportunity to participate in training programs.									
2001		**Disagree**		**Neither**		**Agree**		**Total**	
		N	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Wave 1 Labs with Critical Skills Training:	AFRL	121	11.35	122	11.44	823	77.20	1066	100.00
	AMRDC	134	11.39	123	10.46	919	78.15	1176	100.00
	MRMC	30	14.22	26	12.32	155	73.46	211	100.00
	NSWC – Dahlgren	174	18.91	116	12.61	630	68.48	920	100.00
	NSWC – Indian Head	53	27.60	34	17.71	105	54.69	192	100.00
	NSWC - Carderock	2	28.57	1	14.29	4	57.14	7	100.00
	NSWC – Crane	46	14.56	43	13.61	227	71.84	316	100.00
	NSWC - Port Hueneme	46	17.10	36	13.38	187	69.52	269	100.00
	NSWC – Corona	61	27.35	40	17.94	122	54.71	223	100.00
	NSWC – Other	12	28.57	8	19.05	22	52.38	42	100.00
	NRL	100	14.79	96	14.20	480	71.01	676	100.00
	NUWC – Newport	120	20.27	58	9.80	414	69.93	592	100.00
	NUWC – Keyport	121	34.67	64	18.34	164	46.99	349	100.00
	NUWC – Other	6	23.08	4	15.38	16	61.54	26	100.00
	Total	892	18.25	648	13.25	3349	68.50	4889	100.00
Wave 1 Labs without Critical Skills Training:	ARL	65	20.44	46	14.47	207	65.09	318	100.00
	Total	65	20.44	46	14.47	207	65.09	318	100.00

Table L-6 Perceptions of Sabbaticals for Wave 1 Labs: Professionals Only 43. I would like the opportunity to take a sabbatical for my professional development.									
2001		**Disagree**		**Neither**		**Agree**		**Total**	
		N	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Wave 1 Labs with Sabbatical Intervention:	AMRDEC	184	20.04	227	24.73	507	55.23	918	100.00
	ARL	39	20.97	49	26.34	98	52.69	186	100.00
	Total	223	20.20	276	25.00	605	54.80	1104	100.00
Wave 1 Labs without Sabbatical Intervention:	AFRL	191	22.98	200	24.07	440	52.95	831	100.00
	MRMC	9	11.69	17	22.08	51	66.23	77	100.00
	NSWC (total)	414	28.11	436	29.60	623	42.29	1473	100.00
	NRL	64	15.31	113	27.03	241	57.66	418	100.00
	Total	678	24.22	766	27.37	1355	48.41	2799	100.00

Table L-7 Sabbaticals Reported in Personnel Data								
Lab	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001 YTD**	**All Demo**
AFRL	*	*	*	*	*	*	*	*
AMRDEC				1	0	0	1	2
ARL			0	0				
MRMC			0	0		1	1	2
NSWC Dahlgren	*	*	*	*	*	*	*	*
NSWC Indian Head	*	*	*	*	*	*	*	*
NSWC Carderock	*	*	*	*	*	*	*	*
NSWC Crane	*	*	*	*	*	*	*	*
NSWC Port Hueneme	*	*	*	*	*	*	*	*
NSWC Corona	*	*	*	*	*	*	*	*
ERDC (CERL, CRREL, & WES)	0	0	0	0	0	0	0	0
NRL	*	*	*	*	*	*	*	*
NUWC Newport	*	*	*	*	*	*	*	*
NUWC Keyport	*	*	*	*	*	*	*	*
CECOM								
TACOM								
SBCCOM								
STRICOM								

* Not applicable

Appendix M

Table M-1 RIF Separations					
Lab	**1996**	**1997**	**1998**	**1999**	**2000**
AFRL	1		1		4
AMRDEC	0	0	0	0	0
ARL		1		1	1
MRMC	2	5		1	
ERDC					
NSWC	112	21	1	6	2
NUWC*					
NRL	3	1	1		1
All	115	29	3	8	8

*Data is not available from these labs.

Table M-2 Voluntary Retirement Separations					
Lab	**1996**	**1997**	**1998**	**1999**	**2000**
AFRL*	127	184	75	130	39
NSWC	311	275	313	230	206
NUWC	203	159	85	107	43
AMRDEC	12	52	23	126	21
ARL	28	38	1	20	39
MRMC	23	12	9	10	12
ERDC	46	44	27	17	17
NRL	69	86	122	18	81

*In 1996 and 1997 all occupational groups are represented versus S & E only in subsequent years.

Table M-3 Retirement in lieu of involuntary action					
Lab	**1996**	**1997**	**1998**	**1999**	**2000**
AFRL*	1	1	1		
AMRDEC	1	3	5	4	2
ARL		6	1	3	1
MRMC		1			
NSWC	7	17	4	3	3
ERDC		1	1		
NRL		1	2		
NUWC	56	18	1		

*In 1996 and 1997 all occupational groups are represented versus S & E only in 1998.

Table M-4 Resignation in lieu of involuntary action					
Lab	**1996**	**1997**	**1998**	**1999**	**2000**
AFRL*	1	2	4	10	
AMRDEC	24	41	50	34	36
ARL		4		1	
MRMC					
NSWC	72	31	21	3	4
ERDC					
NRL	1	2			1
NUWC	205	88		3	2

*In 1996 and 1997 all occupational groups are represented versus S & E only in 1998.

Table M-5 RIF Perceptions Item 75a. How fair was the RIF process (if you have had a RIF) or how fair is the planned RIF process (if you have not had a RIF)?									
Group	**Year**	**Unfair**		**Neither**		**Fair**		**Total**	
		N	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Wave 1	1998	569	43%	303	23%	467	35%	1339	100%
	1999	344	34%	262	26%	394	39%	1000	100%
	2001	110	32%	94	27%	142	41%	346	100%
Wave 2	1998	27	41%	16	24%	23	35%	66	100%
	1999	5	42%	4	33%	3	25%	12	100%
	2001	28	33%	15	18%	41	49%	84	100%
Non-Implemented	1998	583	30%	458	24%	891	46%	1932	100%
	1999	304	29%	255	24%	492	47%	1051	100%
	2001	142	29%	106	22%	236	49%	484	100%
"China Lake"	1998	156	37%	110	26%	158	37%	424	100%

Table M-6 RIF Perceptions Item 75b. Were you provided with adequate information about the RIF?									
Group	**Year**	**Yes**		**No**		**Don't Know**		**Total**	
		N	%	N	%	N	%	N	%
Wave 1	1998	890	46%	617	32%	442	23%	1949	100%
	1999	795	50%	384	24%	421	26%	1600	100%
	2001	273	47%	112	19%	198	34%	583	100%
Wave 2	1998	36	30%	33	27%	53	43%	122	100%
	1999	2	7%	8	27%	20	67%	30	100%
	2001	53	31%	38	22%	81	47%	172	100%
Non-Implemented	1998	1777	70%	374	15%	400	16%	2551	100%
	1999	927	64%	245	17%	276	19%	1448	100%
	2001	408	56%	146	20%	172	24%	726	100%
"China Lake"	1998	305	53%	142	25%	126	22%	573	100%

Table M-7 RIF Perceptions Item 75c. Was adequate job placement information provided to those who needed it?									
		Yes		**No**		**Don't Know**		**Total**	
Group	**Year**	N	%	N	%	N	%	N	%
Wave 1	1998	366	19%	397	21%	1177	61%	1940	100%
	1999	264	17%	200	13%	1116	71%	1580	100%
	2001	142	24%	78	13%	367	63%	587	100%
Wave 2	1998	21	18%	22	19%	75	64%	118	100%
	1999	2	7%	5	17%	22	76%	29	100%
	2001	44	25%	19	11%	114	64%	177	100%
Non-Implemented	1998	963	38%	247	10%	1321	52%	2531	100%
	1999	502	35%	127	9%	816	57%	1445	100%
	2001	246	34%	95	13%	388	53%	729	100%
"China Lake"	1998	196	34%	87	15%	288	50%	571	100%