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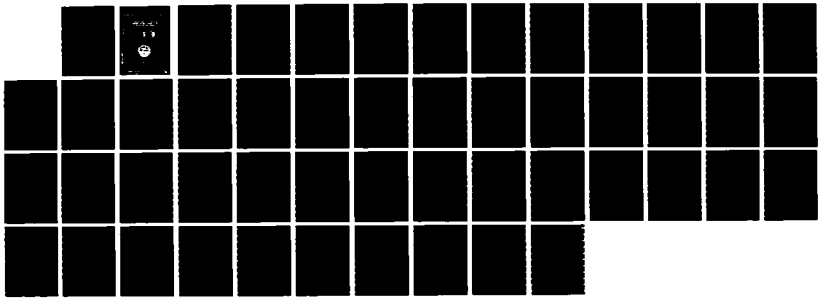

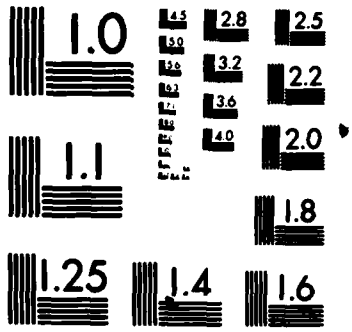

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A TECHNOLOGY TRANSFER PLAN FOR CIVILIAN PERFORMANCE CONTINGENT REWARD SYSTEMS IN THE NAVAL MATERIAL COMMAND

NAVY PERSONNEL RESEARCH
AND
DEVELOPMENT CENTER
San Diego, California 92152

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A TECHNOLOGY TRANSFER PLAN FOR CIVILIAN PERFORMANCE CONTINGENT REWARD SYSTEMS IN THE NAVAL MATERIAL COMMAND

John R. Turney
Stanley L. Cohen

Human Systems Technology, Inc.

Reviewed by
Robert Penn

Released by
James F. Kelly, Jr.
Commanding Officer

Navy Personnel Research and Development Center
San Diego, California 92152

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This project presents a detailed plan for adopting and implementing newly developed productivity improvement techniques employing monetary incentives within the Navy. Steps for developing a technology transfer support system and extending the technology transfer process to user commands are described and responsibilities and roles for researchers, headquarters representatives, and user commands are delineated.

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FOREWORD

This research was conducted under contract with Human Systems Technology, Inc. in support of task area ZF55-521-101-018 (Improving Individual and Unit Productivity), work unit 03.02 (Expectancy Theory of Work Motivation), and was sponsored by the Productivity Management Office of the Naval Material Command (NMC). The purpose was to develop a detailed plan to facilitate the technology transfer of monetary incentive systems from the research setting to implementation within the user community.

Appreciation is expressed to Mr. Robert Sniffin of the NMC Productivity Management Office for his generous assistance in completing this work.

The contracting officer's technical representative was Dr. Steve Dockstader.

JAMES F. KELLY, JR.
Commanding Officer

J. W. TWEEDDALE
Technical Director

SUMMARY

Problem

Since the mid 1970s, the Navy Personnel Research and Development Center (NAVPERSRANDCEN) has been conducting a project concerned with performance contingent reward systems (PCRSs). Under the project, the Center has developed, implemented, and evaluated incentives systems tying rewards closely to employee performance in different Naval Material (NAVMAT) activities. The initial successes of the PCRS programs, in terms of both productivity improvement and cost savings, have led to requests for technical information and assistance, both within and outside of the NAVMAT community. Although the Center has responded to these requests, a more formalized transfer process is needed to expand PCRS technology applications.

Objective

The purpose of this effort was to design a detailed PCRS technology transfer plan to expedite and facilitate the movement of PCRS knowledge and expertise to appropriate NAVMAT users.

Approach

Surveys were developed and administered to representatives from (1) NAVPERSRANDCEN, (2) NAVMAT, naval operations (OPNAV), and systems command (SYSCOM) headquarters, and (3) SYSCOM field activities where PCRS programs had been implemented. Also, shipyard productivity coordinators were surveyed via telephone. The purpose of the surveys was to obtain information that would help to establish a realistic, functional transfer plan responsive to the requirements of as many of the participants in the transfer process as possible. Interview data were analyzed in terms of five conditions that technology transfer experts state must be present if the technology transfer process is to be successful: (1) a mature technology base, (2) sufficient personnel and guidance to support and implement the technology, (3) strong management support, (4) adequate personnel and financial resources, and (5) favorable organizational climate.

Results

1. Interview results were discussed in terms of the five critical technology transfer conditions.

2. A technology transfer plan was developed that reflects the interview results. It is presented in terms of the five critical technology transfer conditions.

3. The steps included in developing the technology transfer support system and in extending the technology transfer process to NAVMAT field users are described. Also, specific recommendations are provided for action responsibilities and support requirements.

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INTRODUCTION

Background and Problem

The Navy Personnel Research and Development Center (NAVPERSRANDCEN) has been conducting a project concerned with performance contingent reward systems (PCRSs) since the mid 1970s. Under this project, which is supported by the Chief of Naval Material (CNM), the Center has developed, implemented, and evaluated incentives systems tying rewards closely to employee performance in different activities of the Naval Material (NAVMAT) industrial establishment.

PCRS programs have been implemented in keypunching departments of six naval shipyards (NSYs), resulting an an average productivity increase of 22 percent (Shumate, Dockstader, & Nebeker, 1978; Bretton, Dockstader, Nebeker, & Shumate, 1978; Dockstader, Nebeker, Nocella, & Shumate, 1980) and in an NSY supply department (Small Purchase Branch), where initial evaluations showed a productivity improvement of over 17 percent, with projected savings in excess of $500,000 over 5 years (Nebeker, Neuberger, & Hulton, in press). Also, a monetary incentives program has been implemented for production workers at the Naval Air Rework Facility (NARF), Alameda, and is currently being evaluated. This latter program, which involves individual goal setting and performance feedback interventions, has already resulted in productivity increases of 10 to 18 percent (Crawford, White, & Magnusson, in press). Future plans are to extend PCRS programs to similar departments in other Naval Material Command (NMC) organizations and across all departments within a single organization. Also, NAVPERSRANDCEN has provided technical advice and documentation to the NAVMAT facilities listed in Table 1 for use in implementing PCRS programs.

Table 1

NAVMAT Activities Provided PCRS Guidance and Documentation

Activity	For use in/by:
Naval Sea Systems Command	Key entry operations
Public Works Center/Naval Facilities Engineering Command	Key entry operations; auto overhaul
Philadelphia Naval Shipyard/Naval Sea Systems Command	Prime pipe shop and support activities
Pearl Harbor Naval Shipyard/Naval Supply Systems Command	Supply clerks; small purchase buyers
Pearl Harbor Naval Shipyard/Naval Sea Systems Command	Inside machine shop
Naval Air Rework Facility/Naval Air Systems Command	Engine rework shops
Naval Supply Systems Command	Publications and printing activities

The initial successes of the PCRS programs and subsequent requests for technical information and assistance, both within and outside of the NAVMAT community, has generated a strong interest at NAVPERSRANDCEN in developing a process for transferring PCRS technology. In 1980, the Center produced a document describing the status of NAVPERSRANDCEN technology transfer actions and recommending general strategies, future steps, and responsibilities to complete the transfer process (Issues relating to technology transfer, 1980). The issues raised in the document include different methods for transferring or extending PCRS programs from one research site to other sites, requirements for support material (i.e., documentation, operational manuals, training, and indoctrination), and establishing a formal technology transfer process. Initial steps in the technology transfer process, as spelled out in the document, include:

1. Providing top level command briefings.

2. Delineating systematic research objectives to develop the PCRS technology base through 1988.

3. Providing technical training for user groups.

4. Providing for a productivity steering group composed of department heads and a productivity improvement team of technical experts at each project site.

5. Providing a collaborative management structure to facilitate technology transfer.

In addition, NAVPERSRANDCEN has (1) collaborated with the Office of Personnel Management (OPM) to produce a document for federal managers and supervisors that describes the PCRS programs introduced within the six shipyards (Joyce, 1981), (2) provided a publication that describes the critical elements in PCRS program implementation (Shumate, Dockstader, & Nebeker, 1981), (3) participated in a workshop on PCRS for practicing managers and supervisors,[1] and (4) developed a working paper addressing design and implementation considerations for incentives systems (Dockstader, 1982).

NAVPERSRANDCEN has continued to respond to specific requests for information on PCRS technology from persons in the user community. At the same time, the NAVMAT Productivity Office (MAT-00K) has functioned to support, coordinate, and publicize PCRS programs. However, a more formalized transfer process is needed to expand PCRS technology applications within NMC. The importance of this process was reinforced in a technology transfer meeting held at NAVMAT headquarters in September 1980, with representatives from NAVPERSRANDCEN, NAVMAT headquarters, naval operations (OPNAV) headquarters, and the NAVMAT systems commands (SYSCOMs).

Objectives

The purpose of this effort was to design a detailed PCRS technology transfer plan to expedite and facilitate the movement of PCRS knowledge and expertise to appropriate

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[1] This 2-day workshop, entitled "Productivity Improvement Through Incentives," was cosponsored by NMC and OPM. During the workshop, NAVPERSRANDCEN researchers and on-site PCRS implementers, both in NMC and in other government agencies, described the nature of PCRS programs and their own practical experiences with these programs. The proceedings (1982) are available from NMC (MAT-00K).

NAVMAT users. The plan is intended to provide for an orderly transfer of the PCRS technology base by addressing, at a minimum, the following requirements:

1. The functions and interrelationships of personnel in NAVPERSRANDCEN, NAVMAT and SYSCOM headquarters, and field activities.

2. Support materials for marketing, implementing, and evaluating PCRS programs.

3. Resources for program implementation.

4. Transfer of the technology base in its current form and as expanded.

5. Procedures and events in the actual transfer process.

APPROACH

Data Collection

Interviews were conducted with persons representing NAVMAT activities likely to be involved in the technology transfer process in order to identify the constraints, concerns, and requirements of these activities and determine appropriate actions for dealing with them. Table 2 lists the activities concerned and the principal objectives/focus of the interviews.

Various organizational and technology transfer experts (e.g., Chakrabarti & Rubenstein, 1976) have noted that five conditions must be present if the technology transfer process is to be successful. First, the technology must be mature. Second, there must be sufficient personnel and guidance available to support and implement the technology. The last three conditions are strong management support, adequate personnel and financial resources, and a favorable organizational climate. These conditions were considered in developing interview guides for each NAVMAT activity involved, as were functions that must be included in the process in some form. They are (1) policy-making functions to provide legitimate support and formal guidelines for PCRS programs, (2) planning and coordinating functions that help to assure that adequate resources are provided for a PCRS program and that appropriate advance planning activities are conducted, and (3) program implementation functions, which involve the actual daily on-site activities carried out step-by-step and the critical issues that must be addressed as they occur. Copies of the interview guides developed are provided in Appendix A.

Analysis

The interview data were content analyzed in terms of the five technology transfer conditions required and the policy-making, planning, and implementation functions. Agreements and differences of opinion on the nature of the PCRS technology base and transfer process requirements were noted. Although the data collected do not necessarily represent all salient NAVMAT perspectives, they do reflect a wide range of viewpoints that should provide a sufficient data base for establishing a feasible PCRS technology transfer process. As this process proceeds, additional input from involved NAVMAT activities will be included.

Table 2

PCRS Technology Transfer Interviews

Activity Represented	Objective/Focus
NAVPERSRANDCEN (N = 5)	Establish the current status of the PCRS technology base (both written and unwritten forms) and obtain views on NAVPERSRANDCEN functions in the technology transfer process.
NAVMAT Headquarters (Productivity Office/MAT-00K; Manpower and Personnel Management Office/ MAT-01M; Resources Management Office/MAT-01) (N = 10)	Directed toward current and future PCRS technology transfer headquarters staff support requirements and how they might best be achieved. Major issues addressed included organizational locations for different technology transfer activities, resource and policy requirements, and appropriate top management support.
OPNAV Headquarters (Civilian Personnel/OP-14) (N = 4)	Same as above.
SYSCOM Headquarters (NAVSEA, NAVSUP, NAVAIR) (N = 4)	Same as above.
SYSCOM field activities (Mare Island, Long Beach, and Philadelphia NSYs; NARF Alameda; Supply Dept, Pearl Harbor NSY; PWC San Diego) (N = 10)	Establish technology base and resource support requirements as viewed by actual users of PCRS programs. Persons interviewed had hands-on field experience with PCRS program implementations.
NSY productivity coordinators (Charleston, Norfolk, Portsmouth, Pearl Harbor) (N = 5)	Determine current knowledge of PCRS technology base for group of potential users and identify requirements to make the technology base relevant to specific organizational settings (conducted by telephone).

INTERVIEW RESULTS

PCRS Technology Base

As indicated previously, the first requirement for a successful transfer process is that the technology base be mature; that is, it must be ready to be transferred from the research and development (R&D) stage to the field activity installation stage. Interview results showed that views as to the maturity of the PCRS technology base ranged from one extreme where the base was seen as being sufficiently adequate to provide guidance for implementing large-scale organization-wide PCRS programs costing hundreds of thousands of dollars to the other where it was seen as being irrelevant because only keypunch operations had been studied in any detail. (Moreover, as was pointed out, it was likely that keypunching would soon be contracted out anyway.) This divergence in views may be explained in terms of different ideas as to what the PCRS technology base involves. If one views the technology base as involving a PCRS process that can be applied across work settings, it is possible to define organizational climate factors, implementation steps, and control and maintenance procedures that are generic to all job types and organizational settings within NMC (see Shumate et al., 1981; Dockstader, 1982). If, on the other hand, one views the technology base in terms of content-specific applications for particular job types in similar work-settings, it is possible to define (1) a total package that incorporates implementation procedures for the targeted type of work-setting, (2) a performance measurement system and standards, (3) a training package, and (4) cost savings estimated for the particular work-setting (see Shumate et. al., 1978; Bretton et al., 1975; Dockstader et al., 1980).

The PCRS technology base that evolves from current and future R&D efforts will probably be a blend of the process and the content views, and will consist of different combinations of process implementation steps, performance measurement system procedures, and monitoring activities for certain content classes of jobs and organizational conditions. At present, however, field activity personnel seem to emphasize a content-specific technology base while headquarters representatives look more toward a generic process technology base that can be used anywhere.

Personnel and Guidance for Program Support and Implementation

A wide range of activities can be performed to support field activity PCRS programs, either at the NAVMAT or SYSCOM headquarters level. The activities that were emphasized during the interviews are listed below and described in the following paragraphs.

1. Develop policy.
2. Formalize network of subject matter experts (SMEs).
3. Disseminate information on PCRS technology base and policy.
4. Identify site candidates for PCRS programs.
5. Provide technical assistance in planning PCRS programs.
6. Provide assistance in obtaining expert and monetary resources.
7. Provide initial technology skills training for on-site personnel.
8. Monitor/assist PCRS program implementations.

Develop Policy

Considerable guidance in and support for PCRS programs has been provided at the Secretary of the Navy (SECNAV) and naval operations levels in the form of written policy (SECNAVINST 5200.31, SECNAVNOTE 5305, OPNAVNOTE 5305, and NAVMATINST

5200.42). Recently, OPM issued *Civilian Personnel Instruction* (CPI) 451, which provides the most complete support and guidance for performance-based reward systems in the Navy. However, these documents do not generally reach possible PCRS users in NAVMAT field activities. Few interviewees were aware of the existence of these documents, even those currently participating in PCRS programs. Moreover, persons at the NAVMAT headquarters level felt that the policy guidance had to be made more directly relevant to NMC, possibly by issuing NAVMAT instructions that linked into CPI 451. Another recommendation was to develop a handbook for NAVMAT users that incorporated material on policy, implementation steps, and other information necessary to conduct a PCRS program.

NAVMAT headquarters level personnel also expressed concern regarding policy issues that may arise as PCRS programs expand in size, scope, and visibility. These issues need to be anticipated so they can be incorporated in formal policy and guidance ahead of time. This would reduce not only the risk of PCRS programs being cancelled but also any negative publicity that could result from possible illegal or inappropriate actions.

Formalize Networks of Subject Matter Experts (SMEs)

During PCRS program implementation, a number of issues are likely to arise that require expert input from SMEs. Such issues include personnel matters, the mechanics of monetary payouts through incentives awards, computer software programming for the performance measurement system, and union concerns about incentive payment equity. Although many such issues can be and have been dealt with at the local activity level, others have required expert input at the SYSCOM or NAVMAT headquarters level. Currently, this input is provided on a demand and staff availability basis through MAT-00K. It was suggested during the NAVMAT headquarters interviews that a more formal NAVMAT network should be established, with designated points of contact in each relevant office or subject matter area.

Disseminate Information on PCRS Technology Base and Policy

NAVMAT activities have little knowledge about the PCRS technology base, which is not surprising since there has been no systematic attempt to disseminate available information. Therefore, it was suggested that information on the technology base be disseminated through a PCRS handbook, site visits by technology experts, and videotapes of experts on and participants in PCRS programs. In this regard, it is critical that key persons, offices, or positions in each activity where the material will be useful be identified.

Identify Site Candidates for PCRS Programs

The sites where PCRS programs have been implemented were not selected through any systematic process. Rather, they became sites as a function of NAVPERSRANDCEN research initiatives and subsequent command determination of where the program should be developed or because persons located within a facility had a knowledge of PCRS programs and were in a position to initiate and carry out such an effort. The PCRS programs at a PWC and an NSY were developed through the initiatives of the local productivity program coordinators who reported directly to their facility commanders.

With the establishment of the PCRS technology transfer program, a selection process must be developed that will encourage sites with specified characteristics to participate in a PCRS program. Because of the number of issues that must be addressed satisfactorily if a PCRS program is to succeed, sites must be selected based on criteria

that NAVPERSRANDCEN research has shown as either helping or hindering program implementations.

Unsuccessful PCRS programs could have a negative effect on future expansion of the program; and successful programs with documented cost savings, a positive effect. Program expansion could also be affected by SYSCOMs and individual facilities within SYSCOMs, who have a certain degree of autonomy that permits them to make the final decision as to whether or not a proposed PCRS program should, in fact, be implemented. A proper balance between centralization and autonomy needs to be incorporated as part of the technology transfer plan.

Provide Technical Assistance in Planning PCRS Programs

Immediately after a PCRS site has been selected, SMEs familiar with PCRS requirements in their respective areas of expertise should assist activities in planning PCRS programs. Resulting plans would not only reduce the possibility that a PCRS program would fail but also, by evaluating the present status of critical program elements (e.g., the performance measurement system and in-house computer support facilities) provide the justification for acquiring needed resources.

Provide Assistance in Obtaining Expert and Monetary Resources

As mentioned earlier, when field activities request assistance in resolving PCRS implementation problems, MAT-00K puts them in contact with the appropriate SMEs within the NAVMAT or SYSCOM headquarters staff. This function may be reduced to some extent with a more formalized SME network. However, with expanded PCRS technology transfer requirements and limited available in-house staff to satisfy these requirements, MAT-00K may be assigned the responsibility for a number of other activities. This would include establishing a network of outside expert consultants (SMEs), advising facilities on how to budget dollars to pay for these consultants, and making appropriate consultant-field activity linkages based on the expertise required to implement a specific program (as determined through the written PCRS plan).

Provide Initial Technology Skills Training for On-site Personnel

Initial technology skills training should be provided to on-site program coordinators and implementers to enable them to deal quickly and effectively with problems that arise. Expert outside consultants can deal with some of these problems. However, as has been demonstrated in all of the PCRS programs implemented to date, capable on-site personnel who are members of the organization and thus familiar with its formal and informal workings are in the best position to sell the PCRS program to skeptics and to deal with problems. These persons may be direct supervisors in a target PCRS site, upper-level managers, or designated in-house productivity program coordinators and implementers.

The initial technology skills training is intended to provide trainees with as complete a working knowledge of PCRS programs ahead of time as possible. It should be as realistic and situation-specific as possible. It should utilize supervisors, managers, and others directly involved in previous PCRS program implementations. (The PCRS workshop held in San Diego in January 1982 (see footnote 1) provided this type of focus.)

Monitor/Assist PCRS Program Implementations

SMEs should be available to monitor a PCRS program as it proceeds, providing input when required. Such monitoring would be useful not only in anticipating and avoiding

certain problems, but also in providing a source of feedback to the PCRS technology base. Also, information obtained by evaluating a total PCRS program can be used to update the technology base and to justify expansion of the transfer effort. As the technology base is expanded and refined, there should be less need to monitor and assist with program implementations.

Management Support

The third condition necessary for a successful technology transfer plan is support from top management. Within NMC, support runs from CNM and his immediate staff through the SYSCOM commanders to the facility commanders. CNM and the Vice Chief of Naval Material (VCNM) have endorsed productivity improvement programs in NAVMAT activities in general as well as PCRS programs as one specific type of improvement effort. However, no attempt has been made at the CNM or SYSCOM command level to market PCRS programs or recommend that they be implemented.

Two different perspectives exist as to the nature of command support that is currently required as part of the PCRS technology transfer process. One is that someone at the NAVMAT headquarters level should be designated to advocate, endorse, and obtain resources for PCRS efforts. According to this perspective, such support is necessary to develop any type of extensive technology transfer program, primarily because of tight personnel ceilings and budgetary constraints.

The other persepctive is that the PCRS technology base is neither mature nor extensive enough to justify a full-scale, highly-visible, high-level support campaign at this time. Proponents of this view feel that facility commanders will want proof, in terms of productivity and cost savings data, that PCRS programs will work before they commit their own resources to them. Also, CNM needs adequate productivity and cost savings data to support a Program Objectives Memorandum (POM) for substantial PCRS program funding. Although PCRS programs conducted by NAVPERSRANDCEN resulted in productivity increases and cost savings, they were limited to a narrow range of job types and NAVMAT facility activities. More extensive evidence needs to be accumulated before CNM, VCNM, or SYSCOM commanders make a videotape, issue specific requirements for PCRS program implementations, or commit major funds to a PCRS program.

These two perspectives need to be accommodated in the technology transfer plan. Adequate top-level backing and resource commitments are necessary if the PCRS technology base is to be expanded to the point where it meets the requirements for wide-scope, substantial program support. At the same time, the base should not be overextended to the point where substantial numbers of high-risk programs are being conducted.

Another management support issue is whether decisions as to PCRS technology control and implementation should be made at the SYSCOM rather than at the NAVMAT headquarters level. One perspective on this issue is that final policy decisions and control over program implementations should rest with NAVMAT headquarters. (In fact, the recently issued CPI 451 on performance-based reward systems makes implementation plan approval an Echelon 2 (NAVMAT headquarters) responsibility.) The other perspective is that the SYSCOMs do and will continue to have final authority over PCRS implementations within their facilities; the NAVMAT headquarters' role is to provide advice and assistance. To resolve the differences between these two perspectives, a PCRS transfer process could be developed that enables NAVMAT headquarters staff to provide the SYSCOMs with effective up-front program guidance and assistance, thereby minimizing any later requirements for control.

Personnel and Financial Resources

The fourth condition for a successful process involves the bottom line of any program initiative: its costs and where the money will come from. Because of tight personnel ceilings, particularly at NAVMAT headquarters, it is unlikely that additional in-house staff will be acquired for the technology transfer process. Also, budgetary resources specifically targeted for the process are uncertain at best and have the habit of disappearing.

The following suggestions were made during the interviews for resource acquisition:

1. Activities wishing to initiate PCRS programs should budget funds up front in their Navy Industrial Fund (NIF).

2. Activities should use funds currently budgeted as part of their incentives awards program or budget additional funds under this program.

3. Activities should charge program developmental costs to the Productivity Enhancement Capital Investment Fund.

4. A central NAVMAT headquarters fund should be established to provide resources for developing pilot programs. SYSCOM facilities where programs were successfully implemented would be required to return a portion of their productivity savings to replenish the fund.

5. A POM should be initiated to provide long-term funding as a Navy appropriation item under civilian manpower.

The PCRS programs that have been implemented in field activities have relied primarily upon NAVPERSRANDCEN research funds, NIF budgeted incentives awards funds, or NIF budgeted productivity program funds. Although these funding sources should remain, there is general agreement that more extensive funding will eventually be necessary to conduct a full-scale, coordinated PCRS transfer program. On the other hand, it is also necessary to consider how a limited program can be carried out using readily available resources to the fullest extent.

Organizational Climate

Organizational climate refers to the unique combination of factors that characterize a specific setting into which a PCRS program is to be introduced. Such characteristics cannot be forecast in advance; rather, they must be determined by visiting the setting to see whether conditions exist that have been found to relate to sucessful PCRS program implementations. Such conditions include management commitment, employee trust in management, good labor relations, opportunity for productivity improvement, and employee receptivity to change. Also, the extent to which commands, facilities, and supervisors are willing to take risks to achieve productivity gains rather than maintain a conservative budgetary status quo is an important climate element. As noted earlier, advance planning, a record of previous PCRS program successes, and upper-level management support can reduce the perceptions of risk.

One organizational climate issue that is likely to surface throughout a PCRS program is a skepticism about the appropriateness of giving employees extra rewards for productivity that surpasses certain standards. NAVPERSRANDCEN researchers and field activity program implementers noted that explaining and selling the incentive awards

concept required substantial amounts of their time. They had to resell the program to high level managers and supervisors who had received counterarguments from opponents of the concept and explain to key NAVMAT persons who had recently arrived in the facility and who were skeptical of or simply unfamiliar with the PCRS concept. Methods for dealing with this skepticism by PCRS implementers need to be built into the technology transfer material.

PCRS TECHNOLOGY TRANSFER PLAN

This section describes a PCRS technology transfer plan that reflects interview results. It is presented in terms of the five critical technology transfer conditions.

PCRS Technology Base

Since the PCRS technology base is currently being developed, the technology transfer plan needs to accommodate its current state as well as provide for an appropriate support system so that its development can continue. As noted previously, some persons perceive the technology base as involving a process; and others, as involving content-specific applications. These two perceptions can best be accommodated within the current technology base by classifying a potential PCRS program site in terms of its job category and organizational similarity to previous successful PCRS programs.

Under this method, potential sites would be classified as a replication, an extension, or a prototype. These classifications are described below.

1. Replication. This classification would be used when a potential site plans a PCRS program that falls into the same or similar job category as a successful PCRS program and has organizational characteristics similar to those of the site where the program was implemented. As indicated previously, PCRS programs have been successfully implemented in the keypunch sections of several NSYs. Thus, an example of a replication would be the implementation of a PCRS program in the keypunch section of another NSY. Such a program would be low risk because the PCRS process applied to the specific job and organization content had already proven to be effective in terms of significant productivity improvements. It could be supported by a proven content-specific process.

2. Extensions. This classification would be used under the following conditions:

a. When the potential site plans a PCRS program that involves the same or similar job category as a successful PCRS program but has different organizational characteristics than the implementing site. Different characteristics could mean that the PCRS process used previously would have to be modified substantially to accommodate a different authority structure or workgroup size.

b. When the potential site plans a PCRS program that has never been implemented before but has organizational characteristics similar to those of a site where some type of PCRS program has been implemented successfully.

c. When the potential site has had a PCRS program implemented successfully in one department and plans a PCRS program that falls in a different job category than the original program for a different department. NAVPERSRANDCEN is planning this type of extension for NARF Alameda. As indicated previously, a PCRS program has been

successfully implemented in the engine division of this activity. Ultimate plans are to implement PCRS programs throughout the other production divisions.

3. Prototype. This classification would be used when the proposed PCRS program represents a new job category in a different type of organization from any previously successful PCRS programs. Such programs would rely completely on the process technology base and, if successful, would contribute to the expansion of the content side of the technology base. They would represent the highest risk because of the uncertainty of their success, and would be conducted under carefully controlled research conditions, primarily by NAVPERSRANDCEN or private contractors with similar capability.

This classification system should serve to reduce the risks associated with PCRS program implementations. It can channel PCRS programs into different support systems as a function of the available process and content technology base. Those sites classified as prototypes or extensions would need a stronger support system in terms of resources, advance planning, and monitoring than would sites classified as replications. As the technology base expands, individual site support requirements should decrease since there would be fewer sites classified as prototypes. However, overall resource requirements may remain the same or increase as the number of PCRS program replications and extensions increases.

The site classification system can also be used to expand the technology base by targeting specific sites for PCRS program implementation. For example, an objective during the initial technology transfer process could be to identify certain low-risk replication sites that would provide productivity improvements and cost savings data within a relatively short time frame. Other sites would be designated as extensions to expand the technology base into broader areas at a moderate degree of risk. Results of programs at replication and extension sites could be used to justify program expansion while basic longer-term, controlled prototype studies are being conducted.

The site classification system should be used to determine the feasibility of a PCRS program and the guidance and support required for program implementation. At a minimum, it can help a facility and its parent SYSCOM decide whether or not to implement a PCRS program by alerting them of the risks and up-front resource requirements involved. At a maximum, it can help ensure that an appropriate blend of programs will be implemented.

Support Personnel and Guidance

A strong support system is needed to facilitate the technology transfer process and to prepare for eventual expansion of the technology base into a wide range of NAVMAT work settings and job categories. Because of tight budgetary constraints, this support system must utilize currently available resources to the fullest extent possible. The two primary aspects of this support system are (1) the mechanisms or devices for actually conveying guidance and information on the technology base to the field activity users, and (2) the responsibilities of the NAVMAT activities in developing and disseminating such guidance and material and in expanding the technology base. These aspects are discussed below.

Mechanisms for Conveying Technology Base Information

PCRS handbooks. One or more PCRS handbooks should be produced that provide guidance and support for PCRS programs. The first would address the topics listed in Table 3 and discussed below.

Table 3

Contents for Initial PCRS Handbook

Item	Topic
Foreword	Information from Commander/Vice Commander and NMC
Chapter:	
1	Definition of a performance contingent reward system
2	Examples of successful NAVMAT PCRS programs
3	Description of Department of Defense, Department of the Navy, and NAVMAT policy and instructions supporting PCRS programs
4	Critical elements in a PCRS program
5	Determining the current state of these elements for a specific site or facility
6	Implications of different states for program implementation and success
7	NAVMAT PCRS program classification system and related support structure
8	Available NAVMAT SMEs for site feasibility diagnosis, training, program development, and program implementation
9	Description of the total implementation process
10	First steps to take and contacts to make
Appendix A	Site-specific descriptions of NAVMAT PCRS programs
Appendix B	Specific PCRS policy material

1. Chapters 1 and 2 would describe the nature of PCRS programs and provide examples of previous NAVMAT success. More detailed descriptions of specific programs could be provided as an appendix.

2. Chapter 3 would provide a summary of policy and command support for PCRS programs. Copies of key policy material, such as CPI 451 and NAVMAT specific instructions, could be included in an appendix.

3. Chapters 4 through 7 would guide the user through the initial steps of a PCRS program to establish the appropriateness for and requirements of a specific site. These chapters are not intended to provide the user with a complete "how-to-do-it" manual to determine site feasibility but, rather, to indicate the major issues to be considered. In the initial handbook, material listed under these chapters may be combined into one chapter.

Later, such material may be broken out into separate chapters representing a broader range of diagnostic material.

4. Chapter 8 provides information on SMEs available for advice during PCRS program installation, making the user aware of the network of SMEs within NMC that can be drawn upon for support. This chapter might be more appropriately placed near the front of the handbook to emphasize the availability of a support system.

5. Chapter 9 describes the implementation steps derived from the PCRS process technology base. Several scenarios could be outlined in flow charts, with estimated time requirements based on previous program implementations.

6. Chapter 10 provides a list of initial actions that a potential site needs to take to establish the necessary foundation for a PCRS program. It includes specific contact points and their roles in helping to construct a PCRS plan.

Other handbooks could focus on specific topics of interest to facility commanders and program managers (e.g., policy and resource support) or on-site program users (e.g., step-by-step implementation procedures). Where sufficient technology base information is available, handbooks could be constructed for specific job categories and organization types to facilitate PCRS program replications. Development of these handbooks would primarily be the responsibility of the SYSCOMs where the relevant activities are located.

Training programs. Since every requirement of a specific PCRS program cannot be anticipated and addressed in a handbook, key on-site personnel must be provided with specialized skills training to help them recognize and deal effectively with issues as they arise. The first training course to be constructed would deal with the PCRS implementation process. It would cover the critical steps in the implementation process and would stress problems, ranging from managerial skepticism to measurement system errors, that actually occur during implementation. This course should be designed as a 1- or 2-day training program, with half of the time being devoted to the basic implementation process; and the other half, to exercises where trainees try to solve the problems presented. Their solutions would be evaluated by the rest of the class and compared with methods used to solve the problems in an actual PCRS program. A videotape of program implementers discussing ways to handle a specific problem would be an effective training device to use in this program.

The second training program to be developed should focus attention on implementing a PCRS program for a specific job category and organizational setting. (NAVPERSRANDCEN has already provided such training for supervisors of shipyard keypunch operations.) Ideally, this training should be given to supervisors and their staffs in sister facilities of a successful recent prototype program. Participants in the prototype program should be involved in developing the training content and actually participate in the initial course presentation. The course would integrate the PCRS implementation process within the specific work setting with actual examples provided by implementers of the prototype program. More than likely, it would be conducted as a workshop with emphasis placed on the exchange of views on implementation issues related to conditions in specific facilities. If possible, the course should be videotaped for presentation to other personnel at potential PCRS replication and extension sites.

Responsibilities of NAVMAT Activities

Given current NAVMAT budgetary constraints, it is unlikely that a new activity would be created to serve as the catalyst for and coordinator of the PCRS technology

transfer process. Instead, it appears that major roles will be played by MAT-00K, NAVPERSRANDCEN, MAT-01M, and the SYSCOM productivity coordinators. These roles and their interrelationships are described below:

1. MAT-00K. Since MAT-00K is already performing many functions required as part of the technology transfer process, the actual implementation of the process will serve to formalize these functions and make them a part of a total integrated set of activities. MAT-00K is in the best position to act as (a) the central keeper of the PCRS technology base for NMC and (2) the liaison between NAVPERSRANDCEN as technology developer and the SYSCOM activities as technology recipients. In the first role, MAT-00K would be responsible for developing the PCRS handbook(s), the training program (s), and the site feasibility diagnostic material, with input from NAVPERSRANDCEN and MAT-01M. In the liaison role, MAT-00K would work through designated SYSCOM headquarters PCRS program coordinators, a designated PCRS subcommittee of the Productivity Steering Group, and facility productivity coordinators or managers in likely program sites to identify potential PCRS site candidates and assure that adequate and consistent technology is transmitted.

Other technology transfer functions identified during the interviews that MAT-00K is suited to fulfill include the following:

a. Diagnose potential sites to establish PCRS program feasibility and to classify sites as replications, extensions, or prototypes.

b. Provide technical assistance to potential sites in developing PCRS plans that adequately address critical program elements.

c. Work with MAT-01M and NAVPERSRANDCEN to establish network of in-house SMEs who are knowledgeable about PCRS programs and available to provide guidance to users upon request. Personnel included in this network should have experience implementing PCRS programs as well as specialized knowledge in performance measurement, incentives awards, labor relations, and other relevant topics.

d. Work with NAVPERSRANDCEN to develop an outside expert network comprised of SMEs from productivity centers, consulting firms, and universities who are available to assist with specific on-site PCRS program requirements.

e. Disseminate current technology base information to field activities and identify new program candidates where recent technology base expansions can be applied.

f. Help link appropriate internal and external resources to a program.

g. Monitor program implementations to assure technology being implemented is consistent with the original PCRS plan. Make sure expert resources are available when needed, and the program is adequately documented for future input to the technology base.

h. Conduct cost benefit evaluations to establish productivity gains and cost savings.

2. NAVPERSRANDCEN. The Center's initial function in the technology transfer process is to deliver the current technology base in formats appropriate for user

consumption. To fulfill this function, NAVPERSRANDCEN needs to provide MAT-00K with the following material on the technology base for inclusion in the PCRS handbook:

a. Critical elements in PCRS programs.

b. Program implementation procedures.

c. Documentation of successful PCRS programs.

d. Diagnostic questions for use in determining whether potential sites are appropriate for PCRS programs and in classifying them as replications, extensions, or prototypes.

NAVPERSRANDCEN should also provide material on program assumptions, implementation activities, and frequently encountered issues requiring on-site problem solving for inclusion in the basic PCRS training course. Once the training course is developed and evaluated on a trial basis, it should be offered as part of the NAVMAT training curriculum for managers and supervisors.

The Center's second function is to assure that the technology base is updated and expanded and that the most recent information is provided to MAT-00K for dissemination to appropriate SYSCOM field activities. As shown in Figure 1, input to the technology base can come from any one of three sources: (1) NAVPERSRANDCEN's own PCRS research program, (2) PCRS programs currently being implemented, such as those at the San Diego PWC and the Philadelphia NSY, and (3) PCRS programs that will be implemented as a result of the technology transfer process. Although three separate contributions could be made to the central PCRS technology base (represented by the solid arrows in Figure 1), a more effective approach would be for NAVPERSRANDCEN to synthesize the technology input from all three sources. To do this effectively and efficiently, the Center needs to develop a strategy for obtaining adequate documentation and evaluation material from each PCRS program site. This could involve providing MAT-00K with a set of guidelines describing site documentation requirements, along with survey instruments for tapping each variable of interest. MAT-00K would coordinate the actual program documentation and evaluation with on-site implementers. Also, NAVPERSRANDCEN researchers could meet with on-site implementers periodically to discuss critical PCRS program elements.

3. MAT-01M. As the NAVMAT headquarters personnel and manpower authority, MAT-01M is in the best position to provide policy and resource acquisition guidance for PCRS technology transfer. Providing guidance on policy helps to assure that consistent supportable personnel guidelines are established regarding such issues as (a) equitable eligibility for incentives awards, (b) adherence to incentives awards program requirements, and (c) interrelationships of PCRS programs with performance appraisal programs and awards. Such issues can be addressed on a case-by-case basis when only a few PCRS programs are operating within NAVMAT; however, when the programs expand in number and in scope, standard legal policy guidelines become more critical.

Providing guidance on resource acquisition also becomes increasingly critical as the number and scope of PCRS programs expand. Reacting to funding and expertise resource acquisition needs on a case-by-case basis must give way to a more stable source of resources. MAT-01M can initiate necessary actions for the eventual expansion in PCRS program scope using available funding strategies such as the POM.

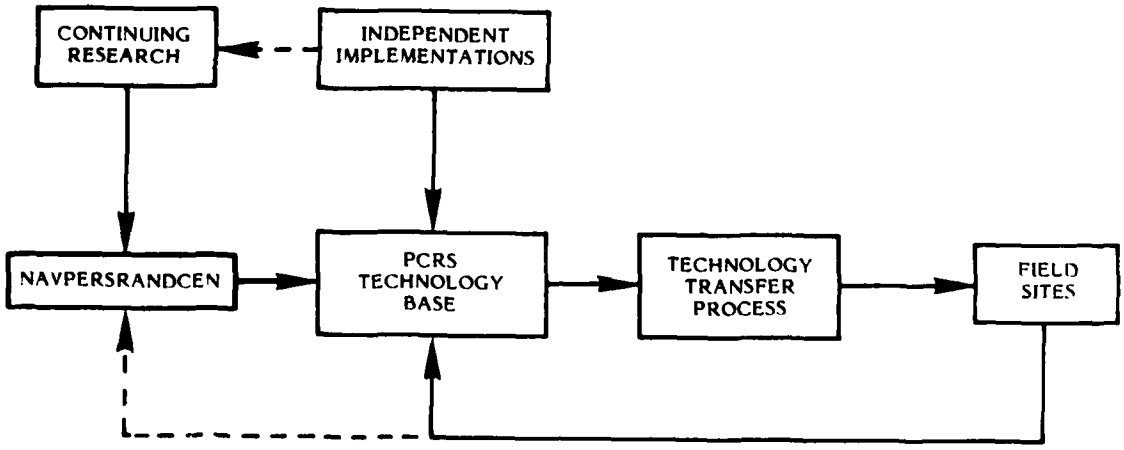

Figure 1. Dynamics of the technology base updating function.

MAT-01M can perform the following as part of these functions:

a. Work with MAT-00K to develop policy guidelines for the PCRS handbook and NAVMAT-specific PCRS instructions derived from CPI 451.

b. Formally designate SMEs in incentives awards, budget, performance appraisal, performance standards, labor relations, and other relevant areas to serve as part of the PCRS SME network. Assure that these persons have a working knowledge of PCRS programs in coordination with MAT-00K.

c. Work with MAT-00K to establish guidelines for PCRS site planning documents that incorporate policy issues derived from CPI 451 and any subsequent NAVMAT-specific instructions.

d. Establish PCRS plan approval responsibilities based on CPI 451 guidelines with MAT-00K and the SYSCOMs.

e. Develop a 5-year PCRS program expansion plan incorporating site targets, policy, and resource acquisition with recommendations from MAT-00K and NAVPERS-RANDCEN. This plan would provide support for a PCRS POM.

4. SYSCOMs. Since the SYSCOMs are ultimately responsible for determining whether or not PCRS programs are implemented in their activities, formalized relationships must be established between each SYSCOM and NAVMAT's PCRS technology

transfer staff. The SYSCOMs may vary as to the support they want to give PCRS programs. However, at a minimum, there must be a formal point of contact in each SYSCOM who is totally familiar with the current PCRS technology base as well as on-going programs in his or her command. This person should sit on a subcommittee of the Productivity Steering Group along with MAT-00K and MAT-01M representatives to facilitate technology and policy information exchange.

SYSCOMs may also vary in the extent to which they want assistance and support from NAVMAT headquarters staff beyond Echelon 2 plan approval requirements. Where a minimum of support is desired, MAT-00K and MAT-01M PCRS staff should provide the SYSCOM coordinator with complete available information and procedural documentation on site diagnoses and classification, resource acquisition, policy guidance, and program implementation and evaluation. When more assistance is desired, NAVMAT headquarters and SYSCOM staffs should share support responsitilities so as to effectively utilize staff resources at both levels.

Management Support

NAVMAT command support at the highest levels must be provided if the PCRS technology transfer process is to succeed. The command should not only acknowledge the existence of the present technology base but also support current PCRS programs, which will provide input to the technology base, enabling its expansion to a large-scale NAVMAT program. Explicit command acknowledgement of the experimental nature of extension and prototype PCRS programs should not only encourage facilities to participate in PCRS experiments but also reduce the risk factor. Command support could be provided by the CNM or VCNM in the foreword of the PCRS handbook, as an oral introduction to the training videotape, and as part of a NAVMAT note or instruction outlining PCRS developmental programs and available resource support for each type (e.g., as a NAVMAT specific interpretation of OPNAV 5305 or CPI 451).

Command support for wide-scale implementations of PCRS programs should also be built into the transfer process. MAT-01M and MAT-00K should establish the timing and nature of this support based on the range and number of documented PCRS program successes in field activities considered necessary to justify a broad-based implementation effort. Immediate command support--from both NAVMAT and SYSCOM command levels--should be directed toward completing the programs that provide this justification as efficiently and effectively as possible.

It is also important that PCRS support be maintained at the OPNAV and SECNAV levels. Since such support is most likely to be reinforced through demonstrated cost savings from successful PCRS programs, PCRS representatives should provide frequent briefings and publications concerning such programs. As the PCRS program expands, OPNAV and SECNAV support becomes even more critical. Acquiring resources through the POM process requires OPNAV sponsorship. Moreover, SECNAV and OPNAV policy instructions and notices may have to be updated to support the expanded program.

Personnel and Financial Resources

Until a budget is established for PCRS programs under civilian manpower through the POM process, they will have to be funded out of current facility, SYSCOM, or headquarters budgets. Ideally, a central PCRS technology base developmental fund should

be established with contributions from participating SYSCOMs. This would expedite the development of the technology base necessary for wide-scale program expansion by supporting targeted sites with adequate resources. The fund could be replenished out of cost savings from successful PCRS programs.

Until this type of budget is established, it will be necessary to continue obtaining support through individual facility and SYSCOM funds. To accommodate PCRS staff requirements at NAVMAT headquarters, current personnel will have to be reassigned and their job responsibilities redefined. Implementation sites will have to use internal staff who are provided available PCRS training and linked into the network of NAVMAT SMEs. These resources could be supplemented by consultants who are funded through activity or SYSCOM budgets.

In the future, it is likely that the success of PCRS programs and the increased demand for implementation assistance from SYSCOM activities can justify the expansion of support staff. Also, productivity savings realized in ongoing PCRS programs may be used to justify and support staff expansion. A portion of these savings could be allocated to support future implementations as well as to sustain current efforts.

Organizational Climate

Critical organizational climate elements can be determined through survey and interview materials developed by NAVPERSRANDCEN for use as part of MAT-00K site feasibility diagnostic procedures. These materials would be administered and interpreted by SYSCOM activities with technical assistance provided by MAT-00K. The PCRS handbook and training programs should include information on how to deal with certain typical climate problems such as skepticism about performance-based incentives. Also, these aids can be used to alert on-site program implementers to organizational climate problems that may arise as the program progresses.

STEPS INCLUDED IN PCRS TECHNOLOGY TRANSFER PROCESS

The previous section addressed a range of activities that need to occur and mechanisms that need to be put into place within NMC as part of the PCRS technology transfer process. This section describes the steps involved in developing the technology transfer support system and in extending the technology transfer process to field activities. Also, for each step, specific recommendations are provided for action responsibilities and support requirements. Appendix B lists the primary responsibilities for each office or activity for the total technology transfer process.

Developing the Technology Transfer Support System

Before the technology transfer process can be extended to users in field activities, the appropriate support system must be in place. The steps required to develop this system are described in the following paragraphs and summarized sequentially in Figure 2. Lead and support responsibilities for conducting each step are presented in Table 4. Table 4 also includes a schedule of time requirements for each step and minimum in-house staff resource requirements for each activity. Based on these estimated requirements, the total process will take about 1-1/2 years. However, the estimates may vary substantially, depending on the degree to which contract support is used.

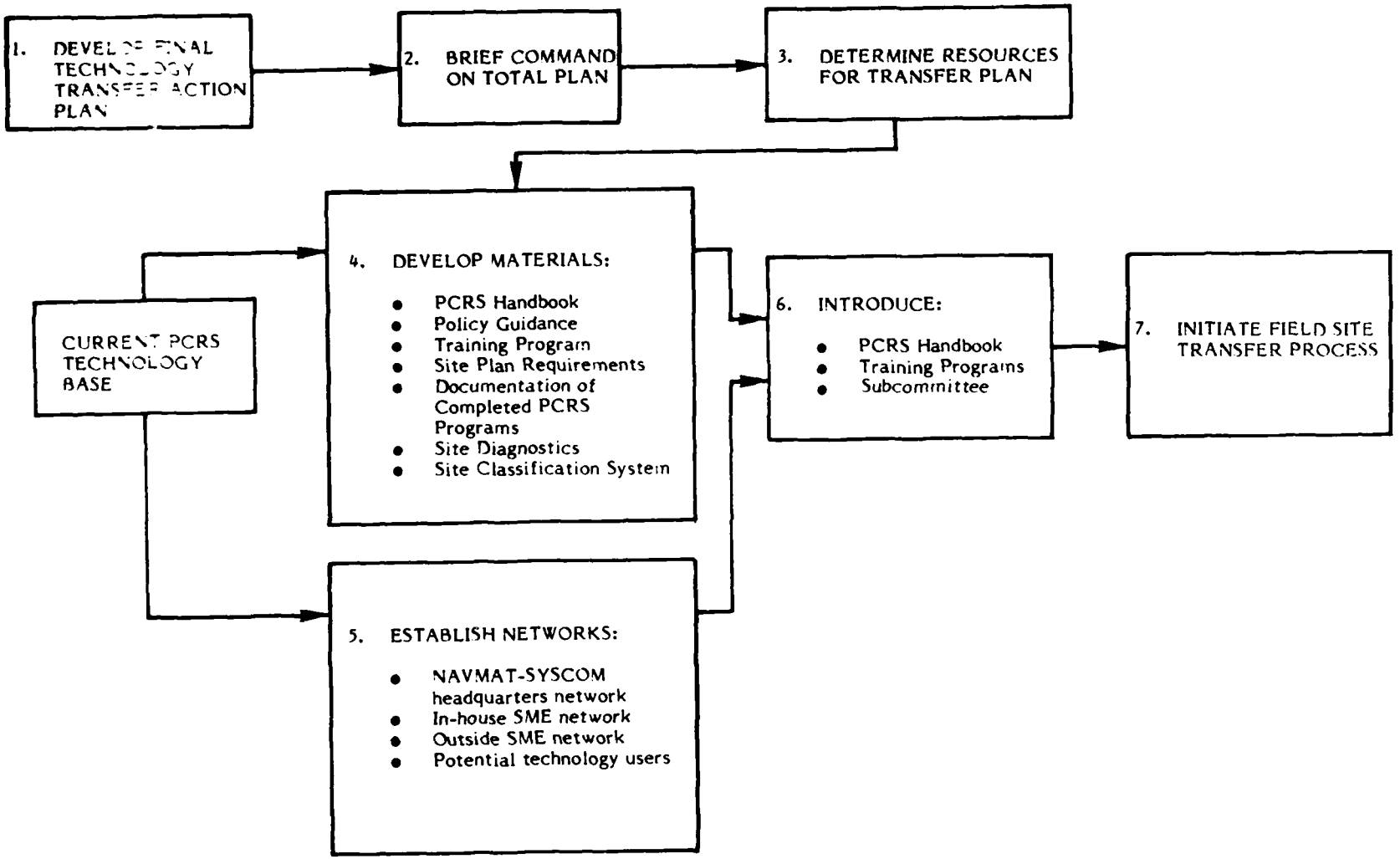

Figure 2. Steps involved in developing the PCRS technology transfer support system.

Table 4

Lead (L) and Support (S) Responsibilities for Steps Involved in Developing the PCRS Technology Transfer Support System

Step	Months Required	Activity: NAVPERS-RANDCEN (1)	MAT-00K (2)	MAT-01M (3/4)	SYSCOMs (1/4)
1. Develop final technology transfer action plan	2	S	L	S	S
2. Brief command on total plan	1	--	S	L	S
3. Determine resources for transfer plan	1	--	S	L	S
4. Develop materials:	10-12				
a. PCRS handbook		S	L	S	--
b. Policy guidance		--	--	L	--
c. Training program		L	S	S	S
d. Site plan requirements		S	S	L	S
e. Documentation of completed PCRS programs		L	L	--	S
f. Site diagnostics		S	L	S	--
g. Site classification system		S	L	S	S
5. Establish networks:	10-12				
a. NAVMAT-SYSCOM headquarters network		S	L	S	S
b. In-house SME network		--	S	L	S
c. Outside SME network		S	L	-	S
d. Potential technology users		S	L	S	S
6. Introduce PCRS handbook, training programs, and subcommittee	2	S	L	S	S
7. Initiate field site transfer process	2	S	L	S	S

Note. The numbers in parentheses represent the minimum in-house staff years required.

Step 1--Develop Final Technology Transfer Action Plan

1. Description. The initial requirement in the total transfer process is the finalization of a detailed action plan. The primary NAVMAT activities responsible for implementing the plan (i.e., NAVPERSRANDCEN, MAT-00K, and MAT-01M) should thoroughly examine it to ensure that it fully meets practical implementation requirements as seen by each office. These requirements include realistic evaluations of available resources, descriptions of what can be accomplished with these resources, and lists of sources where additional resources might be obtained. The productivity coordinators at PWC San Diego and the Philadelphia NSY should also review the plan to provide insights based on their PCRS program implementation experiences.

Participants should place strong emphasis on providing input from PCRS implementations to develop a data base that will support future expansion of the PCRS program throughout NMC. This data base would consist of information on productivity improvements and cost savings as well as projections of future cost savings. To build this data base, site-specific programs in five to 10 activities could be targeted for implementation because of their likely contributions to the data base. However, final implementations decisions would not be made until the first step in the field user transfer process (see p. 24).

2. Responsibilities. MAT-00K initiates the planning sessions, which include participants from MAT-01M, NAVPERSRANDCEN, and SYSCOM productivity coordinators. Emphasis should be placed on reviewing the total technology transfer plan to establish an action plan that can be supported by all participants.

Step 2--Brief Command on Total Plan

1. Description. Once the transfer plan is finalized and approved by participating offices, it should be presented to NAVMAT and SYSCOM commanders and staffs. These briefings would provide an overall perspective of the transfer process in terms of where it is currently and where it is headed. They should also indicate what top-level support and resources would facilitate current program development efforts and when a sufficient data base is anticipated that would justify support for a major NAVMAT PCRS program. Separate briefings may be conducted for OPNAV and SECNAV staffs to inform them of the plan.

2. Responsibilities. MAT-01M briefs NAVMAT and SYSCOM commanders and staff. Support is provided by MAT-00K and the SYSCOM productivity coordinators. Emphasis in the briefings is placed on the total transfer process, milestones, and program expansion.

Step 3--Determine Resources for Transfer Plan

1. Description. Following the briefings, the staff and dollars available currently and in the near future would be assessed. Results would help to establish the schedule and prioritization of activities that are to occur as part of the transfer plan.

2. Responsibilities. MAT-01M leads efforts to establish currently available resources and to develop a strategy for resource acquisition as the total program expands in scope. This step may be incorporated within Steps 1 and 2.

Step 4--Develop Support Materials

1. Description. This step can proceed simultaneously with Step 5; both rely heavily on the current technology base for input and guidance. Step 4 consists of the construction of the support material to be used to introduce PCRS programs to field activities. These materials include (a) the PCRS handbook, which covers a wide range of topics relating to PCRS policy guidance, implementation procedures, and resource requirements, (b) specific NAVMAT policy instruction based on OPNAV 5305 and CPI 451, (c) NAVMAT-wide and SYSCOM site-specific training programs, (d) approval mechanisms for site-specific PCRS plans, (e) documentation of completed PCRS programs including impact evaluations, (f) diagnostics for determining appropriateness of specific sites for PCRS programs, and (g) the site classification system incorporating implementation resource requirements for each category.

2. Responsibilities.

a. PCRS handbook--MAT-00K leads this effort, coordinating input for specific chapters with NAVPERSRANDCEN (PCRS technology) and MAT-01M (PCRS policy).

b. Policy guidance--MAT-01M develops written policy guidance for PCRS programs based on current available material. Primary emphasis is placed on CPI 451.

c. Training program--NAVPERSRANDCEN develops the initial course content for PCRS technology transfer. The material would cover the PCRS implementation process and ways to address specific issues or problems likely to arise during an implementation. MAT-00K and MAT-01M will identify and establish appropriate training technical support for preparing the content for delivery as a formal training program, including lesson plans and videotapes.

d. Site plan requirements--MAT-01M leads development of critical elements for the site plan, which must be prepared by SYSCOM field activities identified as likely PCRS sites. Technical input is provided by NAVPERSRANDCEN and MAT-00K. SYSCOM-specific requirements are developed by each SYSCOM.

e. Documentation of completed PCRS programs--NAVPERSRANDCEN completes documentation of Pearl Harbor supply department programs. MAT-00K assures that the SYSCOMs develop documentation for the San Diego PWC and Philadephia NSY PCRS programs.

f. Site diagnostics--MAT-00K leads the effort to develop site program feasibility diagnostics with technical and policy support provided from NAVPERSRANDCEN and MAT-01M respectively.

g. Site classification system--MAT-00K leads the development of support systems for the respective site classification categories. This action can be effectively integrated with the development of site diagnostics.

Step 5--Establish Networks

1. Description. At the same time PCRS materials are being developed, actions would be initiated to establish the necessary networks of persons to support PCRS implementation. These networks include the designation of a group of NAVMAT and SYSCOM PCRS program coordinators, which could be a subcommittee of the Productivity Steering Group. In addition, the network of in-house SMEs at both the NAVMAT

headquarters and SYSCOM levels would be established. This network would provide input to PCRS implementations in specific areas such as incentives awards, performance measurement, and standards development. Also, a network of outside SMEs would be identified who would provide input throughout an implementation on a regular, on-site basis. Finally, contacts could be initiated with persons within field activities where likely sites for PCRS implementations exist. These sites could represent sister activities to those where PCRS programs have been completed successfully as well as activities where current measurement systems and organzational climate factors suggest that a PCRS program would be successful. These sites would include those identified as potential targets in Step 1. The commanders of these facilities, as well as practicing managers and supervisors of specific activities, could be included within this user network.

2. Responsibilities.

a. NAVMAT-SYSCOM headquarters network--MAT-00K leads the development of this network through SYSCOM productivity coordinators and the PCRS subcommittee of the Productivity Steering Group. MAT-01M supports this action by designating headquarters personnel and human resource policy representatives for the network.

b. In-house SME network--MAT-01M leads this action to designate PCRS points of contact in headquarters and SYSCOM subject matter areas that are relevant to PCRS implementations. Support would be provided by MAT-00K and the SYSCOMs.

c. Outside SME network--MAT-00K leads the effort to establish a network of PCRS SMEs from universities and private consulting firms who can provide on-site technical assistance to implementation efforts. NAVPERSRANDCEN provides advice based on knowledge of and experience with private sector PCRS advisors and implementers.

d. Potential facility users--MAT-00K initiates contacts with field activities to identify candidate sites. Guided by site requirements established in the final transfer plan, MAT-00K would establish contact with facilities in each SYSCOM.

Step 6--Introduce PCRS Handbook, Training Programs, and Subcommittee

1. Description. This step includes the distribution of the PCRS handbook to members of the networks established under Step 5 and the provision of PCRS training to the NAVMAT-SYSCOM headquarters staff and in-house staff networks. Once these groups are trained, the PCRS program will be made available to field activity personnel with representatives of identified user activities encouraged to attend.

The PCRS subcommittee, consisting of NAVMAT and SYSCOM PCRS program coordinators or designated representatives, would also meet as part of this step. The agenda would include the clarification of site diagnostic procedures, PCRS plan development requirements, plan approval mechanisms, resource acquisition issues, and SYSCOM-specific program implementation procedures. In addition, the committee could confirm or modify the initially targeted potential program sites. Strategies could be generated to support sufficient PCRS implementations to obtain a sound PCRS cost analysis data base within 2 years.

2. Responsibilities. MAT-00K distributes the completed PCRS handbook to personnel in the headquarters and field activity user networks as well as to other NAVMAT staff with PCRS interests. MAT-00K also arranges for PCRS training. The initial training program would be conducted by NAVPERSRANDCEN for NAVMAT personnel in the

headquarters and SME networks. Future PCRS training programs would be provided by SYSCOM training staffs. MAT-00K initiates the PCRS subcommittee of the Productivity Steering Group, including PCRS representatives from MAT-01M and the SYSCOMs.

Step 7--Initiate the Field Site Transfer Process

1. Description. At this stage, the focus shifts from the development of the support system to using it to transfer PCRS technology to field sites for program implementations.

2. Responsibilities. MAT-00K decides when the support system is sufficiently completed to initiate feasibility diagnostic site visits. Concurrence is required from NAVPERSRANDCEN, MAT-01M, and the SYSCOM PCRS coordinators after review of the support system action plan approved in Step 1.

Extending the Technology Transfer Process to NAVMAT Field Users

The steps involved in extending the technology transfer process to field users are described in the following paragraphs and outlined in Figure 3. Table 5 presents the lead and support responsibilities for each of these steps. No time or manpower estimates are provided because the process is a continuing one with varying requirements from site to site.

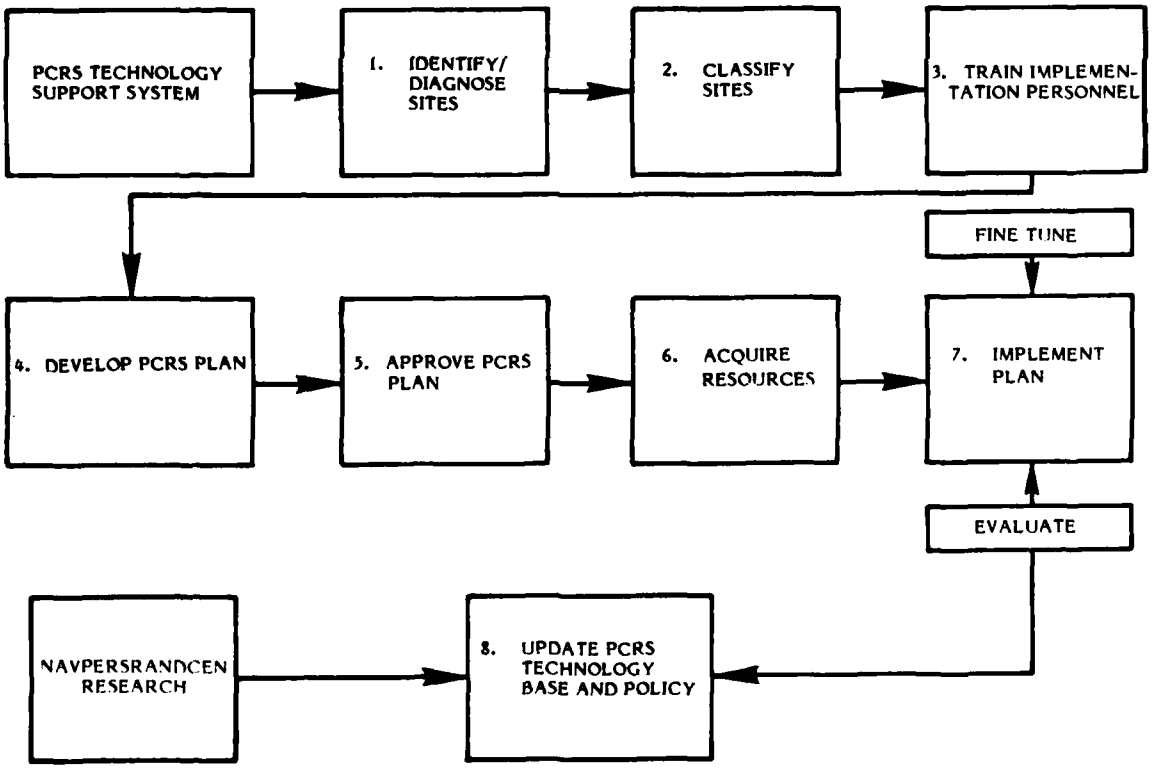

Figure 3. Steps involved in extending the technology transfer process to field sites.

Table 5

Lead (L) and Support (S) Responsibilities for Steps Involved in Extending the Technology Transfer Process to NAVMAT Field Users

Step	NAVPERS-RANDCEN	MAT-00K	MAT-01M	SYSCOMs
1. Identify/diagnose sites	-	L	S	S
2. Classify sites	-	L	S	S
3. Train implementation personnel	-	-	S	L
4. Develop PCRS plan[a]	-	S	S	L
5. Approve PCRS plan	-	S	L	S
6. Acquire resources	-	S	S	L
7. Implement plan	-	S	S	L
a. Fine Tune	-	L	S	S
b. Evaluate	S	L	S	S
8. Update:				
a. PCRS technology base	L	L	-	S
b. Policy	-	-	L	-

[a]The requirements of and authority for such a plan are described in CPI 451, Appendix F, entitled "Productivity Improvement Awards Plan (PIAP)." A PCRS is an incentive management system that qualifies under this instruction and, if correctly developed, allows use of the liberalized provisions of the instuction.

As shown in Table 5, MAT-00K plays a major role in the transfer process at this early stage. However, the major roles will probably shift more to MAT-01M as the primary NAVMAT headquarters representative and to the SYSCOMs as the PCRS technology base matures and the PCRS program is expanded and institutionalized. Until that time, MAT-00K must maintain a major role as the central provider of PCRS technology base information. NAVPERSRANDCEN's role in the technology transfer process is greatly reduced compared with its role in the support system development process.

Step 1--Identify and Diagnose Sites

1. Description. The initial step in the process is to target specific activities that are likely candidates for PCRS implementations. This step requires following through on initial contacts with field activities to establish their suitability by means of on-site diagnoses of critical PCRS elements. (These elements are identified through NAVPERS-RANDCEN research.) The identification and diagnostic activities should proceed within the context of the plan established by the Productivity Subcommittee for the number and range of targeted program sites.

2. Responsibilities. MAT-00K identifies potential sites through contacts it has established within the SYSCOMs and conducts site diagnoses with assistance from MAT-01M and SYSCOM PCRS coordinators.

Step 2--Classify Sites

1. Description. Based on the information collected during a site diagnosis, the site would be classified as a replication, extension, or prototype. The classification would mean that specific resource and implementation parameters or guidelines developed during the support system planning process would be applied. This would help to establish realistic up-front expectations as to the timeframe, resource requirements, and degree of risk associated with a particular potential implementation before it is initiated. Using this information, the facility commander would decide whether or not to initiate a proposed PCRS program. Other input sources that could be consulted include the SYSCOM command as well as SYSCOM and NAVMAT headquarters PCRS program coordinators.

2. Responsibilities. MAT-00K approves and classifies a site after conferring with MAT-01M and the appropriate SYSCOM PCRS coordinator.

Step 3--Train Implementation Personnel

1. Description. Once the decision is made to start a PCRS effort in a specific site, the planning process for that effort goes into effect. As a first step in this process, key on-site staff are identified and provided with PCRS implementation process training and site specific training if the effort is a replication.

2. Responsibilities. Initially, MAT-01M delivers this training. As the program expands, each SYSCOM provides its own PCRS training.

Step 4--Develop PCRS Plan

1. Description. The development of this plan would be a site responsibility with input provided by the PCRS SYSCOM and NAVMAT program coordinators and the in-house SME network. Guidelines for plan format and critical elements would be provided to the site along with points of contact for assistance with specific issues. (see footnote on Table 5, page 26).

2. Responsibilities. The on-site program coordinators develop the implementation plan following established guidelines and with the assistance of MAT-00K, MAT-01M, and SYSCOM PCRS coordinators.

Step 5--Approve PCRS Plan

1. Description. According to the recently issued CPI 451 on performance-based incentives systems, plan approval for a proposed program is currently an Echelon 2 responsibility. Therefore, the plan would be submitted to NAVMAT headquarters PCRS program coordinators for approval. However, in most cases, approval should be almost automatic since this same staff was available for assistance during plan development. Where there is a problem with the plan, it would be returned to the site along with guidance on what is required to correct or expand it appropriately.

2. Responsibilities. MAT-01M approves a plan with concurrence from MAT-00K and the respective SYSCOM PCRS coordinator. The approval also requires the signature of the facility commander. A disapproval requires that recommended revisions be made.

Step 6--Acquire Resources

1. Description. With the approval of the plan, the on-site coordinator works with SYSCOM and NAVMAT coordinators to put in place the resources specified therein. This includes the monetary budget for the current and ensuing fiscal years and the in-house and external consultant SMEs required during program implementation.

2. Responsibilities. The on-site coordinator, with the assistance of the SYSCOM PCRS coordinator, obtains the necessary resources. Support from MAT-00K and MAT-01M is available if necessary to obtain SME resources. For program expansion, MAT-01M will play an active role in resource acquisition by initiating and implementing a Program Objectives Memorandum (POM).

Step 7--Implement, Fine Tune, and Evaluate the Program

1. Description. Once all of the planning steps are completed, the program is implemented. Along with the implementation goes a certain amount of fine tuning since every contingency or problem cannot be anticipated in the advance planning process. This fine tuning can frequently be handled by the on-site implementers. However, it may be necessary to obtain input from SYSCOM and NAVMAT headquarters staff who are members of the PCRS SME network. Also, the NAVMAT headquarters and SYSCOM PCRS coordinators will actively monitor the program so that fine tuning requirements are responsively addressed. The primary on-site coordinator would provide monthly progress reports to headquarters to facilitate this process.

In addition to fine tuning, the program must be evaluated in terms of its cost, its productivity and cost savings, its projected savings if it is to be continued, and its implications for future PCRS policy as the total NAVMAT program is expanded. This would be a NAVMAT headquarters responsibility and would incorporate a cost benefit analysis as well as an evaluation of the implementation procedures utilized. The results of the evaluation would be fed into a central data base established to determine the benefits of PCRS programs. The evaluation should also be designed to assess the long-term impact of a program after it is implemented and has become stabilized. The data would also be used as input to the PCRS technology base for updating and expanding upon implementation procedures within different NAVMAT organizational contexts. NAVPERSRANDCEN research would continue to provide input to this technology base.

2. Responsibilities. The on-site program coordinator has lead responsibility for the actual implementation. Fine tuning support is provided by SYSCOM SMEs and MAT-00K on technical issues and by MAT-01M on policy issues. Program evaluation is provided by MAT-00K with guidance from NAVPERSRANDCEN, MAT-01M, and the SYSCOMs on specific implementation, cost effectiveness, and productivity elements that should be measured.

Step 8--Update PCRS Technology Base and Policy

NAVPERSRANDCEN provides input to the technology base through its research program and data it receives as part of the fine tuning and evaluation of each implementation and projected PCRS program expansion. The technology base is currently being designed for a computer-managed accession system.

Hypothetical Example of Technology Transfer Process

The sequential steps that might be involved in the technology transfer process in a particular site are listed below. Since each site will vary to some extent, the actual process must be adapted to meet the necessary combination of factors existing in a site at a particular time. The critical requirement as the transfer process gets underway is to construct a flexible support system that can be effectively adapted and modified as the PCRS technology base is further expanded.

1. The commander of "NARF-Seaside" is contacted by the NAVAIR PCRS coordinator and a briefing is set up to describe the recently completed successful PCRS program in the engine maintenance shop of "NARF-Westside." MAT-00K staff conducts the briefing.

2. The commander directs his manager of engine maintenance to contact MAT-00K. He does and receives the PCRS handbook and documentation of the NARF-Westside program.

3. The manager attends a PCRS program with managers of engine maintenance in other NARFs. The program provides instruction on the PCRS process and content-specific material on the NARF-Westside program. The manager and on-site implementer of the Westside program assist MAT-01M staff with the training.

4. At the request of the NARF-Seaside commander, MAT-00K conducts a site diagnosis.

5. The results of the diagnosis are discussed with NARF, SYSCOM, and MAT-01M PCRS points of contact. The decision is made to classify the site as an extension PCRS program. It is not classified as a replication because of its own unique productivity measurement system, which will require special modifications.

6. The NARF-Seaside manager assigns responsibility for developing the site PCRS plan to one of his supervisors who also attended the training program. The plan is developed with guidance provided by the NAVAIR PCRS coordinator, MAT-00K, and MAT-01M.

7. Once the plan is completed in accordance with the guidelines and approved by MAT-01M and MAT-00K, it is submitted to the NARF-Seaside commander. The NAVAIR PCRS coordinator has arranged for funding for the measurement system out of SYSCOM developmental funds to pay for an outside consultant. Funding for actual incentives payments is to be budgeted in the following year's facility NIF. Half of the supervisor's time for 6 months is committed as program coordinator.

8. Once the commander signs off on the plan, MAT-00K staff assists the on-site coordinator in obtaining the appropriate measurement consultant and in contacting the in-house SMEs to receive additional specific input on standards development and incentives payment mechanisms.

9. The NARF-Seaside on-site coordinator submits monthly progess reports to the NAVAIR PCRS program coordinator and to MAT-01M. MAT-00K conducts its own technical evaluation addressing critical implementation elements in the program with support from an outside contractor.

10. At the end of the program's trial period, MAT-00K completes the evaluation, which includes an analysis of cost benefits and productivity savings resulting from the program.

11. MAT-00K provides input to NAVPERSRANDCEN to add to the PCRS technology base.

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APPENDIX A

SEMISTRUCTURED INTERVIEW GUIDES

NAVPERSRANDCEN Researchers

1. What are the problems in transferring PCRS as you see them? (Include major resistances that are likely to be encountered.)

2. Where do you anticipate that PCRS transfers are likely to occur?

   a. Actual available sites.
   b. Potential sites.

3. What is the nature of the current support for PCRS transfer?

4. Who will be the technology plan recipients?

5. What should be built into the technology transfer package?

   a. Nature of incentives.
   b. Individual-group focus.
   c. Feedback.
   d. Goal-setting.

6. What level of detail should be included for each package element?

7. What is the current status of research intended to feed into the technology transfer package?

8. What do you see as the next steps after the package is developed?

9. What are the specific issues that need to be addressed in interviews with Navy staff, command, actual users, and potential users?

b. How can or should such restrictions be controlled?

c. Should units that are similar to research sites be actively encouraged to implement a PCRS?

d. Should criteria be established that indicate when a PCRS program should be terminated?

e. How much control should field units have over the decision to introduce a PCRS program? In other words, what should be the nature of the relationship between the central PCRS program unit and field activities wishing to implement a PCRS program? What level and type of support will be most beneficial to field activities that want to implement a PCRS program?

SYSCOM Field Activity Personnel

1. Where did the performance contingent reward system (PCRS) program get implemented?

2. How many employees were involved?

3. How did the PCRS effort get started? (Who initiated it and how was it moved past the talking stage?)

4. Who were the key persons involved in the implementation process? (e.g., budget office, personnel, training, etc.)

   a. What were their positions?
   b. What were their roles?

5. Was there anyone who should have been more involved in the process or could have been of more assistance?

6. What assistance was provided by sources outside the facility?

   a. NAVMAT headquarters.
   b. SYSCOM headquarters.
   c. NAVPERSRANDCEN.

7. Was there any additional assistance or support that would have been helpful?

8. How were resources obtained to develop the program?

9. What written guidance was used during program implementation? (e.g., SECNAVNOTE 5305, OPNAVNOTE 5305, SECNAVINST 5200.31, NAVPERSRANDCEN reports)

10. How were performance measures and standards established?

11. What training or instruction was provided to prepare employees for the introduction of the performance reward system?

12. What roles did direct supervisors play in the implementation process?

13. What procedures are used to pay incentives to employees and how were they developed?

14. What role did the union play during the total implementation process?

15. What major problems or potential obstructions were dealt with during the program implementation?

   a. Performance standards.
   b. Upper-level support.
   c. Resources.
   d. Skeptics.

16. Was there any point in time at which you felt the program might be abandoned?

17. What modifications or fine tuning were necessary after the program was installed?

18. How might your knowledge and experience as well as the expertise of other persons directly involved with the program implementation be effectively transferred to other NAVMAT facilities?

Shipyard Productivity Coordinators

1. NAVPERSRANDCEN has been involved with research on performance contingent reward systems (PCRSs) in various Navy facilities over the past several years (e.g., keypunching departments of six shipyards, the Small Purchase Branch of the Pearl Harbor NSY Supply Department, and the Power Plant Division at the Naval Air Rework Facility at Alameda).

   a. Are you familiar with any of these programs?

   b. Are you familiar with PCRSs?

2. Do you have any programs going on within your shipyard?

   _____Yes _____No

3. If yes, please describe. (At this point, interviewer switches to field activity interview questions.)

4. If no, are you likely to have any such programs introduced within your shipyard in the future?

   a. Where?
   b. What are the major roadblocks you see to getting such a program underway?

5. Have you received written support or guidance for introducing PCRS programs? (e.g., SECNAVNOTE 5305, OPNAVNOTE 5305, SECNAVINST 5200.31, NAVPERSRANDCEN reports, in-house newsletters)

6. What additional guidance or assistance do you think that you would need to implement a PCRS program if you have not already done so?

7. What resource requirements would you anticipate and where might they come from? (e.g., money to develop performance measures/standards, staff to train participants, and resources to set up performance monitoring and payback mechanisms)

8. What level of command support would you have for this type of program?

9. What expertise within the shipyard is available for implementing a PCRS program?

10. What expertise outside of the shipyard at the NAVMAT or NAVSEA SYSCOM headquarters level is available for implementing a program?

APPENDIX B

A SUMMARY OF PRIMARY RESPONSIBILITIES FOR EACH NAVMAT OFFICE/ACTIVITY

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NAVPERSRANDCEN

1. Support development of final PCRS support system action plan.

2. Provide input to PCRS handbook representing the current technology base to MAT-00K.

3. Develop technical content for PCRS training program.

4. Document Pearl Harbor supply department research.

5. Provide technical input on site diagnostics and classification system to MAT-00K.

6. Provide recommendations for PCRS SME network membership to MAT-00K and MAT-01M.

7. Provide initial PCRS implementation training to MAT-00K, MAT-01M, and SYSCOM personnel formally assigned technology transfer responsibilities.

8. Recommend strategies for evaluating and documenting PCRS implementations that update and expand the technology base to MAT-00K.

MAT-00K

1. Initiate and coordinate the development of final PCRS support system action plan.

2. Support MAT-01M in command briefings and program resource determination.

3. Develop the PCRS handbook with input from NAVPERSRANDCEN, MAT-00K, and the SYSCOMs.

4. Support MAT-01M in policy guidance and site plan development.

5. Establish support for NAVPERSRANDCEN in training program development.

6. Work with productivity coordinators at PWC San Diego and the Philadelphia NSY to develop adequate PCRS program documentation. Assure their input to the final technology transfer plan.

7. Develop site diagnostics and the site classification system with input from NAVPERSRANDCEN and MAT-01M.

8. Develop the NAVMAT-SYSCOM Headquarters PCRs network through the Productivity Steering Committee.

9. Provide recommendations to MAT-01M for the in-house SME network.

10. Establish contact with command staff and managers in field activities where likely site candidates for PCRS programs exist. At a minimum, this would include the six

NAVAIR NARF facilities, the eight NAVFAC PWCs, the eight NAVSEA NSYs, and the seven NAVSUP NSCs.

11. Distribute the PCRS handbook.

12. Obtain approval from NAVPERSRANDCEN, MAT-01M, and the SYSCOM PCRS coordinators to initiate the field site transfer process.

13. Identify potential sites, conduct diagnostic visits, and approve and classify sites with support from MAT-01M and the appropriate SYSCOM PCRS coordinator.

14. Provide guidance to a site on construction of the PCRS plan and sign-off approval when the plan is fully developed.

15. Assist site with the acquisition of expert and budget resources upon request.

16. Conduct fine tuning checks and program evaluations during site implementations.

17. Maintain centralized PCRS technology data base and disseminate updated technology base information. Conduct a workshop at the completion of each program representing new technology base information for sister activities.

MAT-01M

1. Support MAT-00K in the development of the final PCRS support system action plan.

2. Conduct NAVMAT command briefings on the total PCRS transfer process plan.

3. Develop and implement a resource acquisition plan to meet current and projected PCRS program requirements with input from MAT-00K and the SYSCOMs.

4. Develop PCRS program personnel policy guidance derived from CPI 451. Write a NAVMAT instruction incorporating this guidance.

5. Develop policy input for the PCRS handbook and the PCRS training program.

6. Develop the format and critical elements for the site PCRS plan with support from NAVPERSRANDCEN, MAT-00K, and the SYSCOMs.

7. Provide input to MAT-00K on the site classification system and incorporate this system with site plan requirements.

8. Provide recommendations to MAT-00K for membership in the NAVMAT-SYSCOM headquarters PCRS network, the outside SME network, and the facility users network.

9. Develop the in-house SME network with support from NAVPERSRANDCEN, MAT-00K, and the SYSCOMs.

10. Support MAT-00K by distributing the PCRS handbook and participating in the initial PCRS training program and NAVMAT headquarters PCRS committee meetings.

11. Support MAT-00K in identifying, diagnosing, approving, and classifying PCRS field sites.

12. Assist with site PCRS plan development and coordinate approval with MAT-00K and the SYSCOM. Make final sigh-off on fully developed plans that meet all guidelines.

13. Assure that adequate resources are in place before a program is initiated, with support from MAT-00K and the SYSCOMs.

14. Assist MAT-00K with fine tuning and evaluating an implementation through policy guidance and personnel/human resource subject matter expertise.

15. Update PCRS program policy guidance and disseminate throughout the PCRS networks.

16. Provide regular updates to NAVMAT and SYSCOM headquarters commands on PCRS program accomplishments.

SYSCOMs

1. Formally designate staff points of contact for coordinating SYSCOM-specific PCRS programs.

2. Assist MAT-00K and MAT-01M with finalization of the transfer process action plan, command briefings of SYSCOM headquarters personnel, and SYSCOM-specific resource acquisition.

3. Assist MAT-00K and MAT-01M with the development of the PCRS training program, site plan requirements, documentation of PCRS programs at PWC San Diego and the Philadelphia NSY, and site diagnostic and classification procedures.

4. Assist MAT-00K and MAT-01M in the establishment of the PCRS in-house SME network and the facility users network by identifying appropriate members in each SYSCOM.

5. Assist in the distribution of the PCRS handbook within each SYSCOM.

6. Assure that PCRS program coordinators receive initial PCRS training from NAVPERSRANDCEN and participate in steering committee meetings.

7. Approve initiation of the field site transfer process.

8. Assist MAT-00K with SYSCOM-specific site identifications, diagnoses, approvals, and classifications.

9. Train on-site implementers.

10. On-site PCRS coordinators develop plans with assistance from their SYSCOM PCRS coordinator, MAT-00K, and MAT-01M.

11. Site commander and SYSCOM PCRS coordinator approve the plan.

12. Once the plan is approved at all necessary levels, SYSCOM monetary resources are committed or budgeted and expert resources are obtained with support from MAT-00K and MAT-01M.

13. On-site coordinators implement the program with fine tuning and evaluation assistance from NAVMAT and SYSCOM headquarters PCRS staff.

14. Decide whether to continue a program and to extend it to other SYSCOM sites.

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