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Richard E. Witte  
*Old Dominion University*

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COMMUNITY DEVELOPMENT THROUGH INDUSTRY AND EDUCATION  
PARTNERSHIPS: AN INTEGRATED EVALUABILITY  
ASSESSMENT OF A COOPERATIVE TRAINING  
ALLIANCE BETWEEN INDUSTRY AND AN  
URBAN COMMUNITY COLLEGE

by

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A Dissertation Submitted to the Faculty of  
Old Dominion University in Partial Fulfillment of the  
Requirements for the Degree of

DOCTOR OF PHILOSOPHY

URBAN SERVICES

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May 1987

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## ABSTRACT

### COMMUNITY DEVELOPMENT THROUGH INDUSTRY AND EDUCATION PARTNERSHIPS: AN INTEGRATED EVALUABILITY ASSESSMENT OF A COOPERATIVE TRAINING ALLIANCE BETWEEN INDUSTRY AND AN URBAN COMMUNITY COLLEGE

Richard E. Witte  
Old Dominion University, 1987  
Chair: Dr. John DeRolf

The current political climate strongly supports open market solutions to the urban problems of manpower training, employment, education and economic development. Training alliances established in the open market between the urban community college and local industry may be a practical resource for meeting these needs. Before community college/industry alliances can be actively promoted, their utility as a community development tool must be demonstrated. Conceptualizing community college/industry training linkages as unified programs with established evaluable outcomes will allow practical assessment of their value as a community development tool.

The purpose of this study was to conduct an evaluability assessment of the training linkage between Tidewater Community College and Norfolk Naval Shipyard. This alliance was formed to provide professional academic instruction as an element of the shipyard apprentice

program. The study established the documented program expectations and the program expectations of state and local community development policy makers, community college leaders and shipyard management. The study evaluated all identified expectations for compatibility across partnership interests, plausibility considering the activities being conducted and the measurability of program expectations. The study identified all of the information needs of the program partners and integrated all important evaluable program expectations into unified program models that provide both the shipyard and community development leaders with progressively more comprehensive evaluation options. The evaluation options chosen will be based on the amount of evaluation information needed to make decisions on program viability and program improvement.

The results of the evaluability assessment identified several important considerations that are related to community college and industry alliances:

1. Community development policy leaders strongly support direct community college involvement with industry
2. A significant level of consensus on program expectations exists with virtually all expectations being compatible across partnership interests
3. Conceptualizing this training linkage within unified evaluable program models that includes

all important, compatible, plausible, and measurable expectations of the program partners is a practical means of demonstrating program reality and evaluation options

4. Evaluation utilizing the program models will provide the program partners with the information needed to assess program viability and improve program performance
5. Progressively more comprehensive evaluation options make outcome evaluation a practical and realistic concept
6. Program performance as a community development training alliance can be enhanced by improving the information exchange between community agencies

## DEDICATION

To my wife and my children

## ACKNOWLEDGEMENTS

I would like to thank Dr. John DeRolf for his support and leadership as chairperson of my dissertation committee. I would also like to thank the other members of the dissertation committee: Dr. Jane Meeks who served as my guidance committee chairperson and who continues to influence my thoughts on education in the urban setting; Dr. Jack Robinson who provided insight for conducting practical evaluation research, and Dr. Robert Grymes who provided continuous support during this project. I am particularly grateful to Dr. Wolfgang Pindur for teaching me how to apply program evaluation methods and for encouraging me to conduct a dissertation study using program evaluation techniques.

I would also like to express my appreciation to all of the participants in this study. Without the cooperation and support of busy leaders from the Commonwealth of Virginia, the Tidewater community and Norfolk Naval Shipyard, the study could not have been conducted.

Special thanks are due to Dr. George Pass, President of Tidewater Community College and my colleagues at the college who offered every form of support and assistance.

In particular I would like to recognize Dr. Deborah DiCroce, Dr. Robert Grymes, Jim Weibley, Haroleen Ray, Marvin Radford, Al Marin, Betty Hill, Mike Barton, Julie Harrison, Verlie Burden, Lillian Creech, Mary Ann Glanzer, Fred Jeffcoate, Bob Noyes, Larry Saffioti and Andrew Love.

Special thanks are also due to the Management of Norfolk Naval Shipyard for their support and assistance in this study. In particular I would like to thank Jack Morrell, Kim Kimball and Steve Barrow.

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## CHAPTER I

### RESEARCH PROBLEM

#### Introduction

This study is concerned with establishing an evaluation model for a cooperative training alliance between a public urban community college and a large federal industrial organization. As an initial evaluation effort the study will focus on:

1. Determining program outcomes desired by community development policy-makers and program managers involved in program funding, promotion, planning and operation
2. Integrating program activities with identified program outcomes in a manner that is evaluable, e.g., plausible and measurable in a cost effective manner

In the current conservative climate, community development planners recognize that increased emphasis must be placed on the use of available community resources. By using community resources to retain existing industries and attract new industries, an expanded industrial base can be established. An expanded industrial base should enhance employment opportunity and promote employment stability for

urban citizens. Theoretically an urban area with a stable or expanding industrial base and an employed citizenry will have the tax base to support needed urban service and urban development. The ability to retain industry and attract new industry is often based on the ability and willingness of a locality to share with industry the responsibility of providing an adequate industrial workforce, including resources to assist industry in workforce training and retraining. Training partnerships between public supported community education and industry are currently being promoted as a means of maximizing the investment in public education, stabilizing and expanding the industrial base, providing industry with an adequate workforce and promoting employment opportunity and employment stability for urban citizens.<sup>1</sup>

Higher education has not universally accepted direct involvement with industry as a valid means of meeting public community development needs and industrial human resource development (HRD) needs. George Parks of Emory Business School expressed a concern that education should not let "technology drive education rather than the other way around." In most training partnerships, programming and student population selections are definitely driven by industry. In fact, programming specifications and student populations tend to vary with each new training alliance. Erick Block, Director of the National Science Foundation, summarized a view that is common in traditional four year

institutions, "Companies want universities to train people. This is not their mission."<sup>2</sup> This view even seems to be present in the more responsive public urban university. Alfred B. Rollins, a former president of Old Dominion University, suggested in his address to the 1985 graduating class that considerable care should be exercised in responding to the transient needs of industry and that the university should concentrate on more traditional educational values.<sup>3</sup>

Urban community colleges with a mission of responsive local programming and expanded post-secondary educational access is the resource of choice in many proposals for training partnerships in the urban setting. Rather than seeing local external input by industry into programming and admissions as an intrusion, urban community colleges often actively seek industrial training partnerships. Many community college leaders view involvement with the community and industry in formal training alliances that allow for flexible programming and open admission as the direction of the future and the fruition of the community college mission to serve unique community needs and the student diversity of the service area.<sup>4</sup> The concern is realistic service to an increasing diversity of students and identified community needs. Increasing diversity has resulted from shifting demographics, open access, increased identification of community needs and flexible programming to serve the needs of the urban community. These factors

have resulted in a significant expansion of community college services and programs, often without the evaluation data to document a valid contribution to college and student goals.<sup>5</sup> Formal contract programs provide the community college with the structure needed for accountability without compromising the mission of flexible local programming and expanded access.

The assumed beneficial aspects of training alliances to the urban community and the participating community college is receiving increased political attention. Some states have specifically designated the community college as the prime resource for promoting economic development. In North Carolina, for example, the state community colleges were designated by executive order of the governor in 1983 to be the central training element in the North Carolina program of economic development. In James Owens' review of North Carolina's statewide system of training for new and existing industries, he quotes former North Carolina Governor Hunt as saying that the community and technical colleges are "the backbone of our economy." Mr. Owens also indicates that Governor Hunt felt that the community and technical colleges were the most important single element in the statewide economic development strategy.<sup>6</sup> The belief that community development and the community college are interdependent was discussed recently by Johnas Hockaday, the chancellor of the Virginia Community College System. The chancellor suggested that one will

not find a community with a successful economic development program that does not have a community college with active responsive ties to the community.<sup>7</sup>

Industrial emphasis on cooperative training ventures is increasing. American industry recognizes that keeping up with foreign competition and accelerating technology will require a massive training and retraining effort. Upper level management has recognized a need to shift significant operating funds to organizational training, education and development activities. In some organizations HRD costs approach 20 percent of a worker's wages.<sup>8</sup> These HRD expenditures will be required to meet future manpower needs in both the near term and into the next century. Using community resources such as urban community colleges is increasingly emphasized by industrial HRD planners as a means of sharing training costs with the society that benefits from the workforce payroll.<sup>9</sup>

### Problem

The long term viability of training partnerships between the urban community college and local industry, with the urban community and public policy makers as active or de facto partners, has not been validated in terms of the expectations of both politicians and policy makers who may promote the program and program managers who are in control of strategic program planning and program operational control. No available study identifies nor

describes long term program expectations, desired student outcome objectives, performance indicators and information needs at the program level for all of the partners in an urban training alliance.

Most available research and evaluation data associated with community development, industrial training and the community college examines program impact in relation to a specific community development or industrial variable without consideration for the identification and measurement of other important outcomes. In programs with the diversity of interests represented by alliances between community education and industry, it is important that all valid outcome objectives be considered when judging program performance. Apparent positive or negative program performance based on measurement of narrowly selected or incorrect evaluation criteria may result in inappropriate program continuation, expansion, cancellation or program activity modification. For example, a program that produces a positive economic impact on a particular urban area may or may not be the best alternative to meet the training needs of industry in a cost effective manner. Legitimate program evaluation and promotion of a training alliance between public education and industry will require the establishment of an evaluable model for the training program. The evaluable model unifies and incorporates long term program expectations, desired student outcomes and information needs of all of the partners at the policy and

operational level for both community and industrial interests.

### Purpose

The purpose of this study is to conduct an evaluability assessment of the Norfolk Naval Shipyard Apprentice program. The study is from the perspective of Tidewater Community College/Virginia Community College System and Norfolk Naval Shipyard as contractual partners in a training alliance. Tidewater Virginia, Commonwealth of Virginia and local community development policy leaders and funding authorities are considered to be de facto partners with the community colleges in this training alliance with industry.

Evaluability assessment as used in this study is in the context intended by Joseph Wholey in his Urban Institute publication, Evaluation: Promise and Performance. Wholey describes evaluability assessment as a preliminary evaluation of program design to ensure that a program being considered for evaluation has well defined program objectives and measures of program performance, plausible program assumptions and objectives considering program resources and activities and well defined uses of evaluation information.<sup>10</sup>

The program used as the case study in this evaluability assessment does not have outcome evaluation or evaluation as a community development training alliance

integrated into the program design. Because the program objectives of all program participants had not been identified, it was necessary to place significant emphasis on evaluability assessment or evaluation of program design prior to the initiation of any practical and useful summative evaluation.

The evaluability assessment in this study is an adaptation of the guidelines suggested by Wholey.<sup>11</sup>

Evaluability activities include:

1. Identification of the individual long term program expectations, desired student outcome objectives and performance indicators for each partner in the training alliance
2. Determination of the level of compatibility of expectations between partners and between partnership levels
3. Determination of the measurability and plausibility of long term program expectations, desired student outcome objectives and performance indicators
4. Documentation of current program activities
5. Establishment of information needs of all partners at all levels
6. Establishment of evaluable program model for program expectations, student outcome objectives, performance indicators and program information flow as a culmination of evaluability assessment

research activities and an indication of program reality

7. Providing participants with information on important program side effects and program options to improve performance

### Evaluation Questions

The primary questions are:

1. What are the long term program expectations, desired student outcome objectives, performance indicators and information needs of program partners in the Norfolk Naval Shipyard Apprentice Program?
2. Are identified long term expectations, desired student outcome objectives, performance indicators and information needs compatible across partnership interests, plausible considering the activities being conducted and measurable in terms meaningful for decision making and program improvement?

One additional evaluation question is addressed in the study:

What important secondary impacts are likely to exist for each partner?

### Evaluation Limitations

The primary focus of the evaluability assessment will be limited to long term program expectations, student

outcome objectives, performance indicators and information needs of the partners in the training alliance. As the contracting industry, Norfolk Naval Shipyard is the operational apprentice program manager with an active evaluation system within the Employee Development Division that monitors operational input and process activities through the primary industrial outcome of graduation as journeymen craftsmen in shipyard trades. The program models in this study will include input and process activities identified through observation, review of program documentation and interviews with the Norfolk Naval Shipyard Apprentice Program Administrator and Tidewater Community College administrators. These activities will be used to establish program reality, the plausibility of outcome objectives and logical links to desired program outcomes. Significant emphasis will not be placed on determining and identifying measurement criteria for input and process activities. The focus of this evaluability assessment will be on program outcome expectations, desired student outcomes and partnership information needs.

Determination of participants with a vested interest in a training alliance expected to impact on an urban community could be extremely broad based or could be restricted to the local community, the participating college and the contracting industry. Since time and financial constraints require discretion in establishing the scope of the study, while not sacrificing

representation of valid interests, the study is limited to the following partnership participants.

1. Industrial Partner

- A. Commanding Officer, Norfolk Naval Shipyard
- B. Director of Industrial Relations, Norfolk Naval Shipyard
- C. Director of Employee Development, Norfolk Naval Shipyard
- D. Apprentice Program Administrator, Norfolk Naval Shipyard
- E. Superintendents for the Structural Group, Electrical/Electronics Group, Mechanical Group and Service Group; Norfolk Naval Shipyard

2. Urban Community Development Partners

- A. Executive Branch/State Agency Executives, Commonwealth of Virginia
  - (1) Secretary of Commerce and Resources
  - (2) Chancellor of Virginia Community College System
  - (3) Secretary of Human Resources
  - (4) Commissioner of Labor and Industry
  - (5) Director of Economic Development
- B. Virginia General Assembly
  - (1) Senate Finance Committee members from the Tidewater area (3)
  - (2) House Appropriation Committee members from the Tidewater area (3)

(3) Other House of Delegate members to assure representation from each Tidewater city (2)

C. Local Community Officials from the cities of Portsmouth, VA; Chesapeake, VA; Norfolk, VA; Virginia Beach, VA; and Suffolk, VA

(1) Mayor

(2) City Manager

(3) Director of Economic Development

D. Urban Community College

(1) President, Tidewater Community College

(2) Dean of Instruction and Student Services,  
Tidewater Community College

(3) Provost, Tidewater Community College,  
Frederick Campus

(4) Apprentice Academic Program Administrator,  
Tidewater Community College

The training program investigated in this study was established without experimental or quasi-experimental evaluation controls. The lack of pre-imposed controls limits the establishment of direct cause/effect relationships as an indication of program impact. The evaluability assessment will attempt to imply logical and plausible relationships that could result in identified program impacts. The idea of conceptualizing training program relationships between the urban community college and industry as a unified community development training alliance should have broad application. The methodology

for establishing evaluable models of community development training alliances could have significant utility for conducting evaluability assessments in similar partnership arrangements. The views of politicians, public policy makers, industry training specialists, and community college leaders should apply generally to community development training alliances. Results that apply specifically to Norfolk Naval Shipyard are not intended for generalization but may have considerable utility when applied with caution in similar industrial settings.

#### Evaluation Significance

In the ten year period from 1974 through 1984, 2354 students have completed the requirements for designation as a journeyman craftsman at the Norfolk Naval Shipyard (NNSY). With a conservative training cost estimate of \$22,510 per apprentice, the four year apprentice program represents a substantial expenditure of federal funds. Using the 1984 Fall quarter as an example, NNSY apprentice students completed coursework through Tidewater Community College that was equivalent to 510 full time students (FTE). The FTE generated by the apprentice program represented approximately 25 percent of the enrollment at the Frederick Campus of Tidewater Community College. Considering state funding for public community colleges, the Commonwealth of Virginia nominally invested \$92 thousand in the NNSY apprentice program during the 1984

Fall quarter based on the rationale that providing direct training to industry is within the mission of Virginia Community Colleges and that this training will provide a valid community service to the Tidewater Virginia area and the Commonwealth of Virginia.

Estimates suggest that the presence of Norfolk Naval Shipyard contributes 19 million dollars to the local economy. With apprentice students currently representing approximately 13 percent of the total workforce, the apprentice training partnership makes a substantial economic impact on the local economy of Tidewater Virginia. The current average cash flow attributable to apprentice salaries is approximately \$17 million annually.<sup>12</sup>

The training partnership is a mature program of significant size. It represents a large expenditure of federal and state public funds. It has a significant impact on the enrollment of Tidewater Community College. It accounts for a large percentage of the total workforce at Norfolk Naval Shipyard and it represents a substantial economic impact on the local urban economy. Based on these simple descriptive facts alone, an assessment to clarify program outcomes and information needs is appropriate.

The current conservative fiscal and political climate has resulted in reduced funding and a call for program evaluation and increased accountability for all public programs. The demand for increased accountability has placed the urban community college in a situation that

demands justification for any expansion of service that requires public funding. Expansion of community college services and programs without specified outcome objectives and formal evaluation was possible during periods of liberal funding. Currently, a regressive funding policy is a fact of life for post-secondary education. Real expenditures per student has been declining nationwide over the last few years and federal assistance to higher education will likely continue to decline.<sup>13</sup> For Virginia's state supported community college system, an increasingly conservative funding policy is a reality. A survey of community college presidents conducted by the American Association of Community and Junior Colleges indicates that financing is their major concern.<sup>14</sup> In this atmosphere, urban community colleges must be very aware of the need to clarify program objectives and initiate evaluation activities for each college program. Charles Robb, a former governor of Virginia, indicated that colleges must be held accountable for the productivity of their programs and that unproductive programs must be cancelled.<sup>15</sup> The need to institute formal evaluation programs is not restricted to education. American industry recognizes the need for massive training and retraining efforts; however, documentation of the accomplishment of HRD goals in a cost effective manner is seen as integral to HRD programming.<sup>16</sup> The need for program evaluation is particularly critical at Norfolk Naval Shipyard. As a defense industry the shipyard is

being subjected to significant pressure to retrench and improve the efficiency of the workforce to reduce the federal deficit and maintain a competitive position in the contracting process. The shipyard was recently mandated to reduce the workforce by several thousand workers.<sup>17</sup>

Apprentice programs are not immune to manpower cuts. In a manpower reduction situation at a smaller local shipyard, the entire apprentice program was discontinued. The instructional staff and all current apprentice students were laid off. Evaluation data on programs impacting large numbers of workers are an important information base that management and policy makers need to assist them in their manpower decisions. The establishment of a viable evaluation model for the NNSY apprentice program is critical in the current atmosphere.

Urban economic development planners and political officers also need viable program evaluation data to make proper program decisions on promotion and the funding of cooperative community training alliances. These decision makers must balance their emphasis and support of a rather diverse array of community resources, activities and incentives that are intended to impact positively on the social and economic health of urban settings. Evaluation data produced in a timely and cost effective manner will significantly influence decisions on support/non-support of community development training alliances. Without program evaluation data it is realistic to assume that valuable and

scarce tax dollars will be used to promote ineffective programs. Programs that could result in substantial desired positive impacts will be overlooked because evaluation information needs had not been identified and supplied at crucial policy and political decision junctures.

Considering that virtually no unified evaluation data on community development training alliances exist at the program level, this study should provide insight into an area of evaluation research with a significant gap.

#### Evaluation Utilization

The primary intended use of this evaluation study is to facilitate decision making by:

1. Identified community development interests who are likely to influence or make decisions that impact on the promotion, continuation, improvement, modification, funding and management of cooperative community training alliances within the Tidewater area
2. Identified industrial HRD interests who are likely to influence or make decisions that impact on the promotion, continuation, improvement, modification, funding and management of the Norfolk Naval Shipyard Apprentice Program training alliance

By providing an evaluable model of program operation

that incorporates the expectations and information needs of the identified partnership participants, the varied interests will have a common base of understanding to evaluate individual outcome expectations and the viability of promoting multiple interests within an individual training alliance between an urban community college and local industry.

Based on the data presented in this Evaluability Assessment the varied partnership interests have the data necessary to facilitate decisions concerning program continuation, modification, improvement, promotion, funding priority and the need for additional evaluation data to facilitate these decisions. Other useful data obtained from the study includes:

1. Identification of important side effects of program operation for each partner in the training alliance
2. Establishment of a model for unified evaluation of cooperative urban community college/industry training alliances that may have utility in similar settings
3. Providing all partners with needed accountability for the expenditure of Public funds

## ENDNOTES

<sup>1</sup>Johnas F. Hockaday, Chancellor of the Virginia Community College System, speech presented to Hampton Roads Chamber of Commerce, Portsmouth, Virginia, 16 August 1985.

<sup>2</sup>Ezra Bowen, "Education: Schooling for Survival," Time, 11 February 1985, pp. 74-75.

<sup>3</sup>Alfred B. Rollins, Jr., President of Old Dominion University, keynote address to 1985 graduating class at Foreman Field, Old Dominion University, 18 May 1985.

<sup>4</sup>Don C. Garrison, "Keep America Working: On Time and Winning," Community and Junior College Journal 55 (April 1985):54-56.

<sup>5</sup>Patricia K. Cross, "Dealing With Diversity: The Challenge of Teaching Today," Change, the Magazine of Higher Learning 15 (September 1983):20-29.

<sup>6</sup>H. James Owen, "North Carolina: A Statewide System of Training for New and Existing Industries," in New Directions for Community Colleges: Customized Job Training for Business and Industry 48 (December 1984):55.

<sup>7</sup>Hockaday, Chamber of Commerce Presentation, 16 August 1985.

<sup>8</sup>Bowen, "Education: Schooling for Survival," p. 75.

<sup>9</sup>William L. Deegan and Ronald Drisko, "Contract Training: Progress and Policy Issues," Community and Junior College Journal 55 (March 1985):14-20.

<sup>10</sup>Joseph S. Wholey, Evaluation: Promise and Performance (Washington: The Urban Institute, 1979), p. 17.

<sup>11</sup>Ibid., pp. 52-84.

<sup>12</sup>The descriptive statistics used in this section were accumulated from raw data available through the Tidewater Community College Office of Instructional Research and the Norfolk Naval Shipyard Apprentice Program Office.

<sup>13</sup>Klaus L. Mai, "University and Industry-A Productive Relationship," American Education 20 (July 1984):2-4.

<sup>14</sup>Thomas C. Henry, "Presidents Views on Current and Future Issues Facing the Community and Junior College," Community/Junior College Quarterly of Research and Practice

8 (1984):257-71.

<sup>15</sup>Charles S. Robb, "Higher Education, The New Federalism and the States." Change, The Magazine of Higher Learning 14 (May/June 1982):40.

<sup>16</sup>Thomas F. Urban, Gerald R. Ferris, Daniel F. Crowe and Robert L. Miller, "Management Training: Justify Costs or Say Goodbye," Training and Development Journal 39 (March 1985):68-71.

<sup>17</sup>"Shipyard's Job Freeze Assessed," Norfolk Virginian Pilot, 23 February 1985.

## CHAPTER II

### BACKGROUND FOR EVALUATION

The Norfolk Naval Shipyard (NNSY) Apprentice Program has been conducted jointly by Tidewater Community College, (TCC) Frederick Campus and Norfolk Naval Shipyard on essentially a continuous basis since 1968. In the highly urbanized area of Tidewater Virginia, the partnership represents the joining of two of the largest local public organizations in an alliance to promote a professional shipyard workforce, educational and employment opportunity for residents of the Tidewater area, and economic development for the Tidewater area and the Commonwealth of Virginia.

#### Tidewater Community College

Tidewater Community College is a multi-campus urban public community college. As a member of the state supported Virginia Community College System, the college serves the area of southeastern Virginia known as the Tidewater. The service area of the college includes the cities of Norfolk, Virginia Beach, Portsmouth, Chesapeake, and a part of the city of Suffolk. The Frederick Campus of Tidewater Community College serves the most highly

urbanized section of the service area and administers the NNSY apprentice program. The campus service area includes the city of Portsmouth, a large population segment of the city of Norfolk and smaller population areas in Chesapeake and Suffolk. The Frederick Campus administers many linkages with industry throughout the college service area.

The college is an open-admission institution with service provided to "any person who has a high school diploma or the equivalent, or is eighteen years of age, and, in any case, is able to benefit from a program of instruction."<sup>1</sup>

Tidewater Community College is a comprehensive community college offering both traditional college transfer programs and occupational technical programs. Approximately 80 percent of the students at Tidewater Community College are in occupational/technical programs, with the largest percentage of technical students in relation to transfer students being located at the Frederick Campus.<sup>2</sup> Traditional college transfer programs include the Associate of Arts (AA) and the Associate of Science (AS) degrees. The Associate of Applied Science (AAS) is the most popular degree at TCC. Students who earn the Associate of Applied Science have received a technical degree in a semi-professional area and are qualified to enter their respective field directly from TCC without further college education. The college also offers non-degree diploma and certificate programs in occupational

technical areas. These programs may or may not provide course offerings at the collegiate level and exist primarily to provide entry level job skills.

From the college purpose statement:

The college is devoted to serving the educational needs of its community, and assumes a responsibility to respond to the requirements for trained manpower in its region through a cooperative effort with local industry, business, the professions and government.<sup>3</sup>

Tidewater Community College is involved currently in numerous training alliances within the community and is actively involved in a continuous program to increase the awareness of community leaders and local industry, concerning the availability of training program assistance through the college. The Norfolk Naval Shipyard Apprentice Program is the largest and longest running training alliance in which Tidewater Community College is a partner.

#### Norfolk Naval Shipyard

Norfolk Naval Shipyard is the oldest Naval Shipyard in the United States and is actually older than the Union of States. Currently the shipyard employs approximately 13,000 persons for the task of modernizing, overhauling and repairing surface ships, Naval auxiliaries, aircraft carriers and submarines for the U.S. Navy.<sup>4</sup> The largest segment of the total workforce, approximately 9,000 workers, is employed in the various shipyard crafts. Approximately 13 percent of the blue collar workforce are apprentice workers training for positions as journeymen

craftsmen.<sup>5</sup>

### Worker Classification

Civilian employees at the shipyard are classified into two general categories of employment. Government Service or GS/GM employees are those employees traditionally considered to be in white collar job descriptions varying from general clerical tasks through upper level engineering and administrative management. The majority of the workforce at Norfolk Naval Shipyard are "Wage-Grade" (WG) employees. These employees are those traditionally considered to be in blue-collar jobs. WG employees hold jobs at the shipyard that are considered unique shipyard crafts. The tasks performed by the WG segment of the workforce are those associated with specific skilled trades and crafts. Trainees in the Norfolk Naval Shipyard Apprentice Program are considered to be a special category of "wage-grade" employees. If a workers' area of responsibility is directly related to a trade or craft, they will likely be classified as wage-grade, regardless of rank. For example, a welding helper and a superintendent with responsibility for a large number of employees will both be considered to be wage-grade employees.

Wage-grade employees may be most easily divided into functional categories based on job responsibility and level of skill. Employees who are assigned to specific trades but who function at skill levels less than journeymen are

normally classified as WG-02 through WG-09 with the exception of apprenticed students. Apprenticed students are classified as WT-02 through WT-09. The journeymen level in the shipyard is WG-10. This level represents the typical skilled craftsman with technical expertise in a particular trade the yard considers essential to the accomplishment of the various shipyard contracts. The journeyman does have considerable responsibility for on-the-job training of wage-grade employees below WG-10 who aspire to journeyman level and WT apprentice employees. Employees who are classified WG-11 through WG-15 are journeymen who have achieved special high levels of technical skills in their particular craft. Highly qualified wage-grade employees who move into leadership roles broadly related to their technical craft are designated with one of the following wage-grade designations: WS, WD, WL or WN. Employees with these designations may reach the upper levels of shipyard management even though they remain within the wage-grade classification system.<sup>6</sup> Figure 1 outlines a broad functional breakdown of the wage-grade classification structure.

#### History of NNSY Apprentice Program

Apprenticeship as a means of acquiring and maintaining craftsmen in the shipyard began as early as 1898. Even this early, the apprenticed workers had to demonstrate competence in both their trade and academic subject matter.

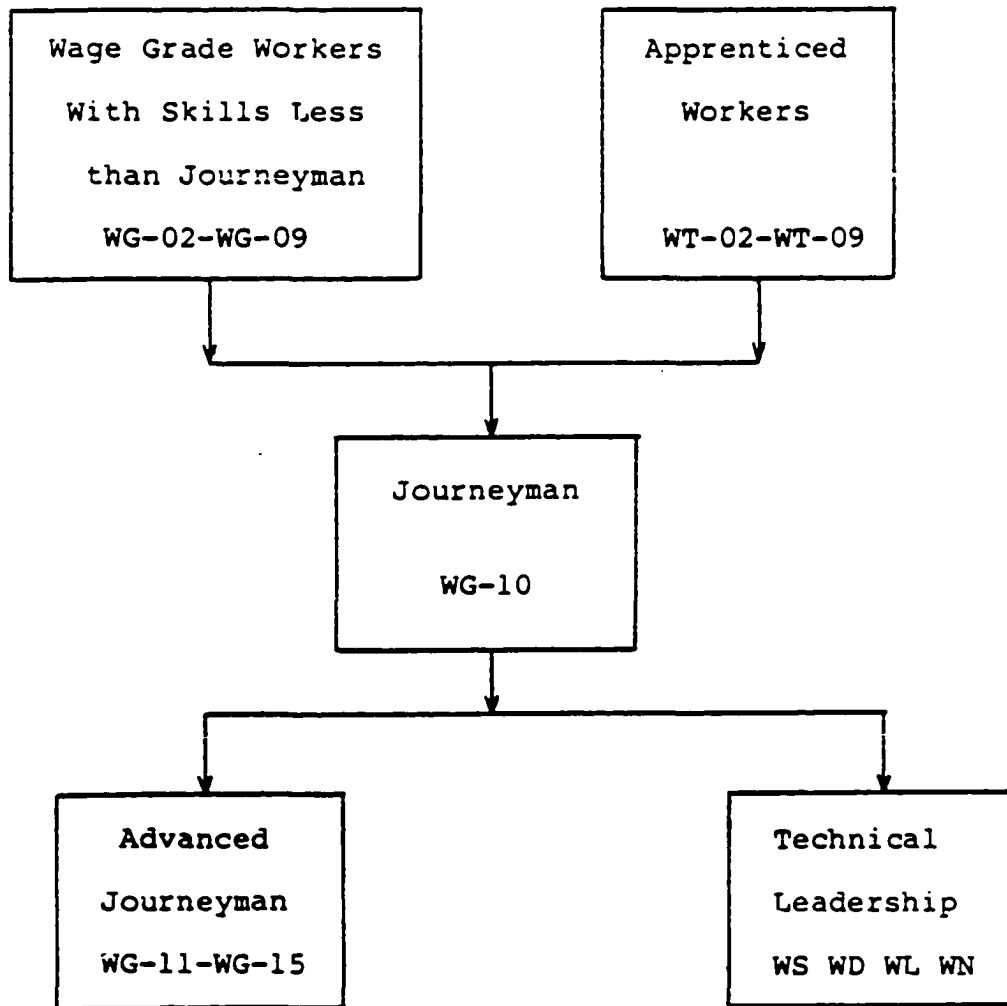


Fig. 1. Wage Grade Classification Structure

While the shipyard provided trade theory training and on-the-job training, the apprentice was required to obtain academic training after normal work hours. While the amount of time allotted to academic training, trade theory and on-the-job training has varied considerably over the years, these three elements remain as the broad categories of apprenticeship training. The total length of the apprenticeship program has remained constant at four years, with the exception of a brief period during World War II when the training period was dropped to three years.

With the exception of the very earliest apprentice efforts, the academic portion of the program was integrated into the daily work schedule of the apprentice. The normal apprentice work day included some elements of the three training modes: academics, trade theory and on-the-job training. All training was conducted by civil service workers at the yard, although short-term cooperative assistance from the local public schools had been obtained over the years.<sup>7</sup>

In the fall of 1968, shortly after the founding of Tidewater Community College, Norfolk Naval Shipyard and Tidewater Community College entered into a contract for the college to begin teaching mathematics, technical writing, drafting and physics.

Over the years since assuming the initial training contract, Tidewater Community College has increased its involvement with the apprentice students through expansion

of course offerings and expansion of academic supervision of the student.

### Program Description

The Norfolk Naval Shipyard Apprentice Program provides a four year apprenticeship in over 30 shipyard trades. The apprenticeship will include learning experiences based on three modes of training: academic instruction by college instructors, trade/craft theory instruction by shop instructors and on-the-job experience under the supervision of a journeyman worker. Apprentices are hired based on the needs of each shop craft. New apprentices may not be needed in every category each year.

Selection of apprenticed workers is based on a series of entry criteria that includes completion of a written examination administered by the Civil Service Commission. Scores obtained on the test may be enhanced by using a veterans preference of up to 10 points based on prior military experience. Applicants whose total test and preference score exceeds the current qualifying score will be offered an interview by shipyard management. During the interview, the applicant's prior education, experience and training is reviewed and a trade preference is established. The shipyard will select apprentice candidates and make offers to apprentice a worker in a specific trade and shop based on current needs within the shipyard. The apprentice experience and individual programs are unique to the

occupation being apprenticed.<sup>8</sup>

### Training Sequence

The actual sequence of training varies slightly with each new apprentice class. In all cases, however, academic training is integrated into the first year of the four year apprenticeship. A typical training sequence that has been followed in previous years includes:

1. Tidewater Community College administers the Comparative Guidance and Placement Test (CGP), a standardized test prepared by Educational Testing Service. Based on Individual test scores, the college makes recommendations for any needed remediation of basic skills that should be accomplished prior to beginning academic instruction. Apprentices are encouraged by the college and the shipyard to seek needed remediation. Based on the indicated need for remedial classes and the number of apprentices desiring to participate, after hours remedial classes will be offered by the college
2. The new apprentice is assigned to a two or three month period of shop orientation. During this period the apprenticed workers become familiar with their trade and the responsibilities of their shop. Apprentices needing remediation of basic academic skills may complete the remedial

coursework

3. After the completion of shop orientation, the apprentice begins the first of two quarters of concentrated academic instruction. During this period the worker is assigned directly to the apprentice school staff and reports to the college or shipyard facility for instruction
4. The apprentices return to their assigned shop after completion of the first academic quarter. They normally are assigned to the shop for three months of trade theory instruction or a continuation of theoretical and on-the-job training, depending on the training plan for each trade and shop
5. At the end of the assignment to the shop for trade theory and on-the-job training, the student is reassigned to the apprentice school for another quarter of academic instruction by Tidewater Community College. After successful completion of this quarter, the worker has completed the academic session of the apprenticeship and normally will not return to the apprentice school
6. At the completion of academic instruction, the apprentice is reassigned to the trade shop to continue trade theory instruction and on-the-job training. As the apprenticeship progresses, the

apprenticed worker is assigned to increasingly more complex tasks with more individual responsibility. Even though the apprenticed worker is a productive member of the workforce, apprentice work remains under the direction of a journeyman level craftsman until the apprenticeship is completed

7. Training during the final year of apprenticeship is normally more specialized as the apprentices learn the intricate nature of the machinery or specialized equipment they are expected to operate, install, overhaul or test. In this phase of training a metals inspector apprentice, for example, may begin to specialize in material certification or operations support<sup>9</sup>

#### Academic Program

The academic program taught by Tidewater Community College is an evolutionary one. The program varies from contract to contract in order to make the program coursework most applicable to the current learning needs of the apprenticed workers. The academic program described will be based on an apprentice academic curriculum that is typical of curriculums completed by prior apprentices.

Tidewater Community College is responsible for the full 40 hour work week during the two quarters of academic instruction. The basic 40 hour week includes 32 credit

hours and 40 contact hours during the first quarter and 30 credits with 40 contact hours during the second quarter. Figure 2 shows the curriculum structure for the first and second quarters of instruction. The program divides apprentices by trade into math eligible trades and non-math eligible trades. Basically those apprentice trades that require a high level of math skills to acquire journeyman competencies were given math and physics instruction at a higher level. Students also receive alternative drafting classes based on their trade. The remaining apprentice academic classes were common to all apprentices. Students who attend the NNSY apprentice program are simultaneously registered as curriculum students at Tidewater Community College and earn academic credit for their efforts.

Students who successfully complete all courses in the academic curriculum simultaneously complete, with the exception of a four hour social science requirement, all of the required coursework for a one year Engineering Technical Assistant certificate. This program is designed to provide entry level technical workers with a solid academic foundation, an understanding of industry, industrial process, safety and technically oriented communication skills.<sup>10</sup> Engineering Technical Assistant graduates, including NNSY apprentices, who subsequently become degree seeking students in other technical programs at the college, are given the opportunity to integrate their certificate coursework into other curriculums through

## FIRST QUARTER

Non-Math Eligible  
ApprenticeELEM INDUSTRIAL MATH  
Credit-7 Contact-7PRACTICAL PHYSICS  
Credit-8 Contact-10Math-Eligible  
ApprenticeTECH INDUSTRIAL MATH  
Credit-7 Contact-7TECHNICAL PHYSICS  
Credit-7 Contact-10ALL APPRENTICE STUDENTS

	<u>Credit</u>	<u>Contact</u>
TECHNICAL DRAFTING OR ELECTRONICS DRAFTING	4	8
INDUSTRIAL COMMUNICATIONS	6	8
METRICS	1	1
INDUSTRIAL MATERIALS AND PROCESSES	3	3
INDUSTRIAL SAFETY	3	3

## SECOND QUARTER

Non-Math Eligible  
ApprenticeELEM INDUSTRIAL MATH  
Credit-7 Contact-9PRACTICAL PHYSICS  
Credit-8 Contact-10Math-Eligible  
ApprenticeTECH INDUSTRIAL MATH  
Credit-7 Contact-9TECHNICAL PHYSICS  
Credit-8 Contact-10ALL APPRENTICE STUDENTS

	<u>Credit</u>	<u>Contact</u>
TECHNICAL DRAFTING or ELECTRONICS DRAFTING	4	8
INDUSTRIAL COMMUNICATIONS	6	8
INDUSTRIAL MATERIALS AND PROCESSES	3	3
INDUSTRIAL SKILLS	2	2

Fig. 2. Academic Program Curriculum Structure

direct substitution and course challenge programs. Depending on the demonstrable competence of the students, and the degree sought, NNSY apprentices may acquire substantial degree-level credits toward an Associate of Applied Science degree.

## ENDNOTES

<sup>1</sup>Tidewater Community College Catalog 1985-86,  
p. 25.

<sup>2</sup>Tidewater Community College, Office of Institutional Research, Enrollment Data, 1984.

<sup>3</sup>Tidewater Community College Catalog 1985-86,  
p. 25.

<sup>4</sup>"Norfolk Naval Shipyard: A Promising Future, A Historic Past." Promotional brochure, Personnel Operations Division, Code 170.3, Norfolk Naval Shipyard, Portsmouth, Virginia, p. 2.

<sup>5</sup>Norfolk Naval Shipyard, Synchronized Slide Presentation Script, July 1983, p. 1.

<sup>6</sup>Margaret Barnes Carter, "The Educated Worker: A Case Study of Educational Needs and Program of Developmental Reading" (Ph.D. dissertation, Old Dominion University, 1984), pp. 44-45.

<sup>7</sup>Oral histories dictated by prior NNSY apprentice program personnel.

<sup>8</sup>Interview with Edward J. Alm, Apprentice Program Administrator, Norfolk Naval Shipyard, Norfolk, Virginia, 18 April 1983.

<sup>9</sup>Norfolk Naval Shipyard Apprentice Training Plan, NNSY P12410-40, Norfolk Naval Shipyard, Portsmouth, Virginia, 1980, p. 18.

<sup>10</sup>Tidewater Community College Catalog 1985-86,  
pp. 96-97.

## CHAPTER III

### METHODOLOGY

This chapter describes the evaluation design, data collection procedures and methodology for data analysis that was used to conduct this evaluability assessment of the NNSY Apprentice Program. The apprentice program was evaluated from the perspective of a cooperative training alliance between industry and the urban community college as the implementing agent for community development interests. Prior systematic assessment of both industry and community development expectations and information needs related to cooperative training alliances is not well documented.

In this study an evaluability assessment was conducted to document the expectations and information needs of both community development interests and program management and to integrate these expectations with program activities in an evaluable model of program operation. Presentation of an integrated evaluable model of the program as a community development training alliance will enhance decision making concerning program modification, funding and the need for additional evaluation.

### Evaluation Design

Conduct of this study is based on completion of the evaluability assessment phase of the "Sequential Purchase of Information" evaluation design strategy.<sup>1</sup> An evaluability assessment is an evaluation of program design. This phase of program evaluation establishes the intended uses of evaluation information and presents an evaluable model of program activities and outcomes. The evaluable model of the program includes only those identified outcomes that are both plausible and measurable considering the reality of program activities. An evaluability assessment provides the framework for realistic decision making concerning the need for additional evaluation sequences and modification to program activities, information sources, program expectations and performance indicators. After the completion of the evaluability assessment, policy makers and managers may decide to schedule or "purchase" additional evaluation sequences based on the need for additional information. The "purchase" terminology recognizes the resource expectations involved in program evaluation and may include the purchase of the services of outside evaluators. The additional evaluation options that may be purchased include rapid feedback evaluations, intensive summative evaluations using experimental or quasi-experimental designs and performance monitoring evaluations. The sequential evaluation design strategy allows management, planners and policy makers to purchase only that evaluation

information beyond the evaluability assessment that can be produced within given cost and time constraints and that is needed for decision making and program improvement.

The "Sequential Purchase of Information" evaluation design methodology was developed by Urban Institute evaluators as a means of improving the use and usefulness of program evaluation as a tool of managers and policy makers who make program decisions and initiate program changes. In programs where formative evaluation tools and evaluation controls are not integrated into program design, intensive summative evaluations often are too expensive, do not produce needed data prior to critical decision points and may not result in the information that is actually needed by decision makers. The sequential purchase strategy provides usable data in a cost effective manner much earlier in the evaluation process. Timeliness and cost effectiveness is achieved by targeting specific information needs and providing decision makers with the option of selectively purchasing more intensive evaluation sequences only if and when the information is needed. Joseph S. Wholey, in his book Evaluation: Promise and Performance, describes the concept of the sequential evaluation design as follows:

This approach produces successive increments of information on program promise and performance and uses those increments of information to stimulate interaction between the evaluators and those in charge of government programs. Each interaction further defines program activities and objectives, information needs and priorities, the possibility of meeting management's

needs, and management actions that are likely to improve program performance. . . . Rather than proceed directly from the program-to-be evaluated to intensive evaluation of program effectiveness, we insert one, two or three preliminary evaluation steps, any one of which may produce sufficient information for policy or management decisions. Our approach produces relatively inexpensive information on program performance within months, rather than years. . . .<sup>2</sup>

The evaluative steps or tools proposed by Wholey and other urban evaluators include:

1. Evaluability assessment: This process tests the extent to which managers and policy-makers have defined measurable program objectives and defined specific uses for information on program performance: documents ongoing program activities including resource and information flows, assesses the plausibility of program objectives and the feasibility of measuring progress toward program objectives and identifies opportunities to change program activities, objectives, and uses of information in ways likely to improve program performance.

2. Given the results of evaluability assessment, rapid feedback evaluation may be selected to summarize preliminary program performance and make recommendations on program modifications and the value of obtaining additional evaluation information through follow-up evaluation sequences.

3. Given the results of evaluability assessment or rapid feedback evaluation, performance monitoring may be selected to measure program performance and compare actual program performance with prior or expected performance and make recommendations on program modification.

4. Given the results of evaluability assessment or rapid feedback evaluation, intensive evaluation may be selected as an evaluation option. Normally this sequence uses comparison or control groups to estimate the extent to which program results were caused by program activities.<sup>3</sup>

The evaluability assessment used in this study represents an initial evaluation effort of the NNSY Apprentice Program as a community development training

alliance. The study determines program expectations and information needs and analyzes these desired program outcomes to determine the degree of conflict across partnership interests, the plausibility of expectations given the program activities being conducted and the degree of measurability of the various expectations. The assessment also identified likely secondary impacts resulting from program activities and suggested modifications that would improve program results.

### Evaluation Questions

Each evaluation question in this study is appropriate for evaluation by an evaluability assessment. Figure 3 summarizes the evaluation questions addressed in the study and lists the data activities and data procedures that are appropriate to each question. The evaluation questions addressed in this study approach the NNSY apprentice program as a cooperative urban community development training alliance. Urban community development training alliances are promoted as a means of industry achieving human resource development (HRD) goals while promoting the accomplishment of community development goals. The central concern addressed in this study is: Does the cooperative apprentice training alliance between NNSY and Tidewater Community College result in a positive relationship between the accomplishment of identified industrial human resource development (HRD) outcomes and the promotion of urban

<u>EVALUATION QUESTION</u>	<u>DATA ACTIVITY</u>	<u>DATA PRODUCT</u>
What are the long term program expectations, desired student outcome, objectives, performance indicators and information needs of program partners in the NNSY	Documentation and literature review.  Interview industrial partners  Interview community partners  Collect and summarize data.	Raw data on program expectations, student outcome objectives, performance indicators and user information needs.
Are identified long term program expectations, desired student outcome objectives, performance indicators and information needs compatible across partnership interests, plausible considering activities being conducted and measurable in terms meaningful for decision making and program improvement	Develop logic model  Develop equivalency model  Develop evaluable model	View of how the program was intended to operate, how it actually operates and a presentation of the program that is evaluable, e.g., outcome expectations are compatible, plausible and measurable.
<u>ADDITIONAL EVALUATION QUESTION</u>		
What important secondary impacts will likely result from the conduct of this study?	Review interview summaries and discussions with program managers and public policy leaders.  Review of program models	Perceptions of the process of evaluation of an industrial training program as a community development training alliance.

Fig. 3. Evaluation Questions/Data Activities and Products

community development in the Tidewater Virginia area?

The primary evaluation questions asked as a means of addressing the concern are:

1. What are the long term program expectations, desired student outcome objectives, performance indicators and information needs of program partners in the Norfolk Naval Shipyard Apprentice Program?
2. Are identified long term program expectations, desired student outcome objectives, performance indicators and information needs compatible across partnership interests, plausible considering the activities being conducted and measurable in terms meaningful for decision making and program improvement?

One additional evaluation question is addressed in the study: What important secondary impacts will likely result from the conduct of this study?

#### Evaluability Assessment

An evaluability assessment of the Norfolk Naval Shipyard Apprentice Program as a cooperative industry/community development training alliance is the primary emphasis of this paper. The method used to answer each evaluation question defines the major evaluation activities that are included in the study. The first major evaluation activity is data collection. In this evaluability

assessment, data collection is primarily concerned with clarifying the expectations of training partnership participants as addressed in evaluation question one:

1. What are the long term program expectations, desired student outcome objectives, performance indicators and information needs of program partners in the Norfolk Naval Shipyard Apprentice Program?

Data analysis, the second major evaluation activity, is concerned with the process of program modeling as a means of addressing evaluation question two:

2. Are identified long term expectations, desired student outcome objectives, performance indicators and information needs compatible across partnership interests, plausible considering activities being conducted and measurable in terms meaningful for decision making and program improvement?

The interview process and the program modeling phase provide the data needed to answer the additional evaluation question addressed in this study: What important secondary impacts are likely to exist for each partner?

#### Data Collection

Data collection refers to activities conducted to clarify program expectations. Because program evaluation is a continuing and evolving process rather than a strictly

controlled experiment, actual data collection is continuous as the evaluation attempts to refine findings as a means of reflecting program reality. The data collection activities used to clarify program expectations were selected based on the recommendation of Wholey and for their utility in the current setting. The primary clarification activities included:

1. Review of program documentation. The review included industry and community development documentation related to cooperative community development training alliances
2. Interviews with program management at Norfolk Naval Shipyard, including both operational and strategic managers
3. Interviews with identified community development interests, including officials of the Commonwealth of Virginia, officials from all of the cities in the Tidewater area of Virginia and officials representing the Community College

#### Review of Documentation

The review of program documentation provided the data to describe the intended program from a variety of perspectives. Public programs, including public college and government training programs are often begun with only the broadest general policy objectives as guidelines for program initiation and continuing management.<sup>4</sup> Those

involved in program operation and management usually sense that it is essential to maintain flexibility to respond to changing demands of program users. While flexibility and changing operational objectives may work to maintain the program and program staff, and may provide needed services, it may lead the program in directions that are not congruent with original policy initiatives that were responsible for program creation. The review of program documentation collected data on the stated program expectations and objectives. The review also attempted to collect the data necessary to establish the level of continuing validity of the original assumptions and any new forces that suggest the need for continuation or decline in the program as a cooperative training alliance. The review was also concerned with collecting the data needed to establish the intended program and the logic of the program, given the documented activities and expectations. The primary documentation review included formal and informal agency documentation. This documentation was supplemented with professional literature, newspaper articles, speeches and oral histories.

The synthesized results of the data gathered in the review of documentation are used along with interview data to establish a program logic model in the data analysis and program modeling phase of the evaluability assessment.

#### Interview of Program Management

This section of the evaluability assessment is

concerned primarily with the expectations of industry and specifically with managers associated with Norfolk Naval Shipyard and the apprentice program. The specific interviews that were conducted included managers from two categories.

1. Operational Managers--These interviews included managers who are involved with the apprentice program on a daily basis. Program involvement is from one or more of the following perspectives:
  - A. Input into apprentice learning needs during the academic phase with Tidewater Community College.
  - B. Establishment and monitoring of trade theory and on-the-job training phases of the apprenticeship.
  - C. Primary user of the product of the apprentice program--journeyman craftsmen.
  - D. Daily organization, administration and program implementation at the apprentice school.
  - E. Daily coordination of the academic phase of the apprentice program.

Interviews with operational managers included the superintendents for the structural group, electrical/electronics group, mechanical group and service group for Norfolk Naval Shipyard, the apprentice program administrator and the Tidewater Community College academic program

administrator.

2. Strategic Managers--These interviews included managers from the shipyard who utilize the apprentice program as a tool to achieve the shipyard objectives. Interviews with strategic management included the following officials or their representatives.

- A. Norfolk Naval Shipyard Commanding Officer, as the chief executive of the shipyard.
- B. Director of Industrial Relations as the manager responsible for all Personnel activities at the shipyard.
- C. Director of Employee Development as the person responsible for coordinating all training, education and development activities at the shipyard.
- D. Norfolk Naval Shipyard Production Officer as the senior manager directly responsible for all ship repair modernization and overhaul-work at NNSY.

#### Interview of Community Development Interests

This section of the evaluability assessment is concerned with determining the expectations and information needs of influential policy leaders at the state and local level who have been appointed or elected to positions critical to community development. Interviews with state

and local policy leaders included the following officials or their representatives.

1. Executive Branch/State agency executives,  
Commonwealth of Virginia
  - A. Secretary of Commerce and Resources
  - B. Chancellor of the Virginia Community College System
  - C. Secretary of Human Resources
  - D. Commissioner of Labor and Industry
  - E. Director of Economic Development
2. Virginia General Assembly
  - A. Senate Finance Committee members from the Tidewater area (3)
  - B. House Appropriation Committee members from the Tidewater area (3)
  - C. Other House of Delegate members to assure representation from each Tidewater city (2)
3. Local Community officials from the cities of Portsmouth, Chesapeake, Norfolk, Virginia Beach, and Suffolk, Virginia
  - A. Mayor
  - B. City Manager
  - C. Director of Economic Development
4. Urban Community College
  - A. President of Tidewater Community College
  - B. Dean of Instruction and Student Services at Tidewater Community College

- C. Provost of the Frederick Campus of Tidewater Community College
- D. Tidewater Community College Apprentice Program Manager

#### Human Subjects Concerns

All of the persons interviewed in this study are public employees or elected officials who were asked to make comments concerning their professional relationship with community colleges, the NNSY apprentice program and/or community development training alliances. This evaluation research meets the criteria established by Old Dominion University for the protection of human subjects and permission to conduct this research was granted by the Human Subjects Committee at the University.

#### Interview Procedure

The interview procedure used in this study is the "standardized" interview as described by Richardson.<sup>5</sup> The standardized interview is appropriate when the same information is to be gathered from each person interviewed and the responses of the interviewers are to be compared and classified as responses to identical questions. The aim of the interview is to detect similarities and differences on a specific topic between persons interviewed rather than similarities or differences attributable to a difference in topic that may result from a question being stated differently or in a slightly different context as is

often the case in the "nonstandard" interview. While valuable data may be gathered from nonstandard interviews, the disadvantages make it less appropriate for research and evaluation studies. The most important disadvantages for the current study include:

1. It is more complex than the standardized interview, resulting in significantly more interviewer training and skill
2. A clearly established methodology for the nonstandard interview has not been established and thus it is more difficult to obtain verifiable data across the sample of respondents
3. Guidelines for administrators would be difficult to establish

Using the standardized interview over the nonstandard interview leaves the interviewer with the choice of using the "schedule standardized interview" or the "nonschedule interview" as the best means of achieving standardization. Richardson summarizes the two forms of standardized interview:

Although there is no disagreement among investigators that, in order to obtain standardization, respondents must be asked for precisely the same information, there is a difference of opinion as to the form of interview whereby this may best be accomplished. The form most commonly used to obtain standardization is the schedule interview, in which the wording and sequence of questions are determined in advance and the questions on the schedule are asked of all respondents in exactly the same way. The alternative approach is the non-schedule standardized interview, so called because it aims at achieving standardization without the use of a prepared schedule from which the interviewer reads the

questions. Instead, the interviewer is thoroughly taught exactly what information is required of each respondent and then is allowed to vary the wording and the sequence of the question for maximal effectiveness with individual respondents.<sup>6</sup>

The general assumption that is the basis of the schedule interview is that to produce a response that validly differentiates one respondent from another the stimulus must be identical and, in order to achieve this sameness the questions must have exactly the same meaning each time they are presented.

In order to achieve standardization and the validity of response that is desired, schedule interviews also make the following assumptions:

1. "In any study, the respondents have a sufficiently common vocabulary so that it is possible to formulate questions which have the same meaning for each of them."<sup>7</sup>
2. "A uniform wording for all respondents can be found for any subject matter."<sup>8</sup> In order to achieve the interview goals associated with vocabulary and wording it is important that the evaluator correctly assess the interviewers so that question vocabulary structure and wording reflects the intended level of comprehension. The question must not be too difficult nor should it be perceived as patronizing or unworthy of the time and concentration required for serious response. Schedule interviewing assumes that

uniform and appropriately worded questions can be constructed for most subjects and interview groups.

3. "If the meaning of each question is to be identical for each respondent, its context must be identical and since all preceding questions constitute part of the context, the sequence of the questions must be identical."<sup>9</sup>

Because sequencing is so important in the interview structure, two important general guidelines should be followed.<sup>10</sup>

1. Place question likely to arouse interest early in the schedule
2. Place sensitive and/or threatening questions near the end of the interview to take advantage of any confidence that may have been developed during the course of this interview. In cases where the interviewer is not able to overcome the potential threat, placement at the end of the schedule will prevent loss of valid response to all of the other questions

The schedule interview is considered the most appropriate interview method when the education and background of each interviewee is essentially the same. Opponents of the schedule standardized interview believe that each respondent is different and must have an interview that is individually tailored in both language and

sequence. It is suggested by these researchers that careful interviewer training can result in individually tailored interviews that are more valid than schedule standard interviews. In the current study each interview sequence was conducted with essentially homogeneous populations and therefore utilized the schedule standardized interview format. The actual interview schedules used are adaptations of program evaluation interviews conducted by the Urban Institute. The interview schedules used are included as Appendix One.

Only two population variations were considered to be important enough to vary the schedule standardized interview format in this study.

1. State and local policy leaders who did not have direct knowledge of the NNSY/TCC linkage were asked by the interviewer to respond in terms of community college/ industry linkages in general
2. Some officials indicated that they did not have direct knowledge of long term expectations for industry. Other officials indicated that they did not have direct knowledge of long term community development expectations. The interviewer indicated to these officials that they could use an industry or a community development frame of reference if they were uncomfortable in responding to both

The only other variation to the schedule is that

additional clarifying questions were asked when considered necessary and additional discussions were often conducted after the formal interview was completed. These minor variations are not considered significant in an evaluability assessment focused on gathering both formal and informal information from every available source.

### Data Analysis

Data analysis utilized program modeling as the primary analysis tool. Program modeling is essentially a means of synthesizing and analyzing the outcome data that was obtained from the documentation review, interviews with the industrial partners, interviews with community development partners and evaluator observation of program operation during site visits. Models were constructed using the techniques recommended by Wholey. Program activities or outcomes that are expected to occur are represented diagrammatically as boxes, while arrows represent causal assumptions that one event will lead to another. Figure 4 is a preliminary simplified model of the program logic for the apprentice program as a community development cooperative training alliance that demonstrates the modeling concept used in the study. Three models were constructed; the logic model, the equivalency model and the evaluable program model.

### The Logic Model

The logic model represents a synthesis of all of the

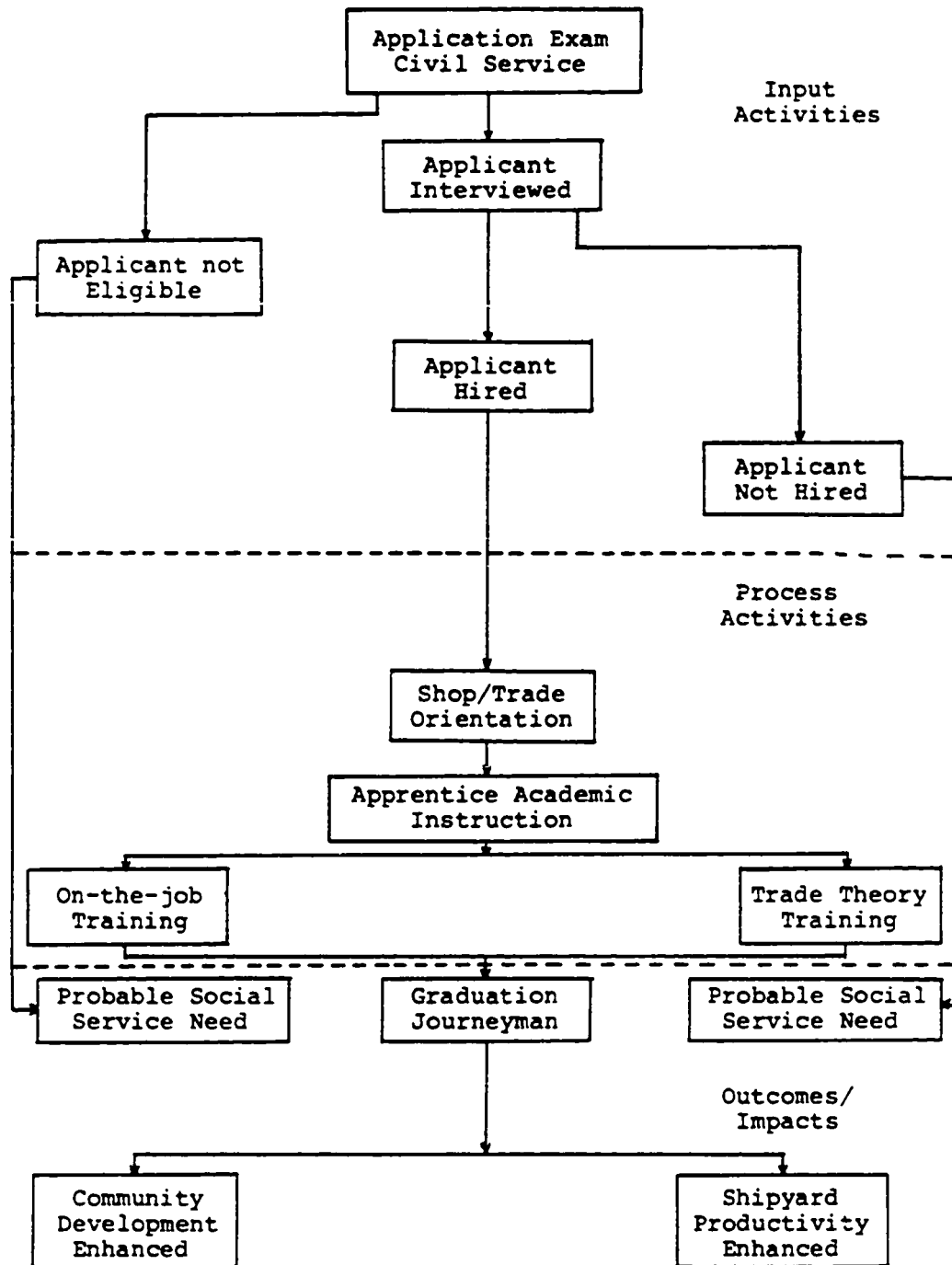


Fig. 4. Preliminary Logic Model

outcome expectations that are available from the documents review and interviews. This model represents a melding of rather diverse views and perspectives. In this evaluation it was possible to synthesize program management policy and product user expectations into a single model. In cases where this melding is not possible, separate models may be constructed. Wholey points out that while separate models are sometimes needed, a single model can accommodate a considerable variety of expectations as long as they are not in conflict.<sup>11</sup> The logic model is a description of the apprentice program as it is intended.

#### The Equivalency Model

The equivalency model resulted from an examination of the program in the field to observe the activities that are actually being conducted and to determine what data are actually being collected or is collectable. The evaluator compared what was actually taking place and the outcomes that were actually expected to what was documented in the logic model to answer two important questions:

1. What data are obtainable on program performance?
2. Is there a program in place that has some likelihood of achieving the desired program expectations? The equivalency model represents a program model equivalent to what is actually happening in the field.

### The Evaluable Model

The evaluable model is

. . . the evaluator's assessment of the program that can usefully be evaluated, given the current level of agreement on measures of program performance, given the program activities currently under way, and given the feasibility and cost of measuring progress toward these program objectives that are plausible and measurable.<sup>12</sup>

A great deal of effort in determining the evaluable model was concerned with determining plausibility and measurability. Plausibility is concerned with the likelihood that the program that is actually being conducted will likely lead to desired expectations. Wholey suggests that the evaluator should be aware of the following threats to plausibility:

1. Lack of resources
2. Unrealistic schedules
3. Lack of evidence that intended program activities are actually being conducted
4. Lack of knowledge concerning the necessary link between activities and outcomes.<sup>13</sup>

Schmidt has adequately summarized the concept of measurability in program evaluation:

There are two parts to the question of measurability: (1) the indicator of achievement and (2) the means of verification. It is a standard part of program evaluation methodology that both indicators and means of verification be developed as part of any evaluation. The key question is, who should develop the measures of success? The assessment process discussed here rests on the belief that ambiguous objectives should not be rendered unambiguous by an evaluator; that, we believe, is a management prerogative. The analysis of objectives for "measurability" is not, then, a test of the evaluator's ingenuity in defining measures. It is,

rather, a test to determine whether the manager has defined what he wants his program to accomplish and what evidence he needs to determine this. Lacking such measures, the objective is eliminated from the model, classified temporarily as 'unmeasurable.'<sup>14</sup>

The crux of measurability is to determine if data are evaluable on program performance that will be useful to evaluation users in assessing progress towards objectives. The evaluable model defines the program that has measurable and plausible expectations and likely sources of data on the achievement of those expectations. The evaluable program model provides information sources for decision making and program improvement. The model also clarified secondary impacts that likely result from program activity.

## ENDNOTES

<sup>1</sup>Joseph S. Wholey, Evaluation: Promise and Performance (Washington: The Urban Institute, 1979), p. 12.

<sup>2</sup>Ibid., p. 13.

<sup>3</sup>Ibid.

<sup>4</sup>Peter H. Rossi, Howard E. Freeman and Sonia R. Wright, Evaluation: A Systematic Approach (Beverly Hills: Sage Publications, 1979), pp. 53-60.

<sup>5</sup>Stephen A. Richardson, Barbara S. Dohrenwend and David L. Klein, Interviewing: Its Forms and Functions (New York: Basic Books, 1965), pp. 34-43.

<sup>6</sup>Ibid., p. 36.

<sup>7</sup>Ibid., p. 40.

<sup>8</sup>Ibid., p. 42.

<sup>9</sup>Ibid., p. 43.

<sup>10</sup>Ibid.

<sup>11</sup>Wholey, Evaluation: Promise and Performance, pp. 58-60.

<sup>12</sup>Ibid., p. 72.

<sup>13</sup>Ibid., p. 70.

<sup>14</sup>Ibid., p. 63.

## CHAPTER IV

### RESULTS OF DATA COLLECTION

Chapter four describes the results of the data collection phase of the Evaluability Assessment of the Norfolk Naval Shipyard linkage between the Norfolk Naval Shipyard and Tidewater Community College.

The format for this chapter will be to report and discuss the results of the evaluation activities conducted to answer evaluation question one. Evaluation question one identifies program outcome expectations through a review of program documentation and interviews with representative partnership participants.

#### Evaluation Question I

What are the long term program expectations, desired student outcome objectives, performance indicators and information needs of program partners in the Norfolk Naval Shipyard Apprentice Program?

#### Documentation Review

Public documentation that examines the expectations of industrial human resource interests and community development interests within the limited framework of cooperative community training linkages is extremely limited. The need for public documentation identifying

expectations in terms that are understandable across all partnership interests and that are measurable and evaluable is the significant reason motivating this study. The lack of clearly documented expectations may be the reason that training authorities believe that education/industry linkages are a significantly under utilized resource.<sup>1</sup> The most significant problems encountered in the review of documentation was the need to conduct the reviews through extensive site visits, the lack of consistent terminology in stating expectations and the lack of consolidated statement of program specific expectations. Significant understanding of agency and documentation context proved to be necessary for expectations to be stated by the evaluator in terminology that was both correct and universally understandable across the spectrum of partners in the training alliance.

For this reason, the process of documentation review included identification of individual long term program expectations and student outcomes, discussion of each outcome with program managers and review of additional associated documentation to clarify the intent and context of the outcomes. There is no concern with methodology in mixing program management discussions with the documentation phase of the review rather than restricting these views to the interview phase. As indicated by Wholey, the concept of the sequential purchase of information design uses increments of information to stimulate interaction

between evaluators and those in charge of government programs. Each interaction further defines program activities and objectives.<sup>2</sup> The outcomes are restated in generic terms that can be understood across partnership lines. Once outcomes were clearly stated, if performance indicators are not apparent, documentation was again reviewed to identify available indicators of program performance. When this process was completed for a particular outcome, additional documentation was reviewed for additional long term program expectations, student outcomes and performance indicators. Outcome information needs were identified as they were discovered.

### Results

The findings of the documentation review are summarized and presented in figure 5. Identified outcomes are reported in the four outcome categories selected for evaluation: long term program expectations, desired student outcome objectives, program performance indicators and information needs of the partners. Figure 5 indicates the outcome expectations identified and the partner linked with the expectation. As shown in figure 5, ten different long term program expectations were identified as a result of the documentation review. Seven of the long term expectations were directly or indirectly linked to the industrial partner. Ten of the long term expectations were directly or indirectly linked to the community development partner.

PROGRAM EXPECTATIONS	
INDUSTRIAL INTEREST	COMMUNITY INTEREST
NNSY meets long range manpower needs	NNSY meets long range manpower needs
NNSY recover training costs	NNSY recover training costs
Workforce is a fair and appropriate mix of "at-risk" employees	Workforce is a fair and appropriate mix of "at-risk" employees
Quality workforce	Quality workforce
National security/ national defense	National security/ national defense
Economic development	Economic development
Future leadership	Future leadership
	NNSY meets long range program expectations
	Promote training linkages
	Promote production efficiency
STUDENT OUTCOMES	
INDUSTRIAL INTEREST	COMMUNITY INTEREST
Skilled journeyman craftsman	Skilled journeyman craftsman
Employment retention	Employment retention
Educational access for "at-risk" employees	Educational access for "at-risk" employees

Fig. 5. Summary of Documentation Review

STUDENT OUTCOMES	
INDUSTRIAL INTEREST	COMMUNITY INTEREST
Educational success for "at-risk" employees	Educational success for "at-risk" employees
Employment access for "at-risk" employees	Employment access for "at-risk" employees
Employment retention of "at-risk" graduates	Employment retention of "at-risk" graduates
Career advancement	Career advancement
	NNSY meet desired student outcomes
	Advanced education
	Reduced unemployment
PERFORMANCE INDICATORS	
INDUSTRIAL INTEREST	COMMUNITY INTEREST
Number of journeymen meets projected need	Number of journeymen meets projected need
Supervisor evaluations	Supervisor evaluations
Number of graduates retained 2 1/2 years	Number of graduates retained 2 1/2 years
Number of "at-risk" employees by category, admitted	Number of "at-risk" employees by category, admitted
Number of "at-risk" graduates who are retained	Number of "at-risk" graduates who are retained

Fig. 5. Continued

PERFORMANCE INDICATORS	
INDUSTRIAL INTEREST	COMMUNITY INTEREST
Number of graduates serving in technical leadership positions	Number of graduates serving in technical leadership positions  Number of graduates/journeyman appointments  Number of graduates returning to TCC  Performance indicators considered appropriate by NNSY  The economic impact of NNSY/TCC linkage
INFORMATION NEEDS	
INDUSTRIAL INTEREST	COMMUNITY INTEREST
Open communication links between NNSY, NAVSEA, DON, VA, TCC & Va. Dept. of Labor	Evaluate/communicate program outcomes to industry/community  Improve college communications with public

Fig. 5. Continued

Of the total of ten program expectations identified during the documentation review, seven were identified with the interests of more than one partner.

Figure 5 indicates that 11 student outcome objectives were identified as a result of the documentation review. Seven of the objectives were directly or indirectly linked to the industrial partner. Ten of the objectives were directly or indirectly linked to the community development partner. Of the 11 student outcome objectives identified during the review, seven were identified with the interests of more than one partner.

Figure 5 indicates that 11 program performance indicators were identified as a result of the documentation review. Seven of the performance indicators were directly or indirectly linked to the industrial partner. Eleven of the performance indicators were directly or indirectly linked to the community development partner. Of the 11 performance indicators identified during the documentation review, seven were identified with the interests of more than one partner.

Figure 5 indicates that three specific information needs were identified as a result of the documentation review. One of the information needs was directly or indirectly linked to the industrial partner. Two of the information needs were directly or indirectly linked to the community development partner. Of the three information needs identified during the documentation review, none were identified with the interest of more than one partner.

Norfolk Naval Shipyard  
Program Documentation

The review of documentation at Norfolk Naval Shipyard included both formal and informal documentation and statistical data maintained on the apprentice program.

The review resulted in the identification of seven long term program expectations and seven desired student outcomes. Seven performance indicators were identified as available measures of the level of achievement of program expectations and student outcome objectives. One specific outcome information need was identified during the documentation review. The following is a summary of the findings of the documentation review at Norfolk Naval Shipyard.

Long Term Program Expectations

1. NNSY meet long range manpower needs
2. Recover training costs
3. Workforce represents a fair and appropriate mix of "at risk" employees
4. Quality workforce
5. National security/national defense
6. Economic development
7. Future leadership

Desired Student Outcomes

1. Skilled journeyman craftsmen
2. Employment retention
3. Educational access for "at-risk" employees
4. Educational success for "at-risk" employees

5. Employment access for "at-risk" employees
6. Employment retention of "at-risk" apprentice program graduates
7. Career Advancement

#### Performance Indicators

1. Number of journeymen meets projected need
2. Journeyman supervisor evaluations
3. Number of apprentice graduates retained for two and one-half years
4. The number of "at-risk" employees, by category, who are admitted to the apprentice program
5. The number of "at-risk" apprentice program graduates, by category, who are retained in the shipyard workforce
7. The number of apprentice program graduates serving in technical leadership position

#### Information Needs

1. Open communication links between Norfolk Naval Shipyard and Department of the Navy, Naval Sea Systems Command, Department of Labor, Veterans Administration, the Virginia Department of Labor and Industry and Tidewater Community College.

A significant volume of documentation at Norfolk Naval Shipyard was reviewed. Most of the documentation tended to be input and process oriented which provided valuable information for the modeling phase of this study. The review of input/process information also provided

needed program insight and context, but very little outcome data.

Official guidance for program operation and expectations for the Norfolk Naval Shipyard Apprentice program is provided by the Department of the Navy (DON) in Part I of OPNAVINST 12000.14, Department of the Navy Apprentice Training Program. The Norfolk Naval Shipyard implements this guidance through NAVSHIPDNOR INSTRUCTION 12410.25B which establishes policy and procedures and assigns responsibility for administering the apprentice program in accordance with Department of Navy directions. Shipyard documentation tends to state broad based program outcome objectives without linking those objectives to specific measures of adequate outcome based program performance. Communication needs associated with outcome performance are generally not identified. Rather, attention is devoted to those input and process activities considered necessary to implement and operate the program. The basic assumption in the documentation is that if the program is operated in accordance with the specified input and process activities, the outcome objectives will be realized. Discussions concerning the lack of documented outcome performance measures suggested that cost constraints have prevented this undertaking. The shipyard has a significant interest in identifying program outcomes and realistic performance measures.<sup>3</sup>

The primary objective stated by the Department of the

Navy for approved apprentice training programs is "to develop highly skilled Navy and Marine Corps-oriented journeyworkers to meet long range journeyworker needs."<sup>4</sup> This objective is restated in terms specific to the NNSY program--". . . administer a sound apprentice program designed to meet long-range journeyman needs of the shipyard by providing quality journeyman skilled in ship repair, conversions and maintenance of support facilities."<sup>5</sup>

The primary objective of the shipyard apprentice program addresses two evaluation issues from Evaluation Question I, long term program expectations and desired student outcome objectives. The long term program expectation is to meet long range manpower needs. The desired student outcome objectives is to develop skilled journeymen craftsman.

The focus of the apprentice program as a long range human resource tool to develop quality journeymen is discussed in considerable detail within official documentation. The following quote from DON guidance provides perspectives on use of the apprentice program as a long range human resource tool.

Activities must request authority to establish an apprentice training program only to meet clearly identified long-range needs. Due to time and resource commitments required, the apprentice program is not appropriate for addressing short-range needs for emergencies. (As a general rule, a journeyworker to apprentice ratio of 4:1 or greater should exist for effective on-the-job apprentice training.) To effectively meet long-range goals, the program must be

insulated from transitory retrenchments and erratic fluctuations in enrollments to the maximum possible extent. When exemptions to hiring freezes are allowed by DON and the command, activities are encouraged to exempt apprentices from hiring freezes in order to maintain critical-skilled levels and cost-effective teacher-student ratios.<sup>6</sup>

This paragraph mandates the shipyard to project manpower needs into the future. The assumption discussed and verified with program administrators is the use of comparisons of journeymen craftsmen in the workforce in relation to manpower projections as a performance indicator. Stated in terms of the long range program expectations, the performance indicator is: the number of journeymen in the workforce meets projected journeymen needs.

There appears to be some local justification to the assumption that large apprentice programs are universally used as a long range manpower tool. Newport News Shipbuilding and Drydock Company, the largest private employer in Tidewater Virginia, with the largest apprentice program in the state, recently had a major reduction in their workforce due to a loss of government contracts. No apprentices were included in this layoff. Discussion with Newport News officials indicates that traditionally apprentices have not been included in workforce reductions at the Newport News Shipyard.<sup>7</sup>

Discussion, within official documentation, concerning the desired student outcome objective of developing skilled journeyman craftsmen focused on the input and process

activities of selection, curriculum development/review and student evaluation. The tone of both DON and Shipyard documentation supports a belief that a quality product will result if apprentices are carefully screened and selected, trained using an appropriate curriculum mix of academic instruction, trade theory instruction and on-the-job experiences and evaluated on a continual basis that provides feedback for self appraisal, rewards appropriate behavior with periodic pay-grade advancements during the apprentice program and provides the justification for termination when work behavior and skill development is not acceptable. Because these activities are input and process oriented, they will be used to develop program models, but will not be discussed in great detail. Documentation of performance indicators for the primary student outcome objective of developing skilled journeyman craftsmen through completion of the apprentice program appears to be limited to supervisor evaluations. There is no systematic data base to compare the journeymen who are apprentice graduates with other journeymen in terms of quality.<sup>8</sup>

Although retention of apprentice graduates may be logically implied as necessary if the apprentice program is to serve as a long range manpower tool, general retention of apprentice graduates is not specifically addressed as a program expectation in the guiding documentation. The first significant discussion of retention of apprentice graduates is in a letter from the Commander Norfolk Naval

Shipyard to Commander, Naval Sea Systems Command of May 13, 1985.<sup>9</sup> This letter and an enclosed position paper discuss the concerns that Norfolk Naval Shipyard needed to institute an obligated service requirement for apprentice graduates in order that the shipyard could be assured of at least an adequate return on its training investment. Thus, the specific long term program expectation that can be directly implied, concerning retention, is that the shipyard recover the cost of apprentice training through adequate service after apprentice graduation. Although the period of required service is computed individually for each apprentice, the average required service will be approximately two and one half years. In terms of Evaluation Question I, the long term expectation is service adequate to recover training costs. The desired student outcome objective is employment retention and the performance indicator is the number of apprentices retained for a minimum of two and one-half years.

Official documentation also addresses the use of the apprentice program as a means to achieve advancement in the equalization of employment opportunity. As stated in DON literature, "the apprentice program may serve as an avenue for employing veterans, upgrading underutilized employees and increasing the number of female, minority and handicapped journeyworkers."<sup>10</sup> The workers will be referred as "at-risk" employees in order to conform to terminology used by other partnership elements.<sup>11</sup> The long term program

expectation is that the shipyard apprentice program will contribute to the shipyard's efforts to achieve a trades/craft workforce that reflects a fair and appropriate mix of "at-risk" employee groups who may have previously experienced reduced opportunity in the workforce. The desired student outcome objectives for the "at-risk" employees selected for the apprentice program is educational/employment access, opportunity, success, and retention. The performance indicators are the number of "at-risk" employees, by category, who are admitted to the apprentice program, the number of "at-risk" employees, by category, who graduate from the apprentice program, and because the guiding objective is directed to the corp of journeyman workers rather than apprentices, an appropriate performance indicator is the level of retention of "at-risk" apprentice graduates in relation to established EEO goals.

The final objective articulated in official documentation is stated in an agreement between the DON and the Department of Labor (DOL) which establishes the policy and procedures to be followed for the registration of DON civilian apprenticeship programs with the DOL's Bureau of Apprenticeship and Training. In a mutual statement DON and DOL recognize the need for programs to build and maintain a quality labor force. It is suggested that with a quality labor force the following objectives can be met:<sup>12</sup>

1. Strengthen the national security
2. Provide skilled workers needed for the national

economy

3. Provide an opportunity for workers to be trained for skilled occupations without regard to race, creed, color, national origin, sex, nondisqualifying physical or mental handicapping condition

In terms of Evaluation Question I, several long term program expectations are indicated.

1. Quality workforce
2. National security/national defense
3. Economic development

Acceptance of the long term expectation that the shipyard apprentice program will result in a quality workforce is closely related to other identified expectations and a goal of contributing to national security is easily understood considering that the shipyard and DON are elements of the Defense Department that has national security as the primary goal. What is more interesting, however, is the recognition by the Bureau of Apprenticeship and Training of the Department of Labor, that all industrial and cooperative efforts conducted in the United States that contribute to the building and maintaining of a skilled labor force have as a primary long term expectation to strengthen the national security.

The DON/DOL mutual statement provides the first formal statement within official documentation that there is a legitimate concern for the economy by the Department of the Navy and Norfolk Naval Shipyard. The statement also

shows that the Department of Labor attaches significant importance to the enhancement of the economy and that all industrial and cooperative training alliances have as a long term program expectation the strengthening of the economy. With Norfolk Naval Shipyard serving as a program manager for an apprentice program credentialed by the DOL and as an agent of the DON for implementing DON policy in the Tidewater area of Virginia, the Norfolk Naval Shipyard is mandated to provide an apprentice program that provides skilled workers for the local economy. No performance indicators for measuring the contribution to workforce quality, contributions to the economy, or a measured impact on national defense are apparent in any documentation or statistical data review. Part three of the DON/DOL statement also lends support to the long term program expectations and student outcomes associated with adequate representation by "at-risk" employees.

A review of less formal documentation within the shipyard suggests strong supports for all of the program expectations and student outcomes indicated within official documentation. A strong relationship between the apprentice program and both trade/craft management and technical leadership positions within the shipyard is suggested.<sup>13</sup> The long term program expectation of the informal documentation is that the apprentice program will create a pool of highly qualified candidates for trade/craft management and technical leadership positions. The desired student

outcome is that apprentice graduates will develop the competencies necessary for career advancement into management and technical leadership roles within the shipyard. The performance indicator is the number of apprentice graduates serving in technical leadership positions. Just as the apprentice program exists because a continuously available supply of journeymen workers qualified in ship repair, conversion and maintenance of support facilities does not exist within the local economy, the implication is that without the apprentice program an adequate supply of qualified trade/craft managers and technical leaders is not available in the local economy. In May 1986, Captain M. R. Gluse, the Commanding Officer of the Norfolk Naval Shipyard stated:

Our apprentice program constitutes a primary . . . and essential . . . workforce source for the shipyard since the skills in which apprentices are trained are unavailable to the extent required in the local labor market.<sup>14</sup>

While this statement was primarily discussing the journeyman ranks of the workforce the implication is that the statement is true for any position that has shipyard journeyman skills, knowledge, and abilities as requisite for performance of the position. Discussions with managers tend to support the assumed implication.

Information needs documented in the official shipyard literature that was available for the review was confined to internal communications between the various elements of the federal establishment and between the shipyard and

Tidewater Community College as the contractor providing the academic section of the apprentice program. Almost all of the information needs that are suggested in the official literature relate to input and process needs rather than outcome needs. In the documentation available for review, the only outcome information link discussed is reporting graduation data to those agencies that provide journeymen credentialing services for approved apprentice programs. Discussions concerning the lack of documented information needs suggested that there is an implied need for open communication between all official agencies involved in the apprentice program. Considering the agencies involved, the shipyard has the need for open communications on program outcomes with the Department of the Navy, Naval Sea Systems Command, the Department of Labor, the Virginia State Department of Labor and Industry, the Veterans Administration and Tidewater Community College.

No discussion in any documentation reviewed discussed the shipyard's motivation for originally establishing the linkage with Tidewater Community College. Discussion with shipyard officials indicates that the motivation was the desire to obtain a professional academic presence that could flexibly respond to changing manpower training needs and technical change without requiring the shipyard to make a commitment to expand the number of permanent professional educators hired by the shipyard. The Employee Development Code indicates that this original motivation is still

valid.

Community Development Program  
Documentation

Much of the recent criticism of community colleges has resulted from critics who have not been able to accept the transition of the "junior college" which served as a "handmaiden to the university" into a comprehensive community based institution tasked to serve identified needs within the broader community. The broader community includes, but is not limited to, the university.<sup>15</sup> The comprehensive community college is a tool of the community development task to serve identified needs of business, industry, labor unions, the military, public agencies and private citizens in addition to the university.<sup>16</sup> Some influential policy leaders believe that employment related training overshadows all other service.<sup>17</sup>

The current Tidewater Community College catalog states, "Tidewater Community College was established to meet the educational needs of the cities of Chesapeake, Norfolk, Portsmouth, Virginia Beach and a part of Suffolk, Virginia."<sup>18</sup> With Tidewater Community College serving as contractual partner and official representative of community interests in the NNSY/TCC training partnership, it is appropriate to focus the community development documentation review on Tidewater Community College. In addition, the intent of Commonwealth of Virginia policy makers and the Virginia Legislature, who established and fund the

Virginia Community College system, was reviewed. Official community development documentation was supplemented, when appropriate, with the views of various community development policy leaders as a means of clarifying documented program expectations and as an aid in identifying appropriate performance indicators. The sources of these clarifying views included professional literature, discussions with program management, newspaper articles and unpublished academic research efforts. A review of the documentation of all of the diverse agencies that are de facto partners in the NNSY/TCC linkage was beyond the scope of this study. The current review, combined with the extensive interview schedule, is considered adequate to identify all of the expectations of the diverse interests in the NNSY/TCC training linkage. Expectations and outcomes listed in the documentation review are limited to those specifically identified in this review. For example, a long term program expectation identified for community development interests is for Norfolk Naval Shipyard to meet their program expectations. The expectations of Norfolk Naval Shipyard are not repeated in this section unless they are specifically identified in other community documentation. Those NNSY expectations that are also appropriate to community development interests will have that fact indicated in the discussion. The summary presented in figure 5 indicates those expectations that are appropriate to both partners.

The review of community development documentation resulted in the identification of six long term program expectations. Nine desired student outcome objectives were identified as community development objectives. Six performance indicators were identified as measures of the level of achievement of program expectations and student outcome objectives. Two specific outcome information needs were identified during the community development documentation review. Specific findings from the community development review are examined for similarity to Norfolk Naval Shipyard findings. When appropriate, the generic statement from the Norfolk Naval Shipyard review may replace the original statement from Community Development literature. The following is a summary of the specific findings of the community development documentation review.

#### Long Term Program Expectations

1. NNSY meet long range manpower needs
2. NNSY meet long range program expectations
3. Promote cooperative training linkages
4. Promote production efficiency
5. Economic development
6. National security/national defense

#### Desired Student Outcomes

1. NNSY meet desired student outcomes
2. Education access
3. Employment access
4. Career advancement

5. Advanced education
6. Good citizenship/community involvement
7. Employment retention
8. Reduced unemployment
9. Educational success

#### Performance Indicators

1. Number of students graduating from the apprentice program and receiving journeyman employment appointments
2. Number of apprentice program graduates retained by the shipyard
3. The number of apprentice program graduates serving in technical leadership positions
4. Number of apprentice program graduates returning to TCC after graduation
5. Performance indicators considered appropriate by NNSY
6. The economic impact of the NNSY/TCC link

#### Information Needs

1. Evaluate and communicate to industry and other elements of the community the outcomes of the NNSY Training Linkage
2. Improve communication between the college and the public it serves

Very little documentation exists at Tidewater Community College related specifically to program outcome objectives at the Norfolk Naval Shipyard Apprentice

program. The community college documentation that is available on the Norfolk Naval Shipyard Apprentice Program is typically process oriented and intended to implement the contractual requirements specified by the federal government.<sup>19</sup> The federal contract and the implementing documentation covers such topics as instructor and administrator assignments and responsibilities, instructional materials/lesson guide requirements, testing and grading policy, class discipline and reporting procedures and requirements.<sup>20</sup> The outcomes specified in Evaluation Question I, long term program expectations, desired student outcomes, performance indicators and information needs of program partners is not precisely stated by the college for the apprentice program linkage as a separate entity. Informal discussions with program staff and upper level administrators at Tidewater Community College indicate two primary reasons that outcomes for the shipyard program are not clearly stated:

1. An evaluation requiring a precise statement of outcomes for the program has not been previously attempted
2. The apprentice training linkage is considered to be an integral element of educational programming at the college rather than as an extra program in addition to regular educational programming. Therefore, the stated objectives of occupational/technical programming at the college are valid

for the apprentice program linkage<sup>21</sup>

The view of administration tends to be supported in the documentation reviewed, and in enrollment/graduation statistics at the Frederick Campus. The linkage with Norfolk Naval Shipyard is an integral and productive component in the mix of occupational/technical programs and services offered by the Frederick Campus of Tidewater Community College. The Norfolk Naval Shipyard program represents approximately 25 percent of the full time equivalent (FTE) enrollment at the Frederick Campus. Shipyard apprentices enrolled in the Engineering Technical Assistant curriculum gives that curriculum a higher enrollment than all other occupational certificates combined at the Frederick Campus.<sup>22</sup>

Based on the lack of outcome documentation specific to the apprentice program and the degree of integration of the program into the occupational/technical program offerings of the college, it was considered appropriate that outcome objectives for the apprentice program will best be discovered and documented by examining college literature that describes general college expectations, the expectations for occupational/technical programs and the college role in special programs.

The primary official documents that discuss expectations for the various educational programs is the 1986-87 Tidewater Community College Catalog and Student Handbook, the Institutional Self Study Report submitted to the

Southern Association of Colleges and Schools for the 1986 reaffirmation of accreditation, the Virginia Community College Act of 1986 and The Virginia Community College System Policy Manual.

The introduction to the current catalog states that college programs are "designed to meet the educational and training needs of area citizens, business and industry."<sup>23</sup> Based on this introduction, the college has a dual focus:

1. Providing education and training for individual citizens
2. Providing the manpower training needed to enhance the viability of local business and industry within the community

Tidewater Community College officials believe that the apprentice program and other training linkages at the college provide an excellent vehicle for the college to use in promoting access to education and training for every area adult who "is able to benefit from a program of instruction."<sup>24</sup> Training linkages enhance occupational/technical education and training access by delivering the educational services directly to individuals at their worksite while still meeting a specific identified manpower need within the community.

The college "Purpose" statement in the current catalog expands the introductory statement and provides guidance for the college in terms of programming and service expectations as it seeks to meet the community

imperatives of the service area. As Standard One of the Commission on Colleges of the Southern Association of Colleges and Schools, the expectation is that the College Purpose Statement should define the role of the college and provide guidance for all programs and services offered by the college. As the guiding dictate for the college, the purpose statement should be the guiding dictate for examining the college role in the Norfolk Naval Shipyard Apprentices Program.

Tidewater Community College programs are designed to serve the educational needs of qualified youths and adults beyond high school age and to prepare them for employment, for advanced collegiate education, and for improved citizenship.

The college is dedicated to the belief that individuals should be given a continuing opportunity for the development and extension of skills and knowledge, and awareness of their roles and responsibilities in society. The college is devoted to serving the educational needs of its community and assumes a responsibility to respond to the requirements for trained manpower in this region through a cooperative effort with local industry, business, the professions, and government.

A variety of educational opportunities, including quality collegiate and development programs, is provided for youths and adults beyond high school age. A strong counseling program and other student services are available to assist students with decisions regarding their occupational, educational, and personal-social plans and goals.<sup>25</sup>

The 1984-85 Institutional Self Study for Tidewater Community College submitted the current and previous college purpose statements to considerable scrutiny. The review examined all college programs and program publications to ensure that they were consistent with the

intent of the College Purpose Statement and that the statement was consistent with what the college was actually doing in the community. The 1984-85 Institutional Self Study specifically found that the apprentice program linkage was consistent with the College Purpose Statement and was an obvious example of the stated purpose to serve "the educational needs of the community" and "to respond to the requirements for trained manpower in its region through a cooperative effort with local industry, business, the professions, and government."<sup>26</sup> Examination of the college purpose statement supported the dual focus of the college of providing access to education and training for individuals and responding to the manpower needs of the service area. The current catalog specifically supports and promotes cooperative training linkages.

Tidewater Community College provides instruction for employees of new and expanding businesses and industries.

Training is provided for new and developing small businesses, dislocated workers, and employees through the Federal Trade Readjustment Act. Off-campus training is provided with local government via the Job Training Partnership Act.

The Virginia Employment Commission cooperates to recruit prospective employees-students for special training.

This program incorporates job analysis, instructor recruiting and/or training, financial support for job instruction, and an adaptation for continuous training. Such training promotes more efficient plant production for industry and greater opportunity for advancement of employees.

New industries that are planning to locate in the area, or industries that are planning expansion and are

interested in this training, are urged to contact the College through the Continuing Education Office on any campus.<sup>27</sup>

In addition to promoting the use of cooperative training linkages, the business/industry statement clarifies the long term program expectation that training linkages promote more efficient plant production for industry and the desired student outcome of greater opportunity for advancement of employees.

Insight into program expectations and desired student outcomes by community development policy leaders for the occupational/technical programming at Tidewater Community College can be gained by examining the community college act of 1966 which established criteria for the Virginia Community College System. The act in Section 23-214(a) discusses programming at a comprehensive community college and includes as a program category "Vocational and technical education leading directly to employment." Section 23-214(a) defines vocational and technical education: "Vocational and technical training or retraining . . . is conducted as part of a program designed to fit individuals for gainful employment as semi-skilled or skilled workers or technicians in recognized occupations."<sup>28</sup> The Norfolk Naval Shipyard Apprentice Program linkage, if it results in stable employment in semi-skilled, skilled and technical trades, appears to epitomize both the letter and intent of Section 23-214(a) of the Act that created the Virginia Community College system.

Distinguishing individual long term program expectations to be derived from the single broad imperative of meeting manpower needs through cooperative effort with industry is difficult. The willingness of the college to implement a curriculum designed by industry, combined with a willingness to accept the myriad of special requirements included in the federal contract to provide the apprentice training, suggests an institutional context with the flexibility to accept the stated long term program expectations of the shipyard as valid expectations for the college. The basic focus of the college on meeting the manpower needs of industry suggests that the program expectations of industry are a dominant concern in linkages with industry. The basic long term program expectation for Tidewater Community College is that Norfolk Naval Shipyard will be successful in meeting their long term program expectations for the apprentice program. Dr. Deborah DiCroce, Provost of the Frederick Campus of Tidewater Community College, suggests that the essence of community college cooperation with industry is the willingness of the college to accept the documented expectations and student outcomes established by the cooperating industry. "When the college accepts a contract to provide training for an industry, we have accepted their stated program objectives as consistent with our mission within the community."<sup>29</sup> The long term program expectations and student outcomes from the Norfolk Naval Shipyard documentation review are,

therefore, valid expectations and outcomes for Tidewater Community College.

The review of guiding documentation at Tidewater Community College and, for Virginia Community Colleges in general, does clarify several evaluation issues from Evaluation Question I, documented long term program expectations and desired student outcomes. The primary long term program expectation for the NNSY/TCC training linkage is for NNSY to meet their long term manpower needs and other associated long term program expectations. Other specifically identified long term program expectations are to promote cooperative training linkages and to promote production efficiency. The long term student outcome objectives in addition to promoting achievement of student outcomes specified by NNSY are the promotion of educational access, employment, career advancement, advanced education and improved citizenship. Specific performance indicators for these expectations are not well clarified in official documentation, other than an implied acceptance of the criteria established by industry and the number of graduates who return to TCC for advanced college education.

Clarification of appropriate performance indicators and support for conducting evaluations of occupational/technical programs was provided in a recent article in the Virginian-Pilot newspaper. Dr. George Pass, President of Tidewater Community College, in an interview discussing his role on the executive council of the Commission of Colleges

of the Southern Association of Colleges and Schools, told the Virginian-Pilot that in the future, "Colleges will be required to keep better track of graduates to determine if their efforts are making a difference for the student."<sup>30</sup> Dr. Pass suggested that when a college program prepares a student for a specific career the primary questions that a college should be concerned with are:

1. Was the student able to get a job in the major field?
2. Was the student successful in keeping the job?
3. Was the student able to advance in the major field?<sup>31</sup>

These questions serve as broad based performance indicators for evaluating college occupational/technical programs and provide appropriate performance indicators for measuring student outcomes. The second question suggests that employment retention is an important student outcome. The performance measures indicated by Dr. Pass may be restated in terms specific to the NNSY/TCC training linkages.

1. Number of students graduating from the program and receiving journeyman employment appointment
2. Number of apprentice graduates retained by the shipyard
3. Number of apprentice graduates serving in technical leadership positions.

The emphasis on employment concerns by policy leaders

within the community college movement is demonstrated by two major unified efforts of the American Association of Community and Junior Colleges (AACJC) to work with government and industry to "Put America Back to Work"<sup>32</sup> and "Keep America Working."<sup>33</sup> These two national efforts confirm and support the student outcomes of employment and employment retention through support of the long term program expectation of meeting the manpower needs of industry. AACJC suggests that employment related training is closely associated with several other training program expectations and desired student outcomes. These expectations and outcomes include community economic development/economic impact resulting from the increased taxes of the employed worker and a reduction in the drain of tax dollars for unemployment and welfare, increased industrial productivity and an enhanced national defense.<sup>34</sup> Economic development, reduced unemployment payments and national defense will be included as valid community development expectations for the NNSY/TCC linkage. The broad efforts of AACJC in meeting employment needs has received support from Virginia community development policy leaders,<sup>35</sup> the President of the United States<sup>36</sup> and many other industry, national, state and local community development interests.

The newspaper interview with Dr. Pass indicated that an important information need is for colleges to evaluate and communicate to industry and other community development interests the outcomes of their programs based on

performance on the suggested measures. The need to better inform all elements of the community concerning viable college programs that assist industry with manpower needs and programs to upgrade employee skills was documented in the recent Tidewater Community College Self Study Survey. While the majority of survey respondents were knowledgeable concerning these programs and rated the colleges services in these areas as superior or good, a significant minority of respondents had limited knowledge of the services and programs.<sup>37</sup> Based on these data, one formal suggestion and several recommendations were made to address this information need. The suggestion was "that the college develop and implement new ways to inform better both its own employees and the community about its educational programs; its services being offered to local industry, professions and government, . . ."<sup>38</sup>

Most official college documents reviewed do not specifically address the AACJC expectation of community economic development; however, from supporting documentation, it is clear that economic development is assumed to be the obvious result of promoting more efficient plant production for industry and greater opportunity for advancement of employees. In the Tidewater Community College Educational Foundation promotional publication "Partnerships For Excellence" the statement is made that "strong educational programs are vital to the economic well-being of every community and the nation."<sup>39</sup> The

publication goes on to indicate that alliances between Tidewater Community College and business and industry can promote community economic development by providing quality educational programs that aid industry in coping with advancing technology while providing educational opportunity for community members.<sup>40</sup> Promotion of economic development for the Tidewater area and the nation is an obvious long term expectation for the linkages between Tidewater Community College and the Norfolk Naval Shipyard. Dr. Jonas Hockaday, chancellor of the Virginia Community College System, suggests that the community college and community economic development are interdependent. Dr. Hockaday has stated that you will not find a community with a successful economic development program that does not have a community college with active responsive ties to the community.<sup>41</sup>

Recognition, approval and support of the value of Community College training linkages by State of Virginia community development leaders is clarified in a statement from the 1986 State Department of Economic Development publication, Virginia Facts and Figures that describes service available in Virginia Community Colleges:

The colleges stand ready to design programs or classes to meet special needs for business, industry, institutions, or employees of potential employers.

Programs are highly varied with colleges offering opportunities unavailable anywhere else in the state. Specialized training in special skills . . . are available at community colleges . . . Many of the programs are designed to serve regional geographic

needs.<sup>42</sup>

Identification of performance indicators for National defense, reduced unemployment and economic development required the evaluator to look outside of program documentation. Determination of measures of national defense was considered to be outside the expertise and scope of this study. Two obvious performance measures for reduced unemployment is the reduction in transfer payments resulting from employment and the number of new apprentices who are unemployed at the time of hire by NNSY.

Economic development is a more difficult task. Economic development is a complex issue that includes more than simply the impact of increased taxes and reduced welfare payments. Community development policy leaders suggest as measures, the number of new businesses locating in an area, the number of new employees trained and the number of employees retrained.<sup>43</sup> Various theorists and researchers over the years have attempted to systematically link economic development and education. Wellsfry provided a comprehensive review of these ideas and provided evidence of state policy leader support for the use of Virginia Community Colleges to meet the economic development imperatives of the state. Wellsfry presented a plan to assess economic impact by measuring business volume, employment income, and economic indicators such as wage and hour data, unemployment, personal and per capita income, non-agricultural employment and personal income by place of

work.<sup>44</sup> While it is not possible at this point in the evaluation sequence to determine the performance measures most appropriate for the NNSY/TCC linkage, documented methodology to measure economic impact as a means to substantiate economic development is available. Wellsfry believed that economic development was the primary force motivating the development of the Virginia Community College System.<sup>45</sup> Vaughan, who traced the process of development of the Virginia Community College System, supports economic development as an important motivating factor in the development of the system, but tends to frame economic development as a positive result of the primary motivation to democratize educational access.<sup>46</sup>

The general trend observed in the documentation and literature reviewed is that college officials tend to emphasize student outcomes with economic development being a logical, included, program expectation. Public policy leader documentation, on the other hand, may view positive student outcomes as a logical result of a viable program to enhance economic development.

Strong support for economic development as a primary program expectation is clear in discussions of the North Carolina Economic Development Plan,<sup>47</sup> the Iowa Economic Development Plan<sup>48</sup> and the South Carolina Economic Development Plan.<sup>49</sup> All of these plans are contingent on the needs of industry being met. Broad support for this expectation suggests that industry must have control of the

curriculum if the process of meeting diverse partnership needs is to be realized.

According to John Crede, the former Vice Chancellor for Career and Manpower Programs, City Colleges of Chicago

Orientation toward the world of work requires that substantial or primary control of what is learned, and possible even how it is learned, be removed from the institution and its personnel, largely faculty. The educational program does not then differ radically from in-service training provided by business and industry for its employees. This is a different concept for faculty and administration to accept, yet in one sense it merely substitutes service to business, industry, labor and the military for service to the senior collegiate institution . . .<sup>50</sup>

Industrial control of the curriculum is, therefore, included as an expectation of the community development partners.

#### Review of Interviews

A total of 40 interviews that spanned a significant diversity of responsibility were conducted to determine program expectations desired student outcomes, program performance indicators and information needs for the Norfolk Naval Shipyard Apprentice Program/Tidewater Community College Training linkage. In addition to interviewing managers and officials from Tidewater Community College and Norfolk Naval Shipyard, interviews were conducted with Commonwealth of Virginia officials from state agencies, the executive branch, the legislative branch and the Mayor, City Manager and Director of Economic Development from each city in the Tidewater Virginia area.

An amazing degree of consensus on program and student objectives is apparent across the diversity of persons interviewed. Although consensus was not an element in this study, consensus does make the number of program expectations and outcomes more manageable for evaluation. Performance indicators as measures of evidence of accomplishment of program and student objectives were generally consistent across strategic and operational levels of persons interviewed. Discussions of program information needs during the interviews provided the most inconsistent results. The views of officials and managers interviewed tended to form into three basic groups:

1. Well-informed with broadly defined information needs and informal sources
2. Well informed with clearly defined information needs and both formal and informal information sources
3. Less than adequately informed with clearly defined information needs and informal information sources

#### Interview Process

The interview process was initiated by a letter from Dr. George Pass, the President of Tidewater Community College, to selected state, local and shipyard officials indicating strong support for this project and requesting cooperation in the conduct of this study. A sample letter

from Dr. Pass is included as Appendix Two. As a follow-up to the letter, or through direct initial contact, the interviewer scheduled appointments across the state with the officials and managers designated in the study. In five cases during the interview process, interviews were conducted with officials considered to be an appropriate representative of the official designated in this study. Substitutions were made in this small percentage of the interview cases when scheduling difficulties could not be accommodated or when the designated official felt that a particular colleague would be a more appropriate representative for this study. Interview substitutions included one interview substitution with Norfolk Naval Shipyard, one interview substitution with the City of Suffolk, two interview substitutions with the City of Portsmouth and one interview substitution with the City of Norfolk. No substitute interviews were conducted with elected or appointed officials from the State of Virginia, the City of Virginia Beach, the City of Chesapeake or Tidewater Community College. Three of the five alternate interviews were with Assistant City Managers. All of the Assistant City Managers were very knowledgeable on the interview subject. The level of cooperation elicited by such a diverse group of officials and managers suggests that a request for cooperation by the President of Tidewater Community College or the study of community college/industrial linkages, or both, tend to be viewed in a positive light by those

persons selected for the interview in this study.

Interviews in this study were recorded with the knowledge and permission of the interviewees. The interview recordings and notes taken by the interviewer were reviewed and edited summaries were prepared for each interview. The interview summaries focus on answers to the specific interview questions. Actual interviews ranged from ten minutes to over 90 minutes with some interviewees providing significant background information as a framework to clarify their response. The author takes full responsibility for any errors that may have occurred in interrupting interview summaries. Broad based discussions followed the structured interview in most interview settings.

After the interview process was complete, each interview participant received a letter thanking them for their participation in the study. Because some participants had indicated a desire for feedback on the results of the study, the thank you letter indicated that individual requests for an executive summary of the study would be honored. Over 90 percent of the participants mailed in a request for a summary. Several participants requested copies of the full study. A typical thank you letter is included as Appendix Three. A copy of the executive summary is included as Appendix Four.

After the individual interview summaries were completed, a master list of responses to the interview questions was prepared and analyzed for consolidation of

similar responses into generic responses to each question in the two interview guides.

An interview summary for each category of managers and/or officials was then prepared using the appropriate interview guide and all of the generic responses of respondents within that category. It was important to include all of the responses of the respondents. Preparation of this summary did not attempt to measure consensus or judge that responses were measurable, plausible or not in conflict with each other. This study seeks to identify all expectations rather than a consensus of expectations. Measurability, plausibility and degree of conflict between expectations is a function of the program modeling phase of this study.

The consolidated interview summary for each category of manager or official was analyzed as a means of identifying the long term program expectations, desired student outcomes, performance indicators and information needs of that group of managers or officials.

### Results

A summary of all long term program expectations, desired student outcomes, performance indicators and information needs identified during the interview process is presented in Figure 6. As shown in Figure 6, 19 long term program expectations were identified as a result of the interview process. Eleven of the long term program

PROGRAM EXPECTATIONS	
INDUSTRIAL INTEREST	COMMUNITY INTEREST
Quality workforce	Quality workforce
Quality production work	Quality production work
Recruit quality employees	Recruit quality employees
Screen new employees	Screen new employees
Economic development	Economic development
Future leadership	Future leadership
National security/ national defense	National security/ national defense
Cost effective training	Cost effective training
NNSY competitive	NNSY competitive
NNSY recover training costs	NNSY recover training costs
Apply new technology	Apply new technology
	Economic development marketing tool
	NNSY meets long-range manpower needs
	Promote cooperative training linkages
	Promote cooperation between community resources
	Develop training linkage information system
	Reduce welfare transfer payments

Fig. 6. Summary of Interview Results

PROGRAM EXPECTATIONS	
INDUSTRIAL INTEREST	COMMUNITY INTEREST
	Promote production efficiency
	Workforce is a fair and appropriate mix of "at-risk" employees
STUDENT OUTCOMES	
INDUSTRIAL INTEREST	COMMUNITY INTEREST
Apprentice program graduation	Apprentice program graduation
Skilled journeyman craftsman	Skilled journeyman craftsman
Adaptable to change	Adaptable to change
Learn how to learn	Learn how to learn
Able to think, analyze, and make critical decisions	Able to think, analyze, and make critical decisions
Effective communication skills	Effective communication skills
Employment retention	Employment retention
Good citizenship community involvement	Good citizenship community involvement
Employment opportunity	Employment opportunity
Career advancement	Career advancement
Appropriate work behavior	Appropriate work behavior

Fig. 6. Continued

STUDENT OUTCOMES	
INDUSTRIAL INTEREST	COMMUNITY INTEREST
Advanced education	Advanced education
Participation in specialized training	Participation in specialized training
	Educational success
	Retain workers in Tidewater area
	Employment access for "at-risk" employees
	Self-directed behavior
	Educational access for "at-risk" employees
	Educational opportunity
	Employment opportunity
PERFORMANCE INDICATORS	
INDUSTRIAL INTEREST	COMMUNITY INTEREST
NNSY awarded ship repair contracts	NNSY awarded ship repair contracts
Number of graduates retained 2 1/2 years	
Number of graduates serving in technical leadership positions	Number of graduates serving in technical leadership positions
Number of graduates retained	Number of graduates retained
Number of graduates returning to college	Number of graduates returning to college

Fig. 6. Continued

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 PERFORMANCE INDICATORS
 

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INDUSTRIAL INTEREST	COMMUNITY INTEREST
Number of graduates participating in specialized training	Number of graduates participating in specialized training
Number of graduates in relation to admissions	Number of graduates in relation to admissions
Program cost and journeyman quality in relation to other programs	
	NNSY meets long term program expectations
Adequate evaluations	Adequate evaluations
	Number of students retained
	Number of persons employed
Cost of comparable training alternatives	Cost of comparable training alternatives
	Number of Tidewater residents trained
	Number of Tidewater residents retained
	Number of graduates of Tidewater high schools trained
	Number of graduates of Tidewater high schools retained
	Number of new training linkages established
	Number of program graduates retained in trade

Fig. 6. Continued

PERFORMANCE INDICATORS	
INDUSTRIAL INTEREST	COMMUNITY INTEREST
	Satisfaction of apprentice graduates
	Number of apprentice graduates participating in community activities
	Number of "at-risk" employees, by category, admitted/graduated
	Number of "at-risk" employees, by category, retained in shipyard
	Savings in transfer payments
	Enhanced social and economic well-being of student graduates
	Clear career path for graduates
INFORMATION NEEDS	
INDUSTRIAL INTEREST	COMMUNITY INTEREST
Preceptions of other agencies	Perceptions of other agencies
Program evaluation data	Program evaluation data
Apprentice/graduate employment history	Training linkage report
Internal communication enhanced at NNSY	Community to community college information system

Fig. 6. Continued

expectations were linked to the industrial partner. Nineteen of the long term program expectations were linked to community development interests. Of the total of 19 long term expectations identified during the interview process, 11 were identified with the interests of both the industrial and community development partners.

Figure 6 indicates that 21 student outcome objectives were identified as a result of the interview process. Thirteen of the objectives were linked to the industrial partner. Twenty-one of the objectives were linked to community development interests. Of the 21 student outcome objectives identified during the review, 13 were identified with the interests of both the industrial and community development partner.

Figure 6 indicates that 28 program performance indicators were identified as a result of the interview process. Nine of the performance indicators were linked to the industrial partners. Twenty-six of the performance indicators were linked to community development interests. Of the 28 program performance indicators identified during the interview process, seven were identified with the interests of both the industrial and community development partners.

Figure 6 indicates that six specific information needs were identified as a result of the interview process. Four of the information needs were linked to the industrial partner. Four of the information needs were linked to

community development interests. Of the six specific information needs identified during the interview process, two were identified with the interests of both the industrial and community development partners.

#### Interviews with Industry Program Managers

Interviews with program managers were concerned with the expectations of industry in an urban area and particularly with managers associated with Norfolk Naval Shipyard and the shipyard apprentice program. Two categories of managers from Norfolk Naval Shipyard were interviewed: operational managers and strategic managers. Because different interview guides were used for operational and strategic managers, two consolidated interview summaries were prepared for Norfolk Naval Shipyard.

#### Interviews-Operational Managers

Operational managers include the Norfolk Naval Shipyard managers who provide the day to day management of the apprentice academic program and those managers who establish and monitor the trade theory and on-the-job training segments of the apprentice program. The latter group of managers are also the primary users of the program product; journeyman craftsmen. Interviews with Norfolk Naval Shipyard operational managers included the Apprentice Program Administrator, the Structural Group Superintendent, the Electrical/Electronics Group Superintendent, the

Service Group Superintendent, and the Mechanical Group Superintendent. All shipyard apprentices are under the supervision of the Apprentice Program Administrator while they are assigned to the apprentice school. All apprentices and journeymen are under the technical leadership of one of the superintendents at all other times. Mr. Preston Hill, Training Administrator for the service group, sat in on the interview with Mr. Franklin, the Service Group Superintendent. Mr. Hill added valuable additional insight during the interview process. The following interview summary includes the consolidated generic responses of the shipyard operational managers.

Question 1

What are your objectives for the apprentice program?

Answer:

1. Skilled journey craftsmen
2. Quality production work
3. Workers adaptable to changing technology
4. Future technical leadership
5. Students learn how to learn
6. Recruit quality employees
7. Develop ability to think, analyze, and make critical decisions
8. Academic foundations needed to maximize development of craft skills
9. Screen potential employees
10. Create career employees

11. Effective communications

Question 2

What mechanisms exist to achieve those objectives?

Answer:

1. Phased training in academics, trade theory and on-the-job training
2. Careful employee screening
3. Continuous evaluation and feedback
4. Special and advanced education and training
5. Job rotation
6. Curriculum review and change
7. Core task accomplishment

Question 3

What evidence is necessary to see whether objectives are met?

Answer:

1. Work quality
2. Adequate grades
3. Core task accomplishment
4. Satisfactory evaluations
5. Advancements
6. Number of former apprentices in technical leadership positions
7. Attendance records
8. Participation in advanced education
9. Selection and success in specialized training
10. Employee retention

Question 4(a)

What happens if objectives are met?

Answer:

1. Employee experiences pay increases and advancements
2. Shipyard meets time and quality constraints

Question 4(b)

What happens if objectives are not met?

Answer:

1. Employees may be terminated
2. Quality of workforce and leadership is diminished
3. Shipyard may not be able to meet commitments.
4. Shipyard training costs increase

Question 5

How is the Apprentice Program related to local priorities?

Answer:

1. We cannot recruit skilled journeymen from the local economy so we train the locals in our apprentice program and develop shipyard leaders
2. The apprentice program provides the workforce needed to perform the quality and quantity of work required in the shipyard. If the shipyard cannot perform, the local economy suffers
3. When apprentice program objectives are met, the shipyard has the manpower to compete effectively

for the contracts that support the Tidewater economy

4. The apprentice program creates better and more productive citizens who support their community and the shipyard
5. The apprentice program creates a substantial training opportunity for the local community
6. The apprentice program fosters an atmosphere of mutual support for other community resources. For example, many employees use the community college to help themselves qualify for the apprentice program and then return to the college to help themselves advance in the shipyard
7. We provide a great deal of leadership in community activities through volunteer services and support for the combined federal campaign

Question 6

What data or records are maintained?

Answer:

1. Grades
2. Attendance/absenteeism
3. Discipline
4. Core task accomplishment
5. Supervisor evaluations of job performance, work quality and quantity
6. Skills profile
7. Obsolescence/critical of trade or craft

8. Special training and experience

9. Student demographic data

Question 7

How often are these data collected?

Answer:

1. Continuously for training data

2. Evaluations quarterly

3. Variable cycles depending on the data to be collected

Question 8

What is the accuracy of these data?

Answer:

As accurate as can be expected and accurate enough to indicate a problem before it occurs

Question 9(a)

How is this information used?

Answer:

To make decisions concerning advancement, terminations, additional training, job assignments

Question 9(b)

Does anything change as a result of these data and records?

Answer:

1. Manpower predictions are improved

2. Needed changes are made in the apprentice program

Question 10

What major problems are you experiencing?

Answer:

1. Recruiting quality employees
2. Training costs
3. Lack of understanding of program necessity by non-production personnel
4. Employee retention
5. Valid testing procedures
6. Lack of recognition for the accomplishments of apprentice program graduation
7. Completion of apprentice training in four years
8. Serving diverse interests
9. Agreement of priorities
10. Identification of factors influencing employee success

Strategic Managers Interview

Strategic managers include those upper level managers from Norfolk Naval Shipyard who utilize the apprentice program to achieve shipyard objectives. Interviews with strategic managers included the Shipyard Production Officer, the Director of Industrial Relations and the Director of Employee Development at Norfolk Naval Shipyard. Captain Fenton, the production officer at the time of this study, is the senior manager with direct responsibility for accomplishment of all ship repair overhaul and modernization contracts. As the senior manager in the Production Department, Captain Fenton is responsible for

approximately 90 percent of the shipyard workforce. Mr. Cowles, the Director of Industrial Relations, is the senior manager responsible for all personnel functions and activities at the shipyard. Mr. Kimball, the Director of Employee Development, is the senior shipyard official responsible for Training, Education and Development (HRD) activities at the shipyard. The Shipyard Commanding Officer was included in the proposed strategic manager interview list, but because of extensive travel and scheduling difficulties he was unable to participate. He indicated through his secretary and through Mr. Kimball that the other participants adequately represent shipyard management in this study. Some of the strategic managers indicated that they were reluctant to respond to community development priorities. Even though they recognized and supported Norfolk Naval Shipyard's contribution to the community, they felt that their expertise was in shipyard management and that they could best assure a community contribution by concentrating on making the shipyard an effective competitor in the ship repair industry. All strategic shipyard managers were, therefore, given the choice of responding to interview questions from the perspective of a traditional apprentice training program or as a community development training alliance. The following interview summary included the consolidated generic responses of the shipyard strategic managers.

Question 1

In your judgment, what are the objectives of the NNSY Apprentice Program (as a community development training alliance.)

Answer:

1. Quality production work
2. Skilled journeyman craftsman
3. Cost effective training
4. Responsible citizens
5. Economic development
6. Employment opportunity
7. Educational opportunity
8. Workforce adaptable to changing technology
9. Future technical leaders

Question 2(a)

What would you consider acceptable measures/evidence of progress towards meeting your objectives as they relate to long term program expectations (including community development priorities)?

Answer:

1. NNSY competitive in the contracting process
2. Quality production work
3. Able to adapt new technology to the ship repair industry
4. Cost effectiveness
5. Timeliness of work accomplishment
6. Effective performance by the Navy ships

## 7. Recover training costs

Question 2(b)

What would you consider acceptable measures/evidence of progress towards meeting your objectives as they relate to student outcome objectives?

Answer:

1. Employee retention for minimum of two and one-half years
2. Participation in additional administrative and management education
3. Reduced apprentice program failures
4. Progression up the career ladder
5. High quality assurance evaluations

Question 3

What mechanisms exist to support achievement of these objectives?

Answer:

1. Management and curriculum review
2. Phased training in academics, trade theory and on-the-job training
3. Core task accomplishment
4. Journeyman work requirements
5. Extensive evaluations

Question 4

Why do you think that the activities of the program will cause progress toward desired program objectives?

Answer:

1. Our mix of education, training and experience has been continuously refined and evaluated through performance in the field
2. Because we are responsive and open to change when it is needed
3. Because our program provides a logical and systematic learning experience

Question 5

What are the most serious difficulties facing the NNSY program in meeting its objectives (including community development priorities)?

Answer:

1. Program costs
2. Recruitment
3. Funding
4. Competition with other shipyards
5. Hiring restrictions
6. Scheduling problems related to hiring restrictions

Question 6

Is the NNSY/TCC program information system adequate for your needs?

Answer

Yes, but improvement is always possible

Question 7

How do you get the program performance (and community

development) information that you need?

Answer

1. Reports
2. Meetings
3. Shipyard data base

Question 8

How satisfied are you with this information?

Answer:

Adequate but we are attempting to streamline our information system into a computer format that will enhance our ability to track apprentice program participants and graduates to develop an employee history for evaluation.

Question 9

How do you use this information?

Answer:

1. Program improvement
2. Making budget decisions
3. Management decision making

Question 10

What would you like to learn from an evaluation of the program?

Answer:

1. How NNSY programs costs compare with other public and private shipyard apprentice programs
2. Information about our interrelationships with the community and other community agencies
3. Program performance on the student outcomes

indicated in your original research proposal (success associated with "at-risk" category, employee career advancement, employee retention and participation in continuing education activities). The shipyard letter recommending approval of this initial research proposal is included as Appendix Five

#### Summary Data from Interviewing Industry Managers

Interview data were analyzed in terms of evaluation question 1 to identify the long term program expectations desired student outcomes, performance indicators and information needs of shipyard management. Analysis to determine the evaluation outcomes from evaluation question 1 included more than just categorizing the objectives stated by the respondents in question 1 of each interview. The response to each interview question was analyzed as a means of identifying evaluation criteria. For example, new outcomes and performance indicators were identified in question 10 of the interview of strategic managers. Also, the interview summaries provided important input and process data needed for constructing program models during the data analysis section of this study. Analysis of interview data collected from the interviews of Norfolk Naval Shipyard management resulted in the identification of 11 long term program expectations and 13 desired student outcomes. Nine performance indicators were identified as

available measures of the level of achievement of program expectations and student outcome objectives. Four specific information needs were identified during the interview process. The following is a summary of the analysis on interview data.

#### Long Term Program Expectations

1. Quality workforce
2. Quality production work
3. Recruit quality employees
4. Screen new employees
5. Economic development
6. Future leadership
7. National Security/National Defense
8. Cost effective training
9. NNSY competitive in ship repair business
10. Recover training costs
11. Application of new technology.

#### Desired Student Outcomes

1. Apprentice program graduation
2. Skilled journeyman craftsmen
3. Adaptable to change
4. Learn how to learn
5. Able to think, analyze and make critical decisions
6. Effective communication skills
7. Employment retention
8. Good citizenship

9. Employment opportunity
10. Career advancement
11. Appropriate work behavior
12. Advanced education
13. Participation in specialized training

#### Performance Indicators

1. NNSY awarded ship repair contracts
2. Number of apprentice program graduates retained for two and one-half years
3. Number of apprentice program graduates serving in technical leadership positions
4. Number of graduates retained
5. Number of apprentice program graduates participating in continuing education
6. Number of apprentice program graduates participating in specialized training
7. Adequate evaluations of graduates
8. Number of apprentice graduates in relation to apprentice admissions
9. Program costs and journeyman quality compared with other shipyard apprentice programs.

#### Information Needs

1. Perceptions of other agencies involved in training linkages
2. Program evaluation data
3. Ability to track apprentice program participants and graduates and develop an employee history

4. Internal information effort to enhance the perceived value of the apprentice program by non-production sectors of NNSY

#### Interviews with Community Development Interests

Interviews with community development interests included influential policy leaders at both the state and local levels. Community development leaders included urban community development policy leaders who serve as de facto partners in community college and industry training linkages and the urban community college leaders who serve as the actual partner in the NNSY training linkage. All community development policy leaders were interviewed using the same interview schedule.

Community development policy leaders interviewed include Commonwealth of Virginia officials from state agencies, the executive branch, the legislative branch and Tidewater Community College. Officials from Tidewater localities include the Mayor, City Manager, and Economic Development Director from each city. Several of the state and local officials interviewed have changed their position within government since these interviews were conducted. All of the persons interviewed still hold official government positions. It was not considered to be within the scope of this study to interview new office holders.

It was necessary to interview a significant number of community development officials both to represent the

diversity of community development interests and because a review of documentation of every agency involved in this training linkage was beyond the scope of this study. The following interview summary includes the consolidated generic responses of urban community development policy leaders.

Question 1

In your judgment, what are the objectives of the NNSY apprentice program as a Community Development Training Alliance?

Answer:

1. Skilled journeyman craftsmen
2. Quality production work
3. Workers adaptable to changing technology
4. Students learn how to learn
5. Develop ability to think, analyze and make critical decisions
6. NNSY apply new technology
7. Recruit quality employees
8. Future technical leadership
9. Screen new employees
10. Effective communications
11. Employment retention
12. Quality workforce
13. Good citizens
14. Economic development
15. Employment opportunity

16. Cost effective training
17. Model program for economic development marketing
18. Career advancement (career ladder)
19. NNSY meet long range manpower needs
20. Promote cooperative training linkages
21. Promote general cooperation between community agencies
22. Retain workers in the Tidewater area
23. Develop appropriate work behavior
24. Employment access for "at-risk" group
25. Reduce public welfare transfer payments
26. National security/national defense
27. Promote lifelong learning
28. Self directed behavior
29. Educational access for "at-risk" group
30. Satisfaction of apprentice program graduates

Question 2(a)

What would you consider acceptable measures/evidence of progress towards meeting your objectives as they relate to long term program expectations (including community development priorities)?

Answer:

1. NNSY meet long term program expectations
2. High graduation percentages
3. Low turnover of journeyman
4. NNSY awarded ship repair contracts
5. Satisfactory evaluation of student learning

6. Number of students trained
7. Number of persons employed
8. Number of apprentices retained
9. Cost in tax dollars in relation to alternatives
10. Number of Tidewater residents trained and retained
11. Number of graduates in Tidewater high schools trained and retained
12. Number of new training linkages established

Question 2(b)

What would you consider acceptable measures/evidence of progress towards meeting your objectives as they relate to student outcome objectives?

Answer:

1. Retention in shipyard
2. Retention in trade (even if they leave the shipyard)
3. Advancement to technical leadership
4. Participation in advanced education and training
5. Student satisfaction
6. Community involvement
7. Employment and success of "at-risk"/welfare recipients
8. Clear career path
9. Enhanced social and economic well being

Question 3

What mechanisms exist to support achievement of these objectives?

Answer:

1. Quality apprentice training program
2. Regulations of the Department of Labor and Industry
3. Occupational technical training opportunity through the community college and other training resources of the Commonwealth such as the new industry training under the control of the Department of Economic Development
4. Industry control of curriculum
5. Training is cost effective
6. Assistance to industry in recruiting and screening
7. Cooperation between community agencies
8. Higher education funding formula works against support of program objectives

Question 4

Why do you think that the activities of the program will cause progress toward desired program objectives?

Answer:

1. If you have for both industry and the employee what they need, both will be successful and economic development will usually take care of itself

2. Program quality control mechanisms
3. Refinement in mix of related training and on-the-job training of apprentices
4. Program quality control

Question 5

What are the most serious difficulties facing the NNSY program in meeting its objectives, including community development priorities?

Answer:

1. Red tape and bureaucracy
2. Industry maintaining control of curriculum
3. Marshalling the resources to stay abreast of technological change
4. Federal funding
5. Fluctuating enrollments
6. Community college staffing problems
7. Higher education funding formula
8. Military security concerns
9. Recruiting quality employees
10. Competition in the ship repair business

Question 6

Is the NNSY/TCC program information system adequate for your needs?

Answer:

(Some respondents essentially answered questions 6, 7 and 8 with their response to question 6. In those cases, the summary or paraphrase of their response is given in

question six. Only negative, or positive responses with some reservations, are included in the question six summary.)

1. No, we need a report furnished by the community college system on a monthly basis that provides a very brief summary of each linkage between a community college and industry. The summary should include the program length in weeks, the number of students trained and the community college contact person. With this information I could contact the college and get any additional information I might need to use the college and the program in marketing the area, or the college. Often industry testimonials are key factors in another industry's decision to locate in a particular area. (This response is a consolidated summary of the response of one state level and one local economic development official. It was noted by one of these respondents that a program to provide this service was already in place in South Carolina.)
2. No, we need more information on employment and success of the "at-risk" group. It would also be helpful to identify reductions in welfare transfer payments
3. No, I've not previously been convinced that the community college has been surveying and

screening industry to determine their needs. If there is a successful community college program at NNSY you need to give it some public relations. The college may need to organize an information system

4. No, what I've learned, and what I know, I've picked up on my own. When I have sought information I have found that informally it was available and willingly given. However, as Chairman of the Labor and Commerce Committee and the subcommittee on Small Business, no one even mentioned community college training linkages with industry
5. Adequate, the community college and industry always provide the information we request. Perhaps we (economic development) have been remiss in letting people know what information we need. This study should help
6. Adequate, the system is not the best but it would probably be too expensive to have a formal system. Locally it is important that we establish and maintain good informal communications between agencies

#### Question 7

How do you get the program performance and community development information that you need?

Answer:

1. Through both formal and informal means
2. Provided by shipyard to Department of Labor and Industry

Question 8

How satisfied are you with this information?

Answer:

1. Well satisfied, might like more information on model programs
2. Not satisfied (improvements noted in question 6)
3. Adequately satisfied (improvements noted in question 6)

Question 9

How do you use this information?

Answer:

1. To assess the relationship between industry and state government
2. Use model programs to market Virginia
3. Evaluate programs
4. To assess educational opportunities available to citizens of the Commonwealth
5. To make community college funding decisions

Question 10

What would you like to learn from an evaluation of this program?

Answer:

1. The views of shipyard workers

2. Achievement of shipyard workers
3. Satisfaction of NNSY with the program
4. Two or three crucial elements in evaluating industrial training linkages
5. How program methodology can be shared with other programs
6. Measurement of student success
7. Improved information links between community development interests, industry and even high schools. The most important evaluation data in what you're trying to do is to let everyone know what everyone else is doing
8. Communicate to all elements of the community that public education is linking with industry to provide relevant occupational/technical training
9. Provide government, the community and industry with an integrated view of community college/industry linkages as a means of promoting mutual training
10. Create an information network on community training linkages, possibly through the Southeastern Planning District
11. The program and the evaluation could serve as the basis of an excellent promotional/public information campaign
12. Learn how our experience with the military and the shipyard can be used to help diversify our

economy.

Summary Data From Interviewing  
Community Development Leaders

Interview data were analyzed in terms of evaluation question 1 to identify long term program expectations, desired student outcomes, performance indicators and information needs. The responses to each interview question was analyzed as a means of identifying evaluation criteria. Analysis of interview data collected from the interviews of community development policy leaders resulted in the identification of 19 long term program expectations and 21 desired student outcomes. Twenty-six performance indicators were identified as available measures of the level of achievement of program expectations and student outcome objectives. Five specific information needs were identified during the interview process. The following is a summary of the analysis of interview data.

Long Term Program Expectations

1. Quality workforce
2. Quality production work
3. Recruit quality employees
4. Screen new employees
5. Economic development
6. Future leadership
7. National security/national defense
8. Cost effective training
9. NNSY Competitive in ship repair

10. Application of new technology
11. Economic development marketing tool
12. NNSY meet long range manpower needs
13. Promote cooperation training linkages
14. Promote cooperation between community resources
15. Develop training linkage information system
16. Reduce welfare transfer payments
17. NNSY recover training costs
18. Workforce represents a fair and appropriate mix  
of "at-risk" employees
19. Promote production efficiency

#### Desired Student Outcomes

1. Apprentice program graduation
2. Skilled journeyman craftsman
3. Adaptable to change
4. Learn how to learn
5. Able to think, analyze and make critical  
decisions
6. Effective communication skills
7. Employment retention
8. Good citizenship/community involvement
9. Employment opportunity
10. Career advancement (clear career ladder)
11. Appropriate work behavior
12. Continuation of formal education (lifelong  
learning)
13. Participation in specialized training

14. Educational success
15. Retain workers in Tidewater area
16. Employment access for "at-risk" group
17. Self directed behavior
18. Educational access for "at-risk" group
19. Employment success
20. Educational opportunity

#### Performance Indicators

1. NNSY meet long term program expectations
2. Number of apprentice graduates in relation to  
apprentice admissions
3. Number of graduates retained
4. Adequate evaluations
5. NNSY awarded ship repair contracts
6. Number of students trained
7. Number of persons employed
8. Number of apprentices retained
9. Cost of comparable training alternatives
10. Number of Tidewater residents trained
11. Number of Tidewater residents retrained
12. Number of graduates of Tidewater high schools  
trained
13. Number of graduates of Tidewater high schools  
retrained
14. Number of new training linkages established
15. Number of program graduates retained in trade
16. Number of apprentice graduates serving in

technical leadership positions

17. Number of apprentice graduates participating in continuing education
18. Number of apprentice graduates participating in specialized training
19. Satisfaction of apprentice graduates
20. Number of apprentice graduates participating in community activities
21. Number of "at-risk" employees, by category, who are admitted to the apprentice program
22. Number of "at-risk" employees, by category, who graduate from the apprentice program
23. Number of "at-risk" employees, by category, who are retained in the shipyard
24. Savings in transfer payments realized
25. Enhanced social and economic well being of student graduates
26. Does a clear career path exist for apprentice graduates

#### Information Needs

1. A monthly community college system training linkage report that lists:
  - A. Linkage between college "X" and company "Y"
  - B. Program length in weeks
  - C. Number of students trained
  - D. Community College "X" contact person
2. A similar local report from Tidewater Community

## College

3. Evaluation data on program outcomes
4. A system for community resources to communicate to the community college the kinds of information needed
5. Enhance informal communication links.

## Evaluation Question One Summary

Figure 7 presents a consolidation of the findings of the documentation review and the interviews with program and community development partners. All identified long term program expectations, desired student outcomes, program performance indicators and information needs are summarized in Figure 7.

Figure 7 indicates that 21 long term program expectations were identified in the process of answering Evaluation question 1. Fourteen of the long term program expectations were directly or indirectly linked to the industrial partner. Twenty-one of the long term program expectations were directly or indirectly linked to community development interests. Of the 21 long term program expectations identified, 14 were identified with the interests of more than one partner.

Figure 7 indicates that 21 student outcome objectives were identified as a result of answering evaluation question 1. Sixteen of the objectives were directly or indirectly linked to the industrial partner. Twenty-one of

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PROGRAM EXPECTATIONS

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INDUSTRIAL INTEREST

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NNSY meets long range  
manpower needs

NNSY recover training  
costs

Workforce is a fair and  
appropriate mix of  
"at-risk" employees

Quality workforce

National security/  
national defense

Economic development

Future leadership

Quality production work

Recruit quality employees

Screen new employees

Cost effective training

NNSY competitive

Recover training costs

Apply new technology

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COMMUNITY INTEREST

---

NNSY meets long range  
manpower needs

NNSY recover training  
costs

Workforce is a fair and  
appropriate mix of  
"at-risk" employees

Quality workforce

National security/  
national defense

Economic development

Future leadership

NNSY meets long range  
program expectations

Promote coop training  
linkages

Promote production  
efficiency

Quality production work

Recruit quality employees

Screen new employees

Cost effective training

NNSY competitive

Recover training costs

Apply new technology

Economic development  
marketing tool

Fig. 7. Summary of Identified Outcomes

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PROGRAM EXPECTATIONS

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INDUSTRIAL INTEREST

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COMMUNITY INTEREST

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Promote cooperation  
between community  
resources

Develop training linkage  
information system

Reduce welfare transfer  
payments

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STUDENT OUTCOMES

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INDUSTRIAL INTEREST

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COMMUNITY INTEREST

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Advanced education

Advanced education

Good citizenship  
community involvement

Good citizenship  
community involvement

Reduced unemployment

Apprentice program  
graduation

Apprentice program  
graduation

Adaptable to change

Adaptable to change

Learn how to learn

Learn how to learn

Able to think, analyze,  
and make critical  
decisions

Able to think, analyze,  
and make critical  
decisions

Effective communication  
skills

Effective communication  
skills

Appropriate work  
behavior

Appropriate work  
behavior

Participation in  
specialized training

Participation in  
specialized training

Fig. 7. Continued

STUDENT OUTCOMES	
INDUSTRIAL INTEREST	COMMUNITY INTEREST
Skilled journeyman craftsman	Skilled journeyman craftsman
Employment retention	Employment retention
Educational access for "at-risk" employees	Educational access for "at-risk" employees
Educational success for "at-risk" employees	Educational success for "at-risk" employees
	Educational opportunity
	Employment opportunity
Employment retention of "at-risk" graduates	Employment retention of "at-risk" graduates
Career advancement	Career advancement
	NNSY meets desired student outcomes
	Educational success
PERFORMANCE INDICATORS	
INDUSTRIAL INTEREST	COMMUNITY INTEREST
Number of journeymen meets projected need	Number of journeymen meets projected need
Supervisor evaluations	Supervisor evaluations
Number of graduates retained 2 1/2 years	Number of graduates retained 2 1/2 years
Number of "at-risk" employees by category, admitted	Number of "at-risk" employees by category, admitted

Fig. 7. Continued

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 PERFORMANCE INDICATORS
 

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INDUSTRIAL INTEREST	COMMUNITY INTEREST
Number of "at-risk" employees, by category who graduate	Number of "at-risk" employees, by category who graduate
Number of "at-risk" graduates who are retained	Number of "at-risk" graduates who are retained
Number of graduates serving in technical leadership positions	Number of graduates serving in technical leadership positions
	Number of graduates/journeyman appointments
	Number of graduates returning to TCC
Number of graduates returning to college	Number of graduates returning to college
	Performance indicators considered appropriate by NNSY
	The economic impact of NNSY/TCC linkage
NNSY awarded ship repair contracts	NNSY awarded ship repair contracts
Number of graduates retained	Number of graduates retained
Number of graduates participating in specialized training	Number of graduates participating in specialized training
Number of graduates in relation to admissions	Number of graduates in relation to admissions
Program costs and journeyman quality in relation to other programs	

Fig. 7. Continued

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 PERFORMANCE INDICATORS
 

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 INDUSTRIAL INTEREST
 

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 COMMUNITY INTEREST
 

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	NNSY meets long term program expectations
	Number of persons employed
	Number of persons retained
	Costs of comparable training alternatives
	Number of Tidewater residents trained
	Number of Tidewater residents retained
	Number of graduates of Tidewater high schools trained
	Number of graduates of Tidewater high schools retained
	Number of new training linkages established
	Satisfaction of apprentice graduates
Number of apprentice graduates participating in community activities	Number of apprentice graduates participating in community activities
	Savings in transfer payments
	Enhanced social and economic well-being of student graduates
	Clear career path

Fig. 7. Continued

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 INFORMATION NEEDS
 

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 INDUSTRIAL INTEREST
 

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Open communication links  
between NNSY, NAVSEA, DON, VA,  
TCC & Va. Dept. of Labor

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 COMMUNITY INTEREST
 

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Evaluate/communicate  
program outcomes to  
industry/community

Improve college  
communications with  
public

Perceptions of other  
agencies

Perceptions of other  
agencies

Program evaluation data

Program evaluation data

Internal communications  
enhanced at NNSY

Training linkage report

Community to community  
college information  
system

Fig. 7. Continued

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the objectives were directly or indirectly linked to community development partners. Of the 21 objectives identified, 16 were identified with the interests of more than one partner.

Figure 7 indicates that 31 program performance indicators were identified as a result of answering evaluation question 1. Fourteen of the performance indicators were directly or indirectly linked to the industrial partner.

Thirty of the performance indicators were directly or indirectly linked to the community development partner. Of the 31 performance indicators identified, 13 were identified with the interests of more than one partner.

Figure 7 indicates that eight specific information needs were identified as a result of answering evaluation question 1. Four of the needs were directly or indirectly linked to the industrial partner. Six of the needs were directly or indirectly linked to the community college partner. Of the eight objectives identified, two were identified with the interests of more than one partner. The findings identified as a result of answering Evaluation question 1 and presented in Figure 7 will be used as part of the raw data needed to answer Evaluation question 2.

## ENDNOTES

<sup>1</sup>Katherine Moser, "Business--Industry Linkages with Post-Secondary Institutions: Implications for Building Successful Partnerships," Lifelong Learning 9 (May 1986): 4-28.

<sup>2</sup>Wholey, Evaluation: Promise and Performance, p. 13.

<sup>3</sup>Discussion with Jack L. Morrell, Apprentice Program Administrator, Norfolk Naval Shipyard, Portsmouth, Virginia, 21 October 1986.

<sup>4</sup>U.S., Department of the Navy, DON Apprentice Training Program OPNAVINST 12000.14 CH-69 CPE 410-E, Enclosure (2) 17 January 1984, p. 1.

<sup>5</sup>Commander, Norfolk Naval Shipyard, Apprentice Program NAVSHIPYDNOR INST 12410.25B, 11 December 1984, p. 1.

<sup>6</sup>DON Apprentice Training Program, p. 2.

<sup>7</sup>Discussion by Apprentice Program Representative, Newport News Shipbuilding and Drydock Company, at Newsome Park Middle School Career Fair, Newport News, Virginia, 1986.

<sup>8</sup>Norfolk Naval Shipyard, Apprentice Program Data Base, Computerized and Hard Copy, 21 October 1986.

<sup>9</sup>Commander, Norfolk Naval Shipyard, Obligated Service for Apprentices, Ser. 12410, 13 May 1985.

<sup>10</sup>DON Apprentice Training Program, p. 1.

<sup>11</sup>Interview with Secretary Eva S. Teig, Virginia Department of Human Resources, Richmond, Virginia, 8 May 1986.

<sup>12</sup>U.S., Department of the Navy, Agreement Between the Department of the Navy and the U.S. Department of Labor, Bureau of Apprenticeship and Training for the Registration of the Navy Apprentice Program OPNAVINST 1200. 14 CH 69 CPE 410-E, Appendix E, Attachment 3, 17 January 1984, p. 1.

<sup>13</sup>Norfolk Naval Shipyard, Oral Summaries of Shipyard Apprentice Program development by past program administrators. Reviewed at Norfolk Naval Shipyard, October 1986.

<sup>14</sup>Obligated Service for Apprentices, p. 1.

<sup>15</sup>Harold D. McAninch, "Teaching Higher Education Into the Twenty-First Century," Community, Technical, and Junior College Journal 56 (June-July 1986):14-17.

<sup>16</sup>Ibid.

<sup>17</sup>Interview with Delegate Frederick H. Creekmore, Virginia House of Delegates, Chesapeake, Virginia, 8 May 1986.

<sup>18</sup>Tidewater Community College Catalog, 1986-87, p. 20.

<sup>19</sup>Tidewater Community College, Correspondence File, Department of Math and Science, 1986.

<sup>20</sup>U.S., Department of Defense, Contract Solicitation Number N00 181-84-0168, Purchase Division Code 531.55, Norfolk Naval Shipyard, 31 August 1984.

<sup>21</sup>Interview with Dr. Robert J. Grymes, Jr., Dean, Tidewater Community College, Portsmouth, Virginia, 8 June 1986.

<sup>22</sup>Tidewater Community College, Office of Institutional Research, Enrollment Statistics, 1986.

<sup>23</sup>Tidewater Community College Catalog, 1986-87, p. 20.

<sup>24</sup>Interview with Dr. Deborah M. DiCroce, Provost, Tidewater Community College, Portsmouth, Virginia, 5 June 1986.

<sup>25</sup>Tidewater Community College Catalog, 1986-87, p. 58.

<sup>26</sup>Tidewater Community College Institutional Self-Study Report, 1984-85, p. 46.

<sup>27</sup>Tidewater Community College Catalog, 1986-87, p. 58.

<sup>28</sup>Virginia, Code of Virginia Section 1, Chapter 16, Article 23-214(a) 1966.

<sup>29</sup>Interview with Dr. Deborah M. DiCroce, Provost, Tidewater Community College, Portsmouth, Virginia, 5 June 1986.

<sup>30</sup>"Collegians Are a New Breed, TCC Head Says," Norfolk Virginian Pilot, 12 January 1987.

<sup>31</sup>Ibid.

<sup>32</sup>Dale Parnell, "Putting America Back to Work," Community and Junior College Journal 53 (September 1982):12-15.

<sup>33</sup>Garrison, "Keep America Working: On Time, and Winning," pp. 54-56.

<sup>34</sup>Parnell, "Putting America Back to Work," pp. 12-15.

<sup>35</sup>Charles S. Robb, "On Two Fronts: Education in the Workplace," Community and Junior College Journal 55 (August-September):22-25.

<sup>36</sup>Dale Parnell, "President Reagan--Defining the Two Year College," Community and Junior College Journal 55 (August-September):18-20.

<sup>37</sup>Tidewater Community College Institutional Self-Study Report, 1984-85, p. 46.

<sup>38</sup>Ibid., p. 870.

<sup>39</sup>Tidewater Community College Educational Foundation, "Partnerships for Excellence."

<sup>40</sup>Ibid.

<sup>41</sup>Hockaday, Chamber of Commerce Presentation, 16 August 1985.

<sup>42</sup>Virginia State Department of Economic Development, "Virginia Facts and Figures," 1986, p. 5.

<sup>43</sup>Interview with Mr. P. Scott Eubanks, Virginia Department of Economic Development, Richmond, Virginia, 14 May 1986.

<sup>44</sup>Norvall L. Wellsfry, "The Economic Impact of the Virginia Community College System from 1966 to 1974," (Ph.D. dissertation, Virginia Polytechnic Institute and State University, 1975), pp. 109-110.

<sup>45</sup>Ibid., p. 6.

<sup>46</sup>George B. Vaughan, "Broadening the Base of Higher Education in Virginia: Emergence of the Community College System," (Ph.D. dissertation, Florida State University, 1972), pp. 174-81.

<sup>47</sup>Robert W. Scott, "Proven Partners: Business, Government and Education," Community, Technical and Junior College Journal 57 (December/January 1986-87):16-19.

<sup>48</sup>"Two-Year Colleges in Iowa Benefit from Law Designed to Lure 4,000 New Jobs to State," Chronicle of Higher Education, 30 January 1985, p. 3.

<sup>49</sup>Beth Fleischman, "Technical Colleges Join Rapid Response Team to Lessen Effects of Plant Closings in South Carolina," Journal of Studies in Technical Careers 4 (Fall 1984):257-60.

<sup>50</sup>John Crede, quote from an article of unidentified origin.

## CHAPTER V

### RESULTS OF DATA ANALYSIS

Chapter five describes the results of the data analysis phase of the Evaluability Assessment. The format for this chapter will be to report and discuss the results of the evaluation activities conducted to answer evaluation question 2 and the additional evaluation question.

Evaluation question 2 identifies several models of program operation, including an evaluable model of the program. The evaluable program model includes only those expectations that are compatible, plausible and measurable across partnership interests. Answering the additional evaluation question identifies likely secondary impacts that the partners may expect as participants in the program.

#### Evaluation Question 2

Are identified long term program expectations, desired student outcome objectives, performance indicators and information needs compatible across partnership interests, plausible considering the activities being conducted and measurable in terms meaningful for decision making and program improvement?

### Introduction

The raw outcome data and performance indicators obtained in the process of answering Evaluation question 1 were used along with identified program input and process activities to construct models of program operation. Three program models were constructed as a means of progressive data analysis. The models included a logic model that presents the program as it exists in program documentation and in the user surveys. The logic model represents the logical structure of how the shipyard and program partners believe the program operates from input to the synthesized outcomes. The equivalency model represents what is actually happening in the field from the perspective of the evaluator. Using the logic model, extensive site visits and user surveys as a guide, the evaluator determines program reality and displays that reality in the equivalence model. The evaluable model is the evaluators assessment of the program that can be evaluated given program reality and any identified evaluation constraints.<sup>1</sup>

Program activities, events and outcomes in the models are categorized as relating to program input, program process and program outcomes. Program input activities include all activities associated with recruiting, hiring, classifying and assigning an employee for training. Process activities include all of those training, testing, work assignments and evaluations necessary to process an employee during the apprentice program. Program outcomes

include all of the student outcomes and long term program expectations identified in the study. There are obviously many intermediate goals associated with the hiring and training process. However, extensive discussion of these goals is not, for the most part, a significant element in this outcome oriented study other than as providing the necessary logic of program operation as it leads to identified program outcomes and expectations. Program management has an active and continuous program review process that continuously monitors and reviews input and process goals and activities. Only newly identified shipyard input and process activities and input and process activities directly associated with community development outcomes, that had not been previously identified by the shipyard, will be analyzed for measurement criteria separate from normal program management measurements.

#### Logic Model

The logic model presented in Figure 8 synthesizes all of the program activities and the program expectations identified in Figure 7. The logic model is a description of the logical structure of the apprentice program as it is identified in the program documentation and the surveys of program partners in this training linkage. Input and process activities represent activities that are typical of the activities that occur during the hiring and training processes. Actual input and process activities may vary

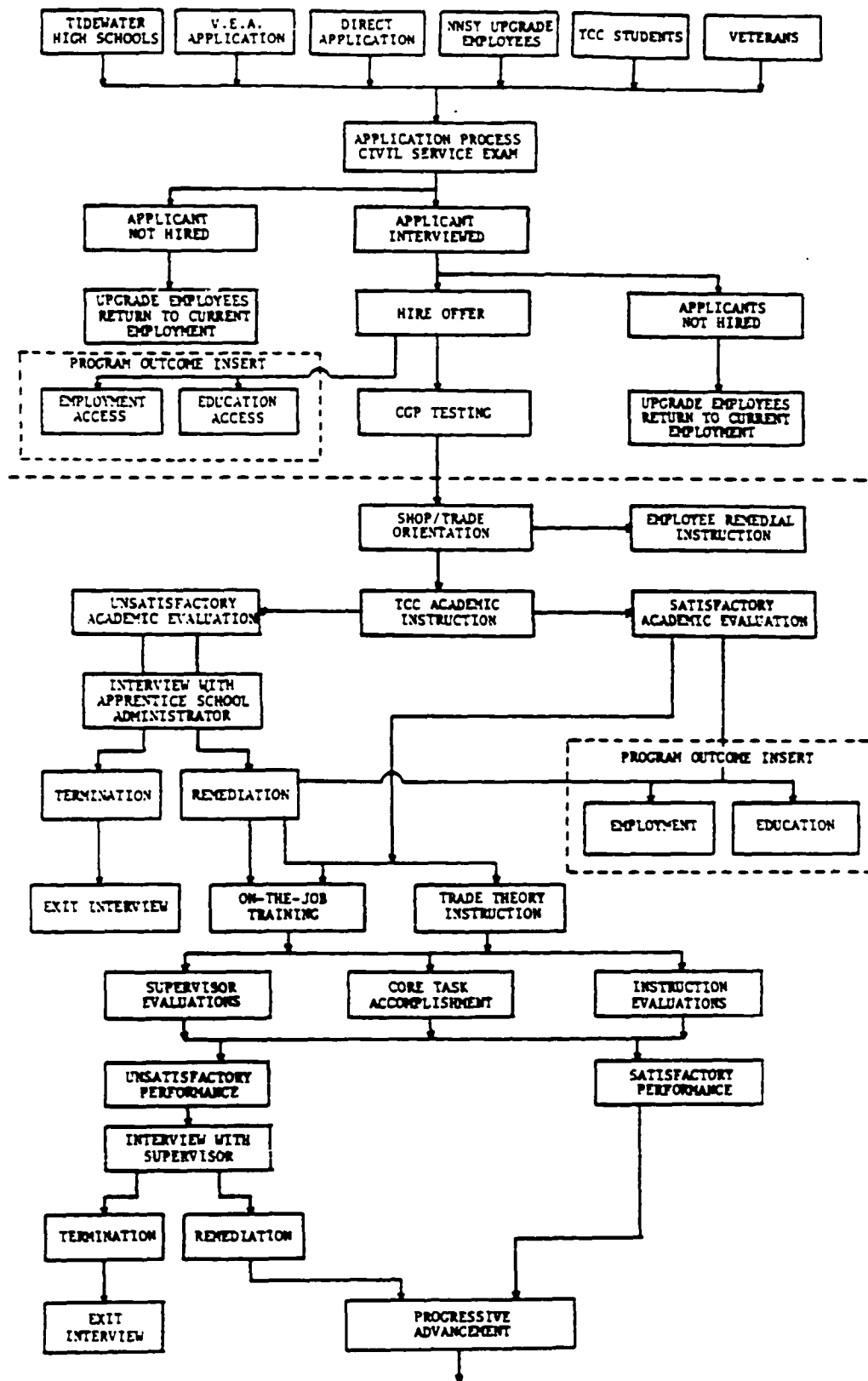


Fig.8. Logic Model

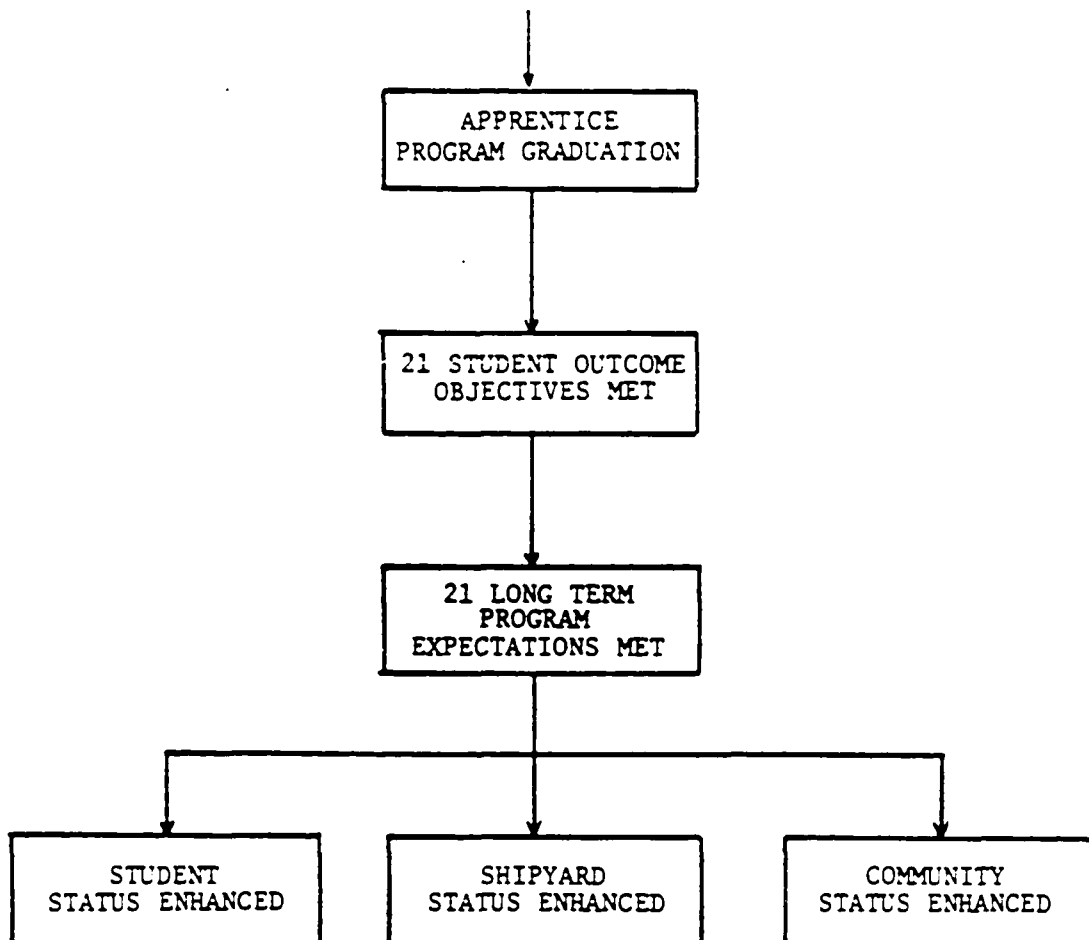


Fig.8. Continued

slightly with each new apprentice class and/or training contract. The evaluator assumes full responsibility for any errors in input and process procedures occurring as a result of misinterpretations or the limitations in documentation available for review. The following discussion describes the logical sequence of events presented in Figure 8, the logic model. Events, activities and objectives in the model are represented by a rectangle. An arrow represents a linking assumption.

The initial task of the apprentice program is recruiting qualified applicants. As indicated by Mr. Jack Morrell, Apprentice Program Administrator, "we must depend on other community resources to provide applicants with the basic academic skills needed for success."<sup>2</sup> The shipyard conducts a variety of recruiting activities within the community. Figure 8 indicates typical program sources for program applicants and includes NNSY employees recommended to upgrade their opportunity within the shipyard through better utilization of their talents, veterans, local high schools, Tidewater Community College, The Virginia Employment Commission and other community sources. In a typical year, 8,000 applications may apply for 200 new apprentice training slots.<sup>3</sup> Prospective apprentices are administered a written civil service examination. Test scores may be enhanced by up to ten points based on a veterans prior military service. Those applicants whose total test and preference score exceeds the current qualifying score will

be offered an interview by the shipyard. Applicants whose score is not adequate, are not employed by the shipyard at this time unless they are current employees who return to their position. During the interview, an applicant's prior education, experience and training is reviewed and a trade preference is established. The shipyard makes offers to apprentice an applicant in a specific trade and shop based on current needs within the shipyard. Applicants not receiving an apprentice offer are not employed by the shipyard unless they are current employees who return to their position. Ideally, at this point, all applicants who are hired are administered the Comparative Guidance and Placement (CGP) examination in a manner similar to all other new students attending the Tidewater Community College, Frederick Campus. Depending on test scores, applicants may receive recommendations for remediating identified deficiencies in basic academic skills during their assignment for shop and trade orientation. Shop and Trade orientation is the initial process activity shown in Figure 8. Employee remedial instruction prior to the academic phase of the program is voluntary and is conducted after work hours. After assignment to the TCC academic phase of the apprentice program, apprentices receive instruction in mathematics, industrial communications, physics, drafting, safety, and industrial materials and processes. (Actual academic classes may vary with each apprentice class and training contract.) Tidewater

Community College instructors test and evaluate students based on criteria established in the training agreement. The NNSY Apprentice Program Administrator evaluates unsatisfactory academic progress based on current criteria and any special circumstances and recommends termination or remediation. Students who are successful in meeting established evaluation criteria or who successfully completed designated remediation activities are assigned to unique trade/shop sequences of trade theory instruction and on-the-job training experiences. Throughout the remainder of their apprenticeship, apprentices are continuously evaluated by their supervisors and trade shop instructors for appropriate work behavior, work quality, satisfactory grades on formal instruction and accomplishment of core tasks that are considered to be critical journeyman skills. Apprenticed employees who receive timely satisfactory evaluations are rewarded with normal periodic advancements and graduate from the apprentice program at the end of four years. Apprenticed employees who have unsatisfactory performance in critical areas are normally allowed to remediate their deficiencies and then return to a normal advancement cycle. In extreme cases, employees may be terminated by the shipyard. Apprentice program graduation is the first program outcome shown in Figure 8 and is considered to be a prerequisite event for most program outcomes identified in this model. In two isolated cases identified student outcomes are related directly by the

program partners to the hire offer rather than to apprentice program graduation. These student outcomes are employee access and employee success.

In the documentation reviewed, and in the program user interviews, a specific logical sequence for how student outcomes and long term program expectations are interrelated is not clear. One possible logical sequence of outcomes would suggest that the process begins with the economic development expectations of drawing a new industry to the area, forming linkages with the community college to meet industries manpower needs which then results in student outcomes being met. Several factors suggest that this was not the appropriate approach for this evaluation.

1. The Norfolk Naval Shipyard has been at its current site, as a shipyard, since before the formation of the union of states
2. The current linkage has a significant history with some policy makers suggesting an ultimate evaluation outcome of economic development marketing for this linkage
3. The majority of user surveys suggest that if appropriate student outcomes are identified and met, that the needs of industry and the community will be met

For the purpose of constructing the logic model, it was concluded that management and policy leaders believed that student outcomes resulted in NNSY meeting their long

term program expectations with a resulting positive impact for the student, the shipyard and the community. The format for the outcome logic modeling follows the general format used for evaluation planning at the National Institute of Mental Health.<sup>4</sup> Logically, graduation from the apprentice program will result in the accomplishment of the 21 desired student outcomes which will result in 21 long term program expectations being achieved. Achievement of these outcomes will result in appropriate service to the three constituencies in this training alliance, the individual student, the industry and the community. The logic model shown in Figure 8 serves as a starting point for the field observations, additional management discussions and additional review of data gathered during the process of answering Evaluation Question 1 that will be necessary to establish program reality.

#### Equivalency Model

Some activities normally conducted by the evaluator as a function of constructing the equivalency model and determining program reality were necessarily conducted prior to the construction of the logic model for input and process activities. Not only were extensive site visits necessary for the evaluator to understand the logical sequence of input and process events, but it was also necessary to review input and process data sources to be assured that an adequate program monitoring evaluation

system was in place. Otherwise, an outcome oriented evaluability assessment might not have been a productive undertaking.

Because of continuous program monitoring evaluations of input and process activities, the evaluator found few variations between program reality (Equivalency model) and management and users beliefs (Logic model) concerning input and process activities and goals. Because the views of community development partners were focused on program outcomes, they had little impact on the logic of program input and process activities. All of the input and process activities on the logic model were evaluated as plausible considering the activities being conducted in the field and most were measurable considering that the data and records maintained are adequate to indicate and verify achievement.<sup>5</sup> Subjective measures are not classified as unmeasurable if they meet these two criteria. All of the input and process activities identified in the logic model are considered to be valid for the equivalency model.

Figure 9 is a complete equivalency model from the perspective of how the evaluator views the reality of the Norfolk Naval Shipyard Apprentice training linkage. Table 1 is keyed to Figure 9 and lists all of the input, process and outcome events, activities and objectives that comprise the program as a training linkage. Table 1 also lists program performance indicators for each program event/activity/objective and indicates the availability of

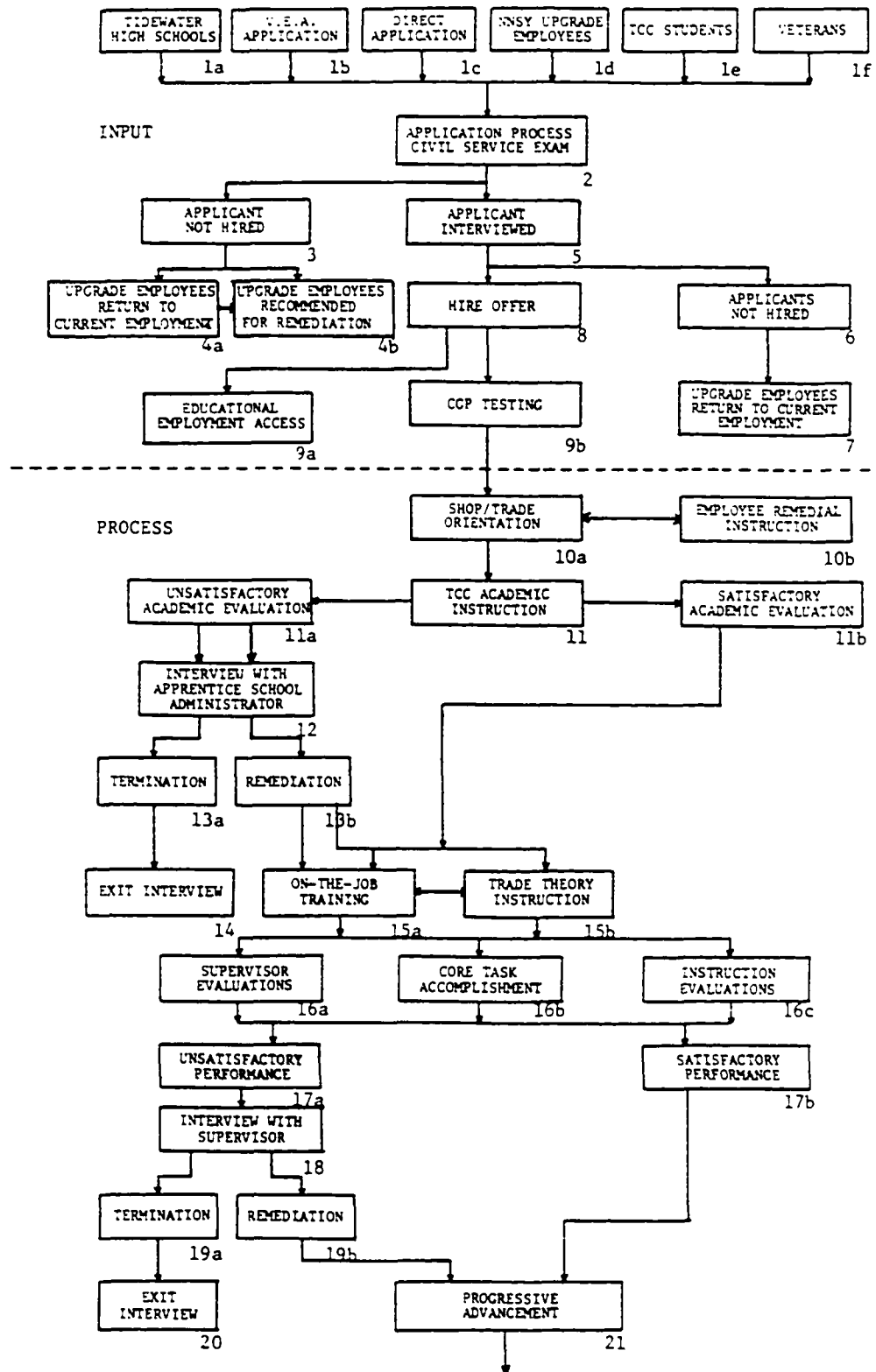


Fig.9. Equivalency Model

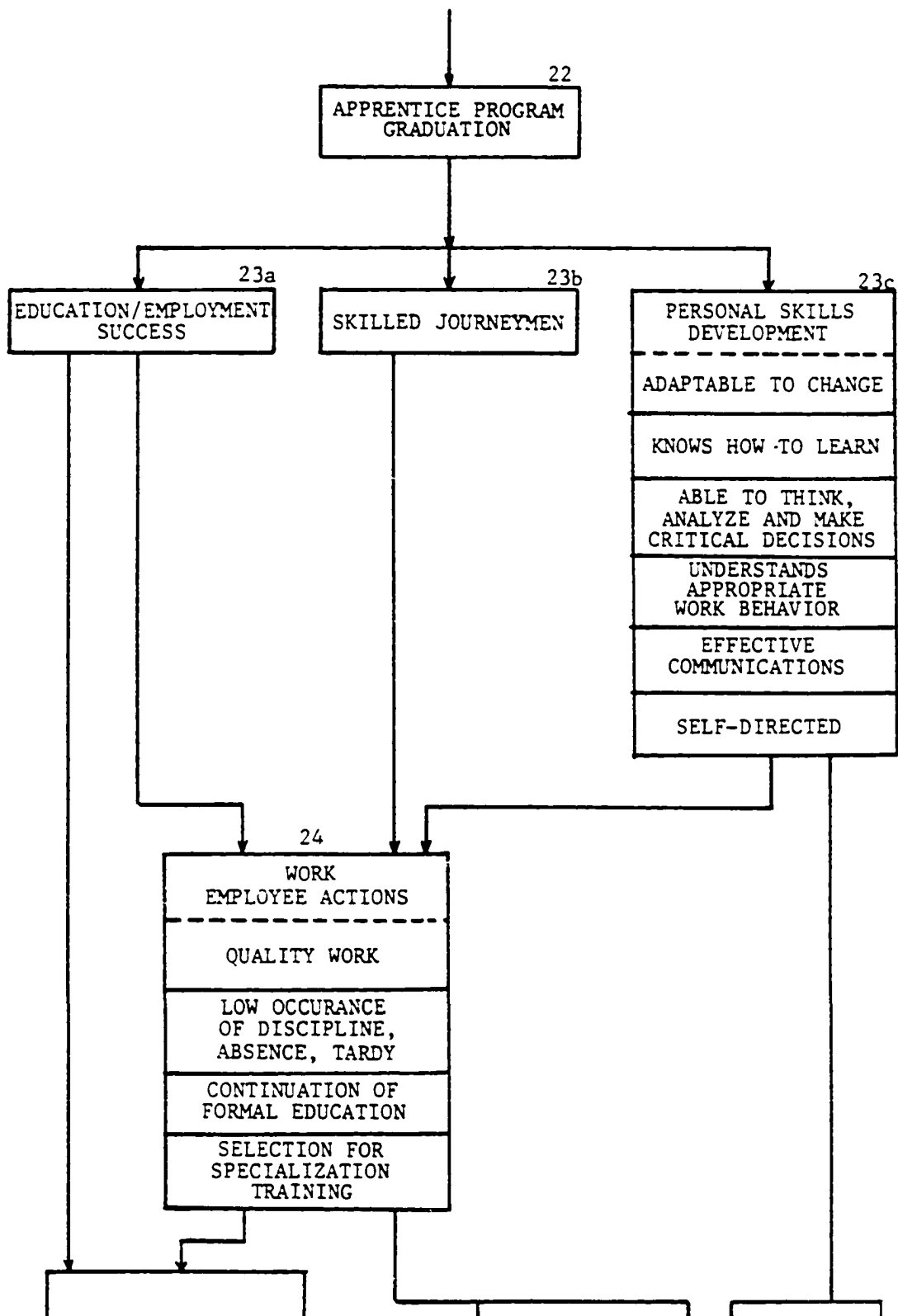


Fig.9. Continued

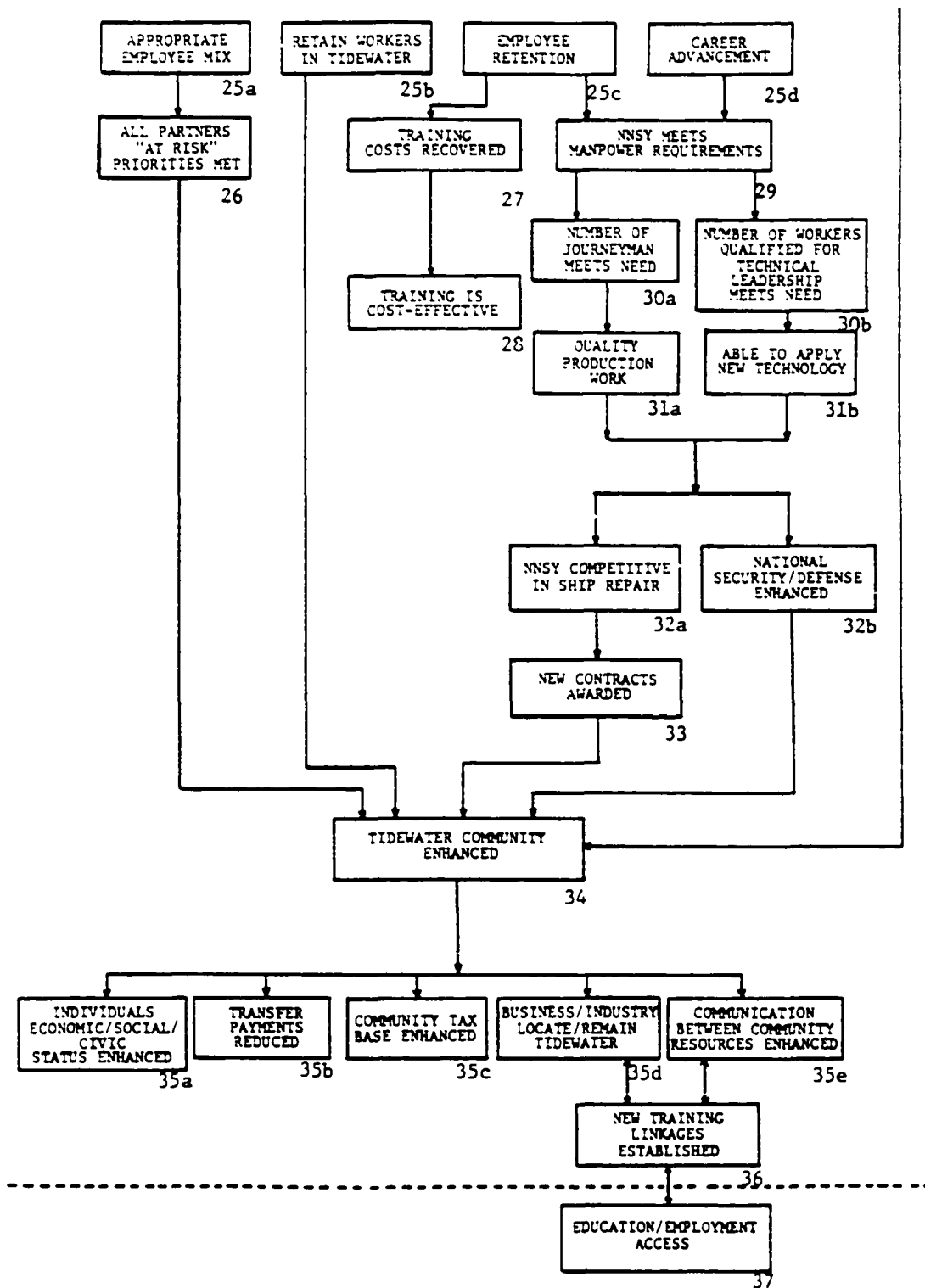


Fig. 9. Continued

TABLE 1

## EQUIVALENCY MODEL MEASUREMENT POINTS

Measure Point	Activity, Event Objective	Performance Indicator	Measure Data Source
1 a, b, c, d, e, f	Recruit Workforce	Number of persons from each source:	
		1a. Tidewater High Schools	no
		1b. Virginia Employment Agency	yes
		1c. Direct Applications	no
		1d. NNSY upgrade applicants	yes
		1e. Tidewater Community College	yes
		1f. Veterans	yes
2	Application Process/Exams	Student achieves the required score	yes
3	Applicant Not Hired	Inadequate total test score	yes
4a	Upgrade Employee Returns to Current Employment	Number of upgrade employees not achieving adequate total score	yes
4b	Upgrade Employee Recommended for Remedial Instruction	Number of unsuccessful employees eventually admitted	no

TABLE 1-Continued

Measure Point	Activity, Event Objective	Performance Indicator	Measure Data Source
5	Applicant Interviewed	Applicants qualifications and expectations coincide with shipyard needs	yes
6	Applicant Not Hired	Needed coincidence of qualifications and expectations does not exist	yes
7	Upgrade Employee Return to Current Employment	Number of upgrade employees not hired for the program	yes
8	Hire Offer	Number hired meets shipyard needs	yes
9a	Education/Employment Access	Number of Veterans, upgrade employees, women, minority, handicapped hired	yes
9b	CGP Testing	Student demonstrates adequate academic skills	yes
10a	Shop/Trade Orientation	Demonstrate appropriate work behavior	yes
11	TCC academic instruction	Established academic criteria	yes
11a	Unsatisfactory academic performance	Performance below established criteria	yes
11b	Satisfactory academic performance	Performance above established criteria	yes

TABLE 1-Continued

Measure Point	Activity, Event Objective	Performance Indicator	Measure Data Source
12	Interview with Program Administrator	Likelihood of apprentice program success	yes
13a	Termination	Success unlikely	yes
13b	Remediation	Employee corrects deficiency	yes
14	Exit Interview	Program improvement	yes
15a	On-the-job training	Adequate work behavior and performance (see 16 a, b, c)	yes
15b	Trade Theory Instruction	Adequate work behavior and performance (see 16 a, b, c)	yes
16a	Supervisor Evaluation	Work behavior (general discipline absenteeism, tardiness, etc.), work quality, work quantity	yes
16b	Core Task Accomplishment	Demonstration of specific journeyman skills	yes
16c	Instructor Evaluation	Trade mastery criteria	yes
17a	Unsatisfactory performance	Work behavior, work quality, work quantity, mastery and/or core task demonstration is inadequate	yes

TABLE 1-Continued

Measure Point	Activity, Event Objective	Performance Indicator	Measure Data Source
17b	Satisfactory performance	Work behavior, work quality, work quantity, trade mastery and/or core task demonstration is adequate	yes
18	Interview with Supervisor	Likelihood of apprentice program success	yes
19a	Termination	Success unlikely	yes
19b	Remediation	Employee successfully corrects deficiency	yes
20	Exit Interview	Program improvement	yes
21	Progressive advancement	Advance from WT-02 to WT-09 based on service time and performance	yes
22	Apprentice Program Graduation	a. Number of graduates	yes
		b. Percent of entering students who graduate	yes
		c. Percent of students completing academics who graduate	yes
23a	Education/Employment Success	Number of Veterans, upgrade employees, women, minorities, handicapped students who graduate from the apprentice program	yes

TABLE 1-Continued

Measure Point	Activity, Event Objective	Performance Indicator	Measure Data Source
23b	Skilled Journeyman Craftsman	Total number of journeyman in the workforce meets projected/actual manpower needs	yes
23c	<u>Personal Skills</u>		
	Adaptable to change	Adapts to changing technical environment	
	Knows how to learn	Able to learn new tasks/systems	
	Able to think, analyze and make critical decisions	Solves critical production problems and makes needed critical decisions	
	Effective communications	Communications effectively with co-workers supervisors, and subordinates	
	Self directed	Needs little direct supervision	
24	<u>Employee Work Actions</u>		
	Quality work	Work is high quality, low incidence of rework	yes
	Low occurrence of discipline, absence, tardiness	Number of disciplinary incidents, number of absences, tardy	yes

TABLE 1-Continued

Measure Point	Activity, Event Objective	Performance Indicator	Measure Data Source
	Continuation of Formal Education	Number of graduates who completed additional college academic work	yes
	Selection for specialized training	Number of graduates who participate in specialized training	yes
25a	Appropriate Employee mix	Number of Veterans, upgrade employees, women, minorities and handicapped in the workforce	yes
25b	Retain workers in Tidewater	Number of apprentice graduates who terminate shipyard employment and leave Tidewater	no
25c	Employee Retention	Number of apprentice graduates who remain employed at NNSY	yes
25d	Career Advancement	Number of apprentice graduates who hold (WG-12-15) WS, WD, WL, or WN positions	yes
26	All partners "at-risk" priorities met	Performance Indicator (25a)	yes
27	Training Costs Recovered	Number of graduates retained for 2 1/2 years	yes
28	Training in cost effective	Costs compred with other comparable programs	no

TABLE 1-Continued

Measure Point	Activity, Event Objective	Performance Indicator	Measure Data Source
29	NNSY meets manpower requirements	Trade/craft workforce necessary to meet commitments (see 30a and 30b)	yes
30a	Number of journeyman meets needs	Number of journeyman meets current manning authorization	yes
30b	Number of workers qualified for technical leadership meets need	(WG-12-15) WS, WD, WL and WN positions filled without resorting to outside recruiting	yes
31a	Quality Production Work	NNSY meets ship repair commitment	yes
32a	NNSY competitive in ship repair	Repair bids are competitive with other public and private shipyards	unsure
32b	National Security/ National Defense enhanced	Naval ships repaired at NNSY meets operational commitments	subjective
33	New ship repair contracts awarded	Number of new contracts	yes
34	Tidewater community enhanced	Perceived community development priorities of all partners and the students/graduates are met	(see 35a-e)

TABLE 1-Continued

Measure Point	Activity, Event Objective	Performance Indicator	Measure Data Source
35a	Individual Economic/ Social and Civic Status Enhanced	Income growth Career advancement Lack of dependence on public assistance Active in civic/community affairs Perceived program impact	yes yes no no no
35b	Transfer Payments Reduced	Number of welfare recipients who achieve permanent employment	no
35c	Community Tax Base Enhanced	Economic impact on Tidewater area resulting from NNSY program as measured by business volume, employment income and other selected economic indicators	no
35d	Business/Industry located in Tidewater	Number of new businesses and industries locating in Tidewater  Number of business and industry expansions	Possible  unsure
35e	Communication between Resources Enhanced	Increased awareness of NNSY program and the associated Education/Employment opportunity by all community elements including area high school advisors	unsure post eval. activity

TABLE 1-Continued

Measure Point	Activity, Event Objective	Performance Indicator	Measure Data Source
		TCC/Virginia Community College system establish training linkage info system	post evaluation assessment action
		Economic Development personnel and other policy leaders increase their communication of needs to community college	post evaluation assessment action
		NNSY Employee Development code promote apprentice program within the shipyard	post evaluation assessment action
36	New Training Linkages Established	Number of new training linkages established	yes
37	Community College/Industry provide Education/Employment Access	Number of new students and "at-risk" students provided educational/employment access through new training linkages	unsure

measurement data. All of the desired student outcomes, long term program expectations and performance indicators identified in figure 7 are integrated into table 1 and figure 9. Because program reality dictates that some expectations be consolidated and that elements of a program performance indicator be used in the measure of more than one outcome, the form of some outcome performance indicators may not be identical to figure 7. Measurement data may include information that is being collected and the data source or, it may include raw data that is known to exist in a particular data base. The level of difficulty of data extraction may influence the eventual selection of an evaluable program model. Because this study is focused on program outcomes and because a significant discussion of the logic of how input and process activities lead to outcomes has already been conducted, discussion of input and process activities in addition to the details available in table 1 and figure 9 will be limited to changes and/or additions from the logic model.

One new input activity was identified during preparation of the equivalency model, two program outcomes were consolidated and reclassified as input goals and two additional outcomes were determined to be elements of the reclassified input goal. The new input activity (measurement point 4-b on table 1 and figure 9) concerns current employees who apply for the apprentice program and are not successful. These employees are apparently being

unofficially advised to make an effort to improve their chance of admission on the next cycle by being tested at Tidewater Community College, and by taking needed remedial academic work. Several students at Tidewater Community College who are NNSY workers, indicated that they had received that recommendation and were in the process of taking courses to improve their chances of selection on the next cycle. The other change in program input concerned consolidating and reclassifying all desired student outcome from the documentation reviews and interviews that were concerned with access and opportunity. The evaluator found that differentiation between opportunity and access was not a practical reality. Access will be the preferred outcome usage in the modeling phase. Education opportunity and Employment Opportunity are deleted as outcomes. Educational access and employment access are appropriate input goals rather than outcome objectives because they are linked directly to the hire offer (measurement point 8 on Figure 9 and Table 1) and are achieved prior to beginning process activities. The evaluator found that in this program, educational access and employment access were inexplicably linked. One did not exist without the other. The goals of educational access and employment access should, therefore, be combined into a single input goal. Once the hire offer is accepted, the student has been given access to education and employment through the input activities of recruiting and selection. Education/employment access was

reclassified as a single input expectation and is measurement point 9-a on figure 9 and table 1. The available data base make it practical to measure access for all of the "at-risk" categories identified in the study except "welfare recipients." One policy leader had an interest in access by local residents and high schools in the Tidewater area. This information is not readily available in the existing data base. No additions or changes to process activities from the logic model were necessary. Process activity measures and data sources as shown in table 1 are measurement point 10 through 21. Figure 9 demonstrates the relationships that exist between the training, testing, work assignments and evaluations that comprise the process activities leading to the initial program outcome, graduation from the apprentice program.

Apprentice program graduation (measurement point 22) had three performance measures indicated as appropriate and data for these measures is readily available or easily computed from the existing apprentice school data base. The three measures of concern were the numbers of graduates and persistence of entering students and students who complete the academic phase. Apprentice program graduation leads directly to measurement point 23. Education and employment success are classified as a single outcome on the equivalency model (measurement point 23a). Measurement point 23a provides the data to measure employment and educational success for all of the "at-risk" group except

welfare recipients. Apprentice program graduation also leads directly to the shipyard's primary documented outcome, Skilled Journeymen Craftsman (measurement point 23b). If the number of skilled journeymen that the shipyard needs were available in the labor market, the apprentice program would not exist. The critical measures for this primary objective is the total number of journeymen in the workforce compared to the projected (actual if there is a difference) manpower need. The data needed for this measure are available within the shipyard and are continuously assessed. The third outcome of apprentice graduation is the synthesized outcome of Personal Skill Development (measurement point 23c). Personal Skill Development includes as components six student outcomes identified in the review of documentation and the user surveys. These component outcomes include an employee who is adaptable to change, knows how to learn, is able to think, analyze, and make critical decisions, understands appropriate work behavior, can communicate effectively and is self directed. The shipyard and public policy makers expect more from its apprentice program graduates than a welder who has demonstrated designated core skills. One senior policy leader expressed concern that the college might place too much emphasis on academic instruction aimed at developing personal skills that might not really be needed. In general, however, there was strong support for these student outcomes. The strongest and most practical

support for personal skill development comes from what had been predicted to be the most unlikely source. Front line trade management indicated strong support for academic training and a comprehensive apprentice program that would promote the development of personal skills in addition to technical skills. Mr. Peddy, Group Superintendent, indicated that he needed "a worker who can adapt to complex and critical situations. I need people who can think and make important decisions."<sup>6</sup> Mr. Shull, Group Superintendent, indicated that he viewed his apprentice graduates as "ready to learn."<sup>7</sup> The most comprehensive support for Personal Skill Development as an outcome was presented by Mr. Messik, Shipyard Group Superintendent. His view is typical of the views encountered by the evaluator concerning personal skill expectation

The apprentice program is the life blood of the shipyard. The apprentice program is our only dependable source of mechanics and I mean not just a journeyman who knows his craft. I need workers who can think and make critical decisions in the important and sometimes dangerous business of ship repair and overhaul. Our apprentices may never directly apply the subject matter from the academic portion of the apprentice program but they learn how to think, to comprehend. And, they learn how to learn and adapt to change in the shipyard environment . . . Mr. Claytor (Norfolk and Southern Railroad) wants to create a craftsman in six weeks of six months. He will not create the kind of craftsman I need . . . In our line of work, technical change requires us to be able to adapt to change. One of the problems we have today in our country is quick fix solutions. We train a person to do one specific job and as soon as that job changes the worker is displaced. We can't afford that kind of thinking. Our jobs change every day.<sup>8</sup>

The only direct measures of these personal skills are

through subjective supervisor evaluations. Most of the shipyard managers felt that the supervisor evaluation process provides valid data.

By producing skilled journeymen with a stable employment outlook who have the personal skills to function effectively in a changing technical environment, it can be realistically expected that a group of employee events will occur that will lead to the accomplishment of a variety of shipyard and public policy leader expectations. These employee actions (measurement point 24) include:

1. Quality work
2. Low incidence of discipline, tardiness and absenteeism
3. Continuation of formal education for specialized training
4. Selection

All of these employee actions can be reasonably measured through data available at either NNSY or TCC. The only major measurement concern is that quality is a somewhat subjective measure that could result in a less competent worker producing high quality work in less complex environment. This worker might then compare favorably to a more competent worker involved in a significantly more complex task. This measurement would need to be mediated with other factors to yield valid information.

Educational/Employment success combined with appropriate employee actions (measurement point 24) should lead

to a workforce comprised of the appropriate mix of "at-risk" employees (measurement point 25a) and should provide all training linkage partners with an assessment of how well their "at-risk" priorities have been met. Data for measurement point 25a are reasonably accessible for all identified categories except ex-welfare recipients. A graduate survey appears to be the only practical way to assess ex-welfare members of the "at-risk" category. Meeting these priorities is one of the outcomes that should contribute to enhancement of the Tidewater area (measurement point 34).

Another expectation of Education/Employment opportunity combined with employee actions is the retention of workers in Tidewater Virginia (measurement point 25b). Measurement of this expectation would require a determination of how many apprentice graduates who left the shipyard remained or left the Tidewater area. While the retention of workers who leave the shipyard is a valid expectation for Tidewater leaders, there is no practical and cost effective means to measure this outcome.

Personal skill development in addition to leading to appropriate employee work actions is also one of the outcomes that should lead to career advancement and enhancement of the Tidewater area (measurement point 34). The current data base does not include appropriate measures of this expectation.

The key expectation from the prospective of the

shipyard, in addition to skilled journeymen is Employee Retention (measurement point 25c). While long term retention is desired, employee retention for at least two and one-half years after completion of the four-year apprenticeship will assure the shipyard that the training costs of individual program graduates are met (measurement point 27). Hopefully the current program structure and retention of graduates for a minimum of two and one-half years will lead to a cost-effective training program (measurement point 28). While data are available to determine total training cost per student trained and retained, a cost effectiveness study would require that data be made available from similar shipyard programs. These data should be relatively accessible to an outside evaluator as similar private programs exist in the local area and similar public programs, that are also under the direction of the Department of the Navy, exist on the USA east coast. The development of skilled journeymen who are retained in the shipyard and who advance their careers in the shipyard leads to the shipyard meeting trade and craft manpower needs (measurement point 29). The two major identified technical manpower needs are: the number of journeyman craftsman needed (measurement point 37a) and technical leadership (measurement point 30b). With qualified craftsmen and technical leadership NNSY should remain competitive in the ship repair business (measurement point 32a). Theoretically, if NNSY is competitive, new

contracts will be awarded (measurement point 33) and the Tidewater community will be enhanced (measurement point 34). Measurement points 32, 33, and 34 are not considered measurable. In practical and political terms many factors influence national security/defense, the awarding of contracts and an enhanced community at least as much as maintaining a competent workforce. However, it is clear that unless a competent workforce exists, these outcomes are unlikely. Data to measure all of the identified individual growth elements (measurement point 35a) are not available. The measurement of economic status, through wages and wage growth, is available. The evaluator suggests that this measure of economic stability is critical to satisfaction of the other individual growth areas. If evaluation resources permit, a survey of graduates would allow a more extensive assessment of individual impact. It is not considered practical to measure the reduction in transfer payments (measurement point 35b) in this study because these records are not maintained on program admissions. If a graduate survey were conducted, it might be possible to estimate this impact from the data gathered. Community tax base enhancement could be measured by a number of valid evaluation studies. However, identification and measurement of all of the indicators involved would represent a major evaluation effort separate from an evaluation of the NNSY/TCC training linkage. No significant support existed at any policy or

management level for a comprehensive economic impact study of this training linkage. Separate from this study, there was some local support for an economic impact study of the shipyard in general as compared to alternate, taxable uses of the local property. This suggestion was not considered to be an element of this study. The evaluation emphasis of interest at all levels, rather than being concerned with measured economic impact, has been measurement of desired student outcomes and the satisfaction of NNSY in meeting their manpower requirements. The important secondary outcomes of interest included communication of training linkage program expectations between the partners including improved information systems (measurement point 35e) and the possible use of the program as a model of marketing the Tidewater area. Training linkages may be utilized as a means to bringing new industry to Tidewater or assist existing industries to expand (measurement point 35d). This effort would result in new training linkages being formed (measurement point 36). The forming of new training linkages would enhance accomplishment of the primary community college mission to increase employment and educational access for members of the Tidewater community. Employment and Educational Access (measurement point 37) is actually a combined outcome expectation for this linkage and an input expectation for new linkages.

### Evaluable Program Models

Three evaluable program models of the Norfolk Naval Shipyard/Tidewater Community College training linkage were constructed. Figure 10 provides a consolidated overview of the entire training linkage and the evaluable models. Of the evaluable models, Figure 11 is the most comprehensive model. Program evaluation using the model in Figure 11 would require the greatest allocation of resources and would have impact assessment as the evaluation objective. Figure 12 is an alternate evaluable model. Program evaluation using the model in Figure 12 would require the allocation of fewer resources and would be conducted as a program monitoring evaluation. Figure 13 is an alternate evaluable model that included only critical program expectations. Program evaluation using the model in Figure 13 could provide rapid feedback information on program expectations. Rapid feedback evaluation data would give management the information needed to make informed decisions concerning the need for additional evaluation sequences using the more comprehensive evaluable models.

### Evaluability Considerations

Several key elements were considered in determining the evaluable model. The equivalency model was concerned with three of these elements in determining program reality:

1. The compatibility of the expectations of the

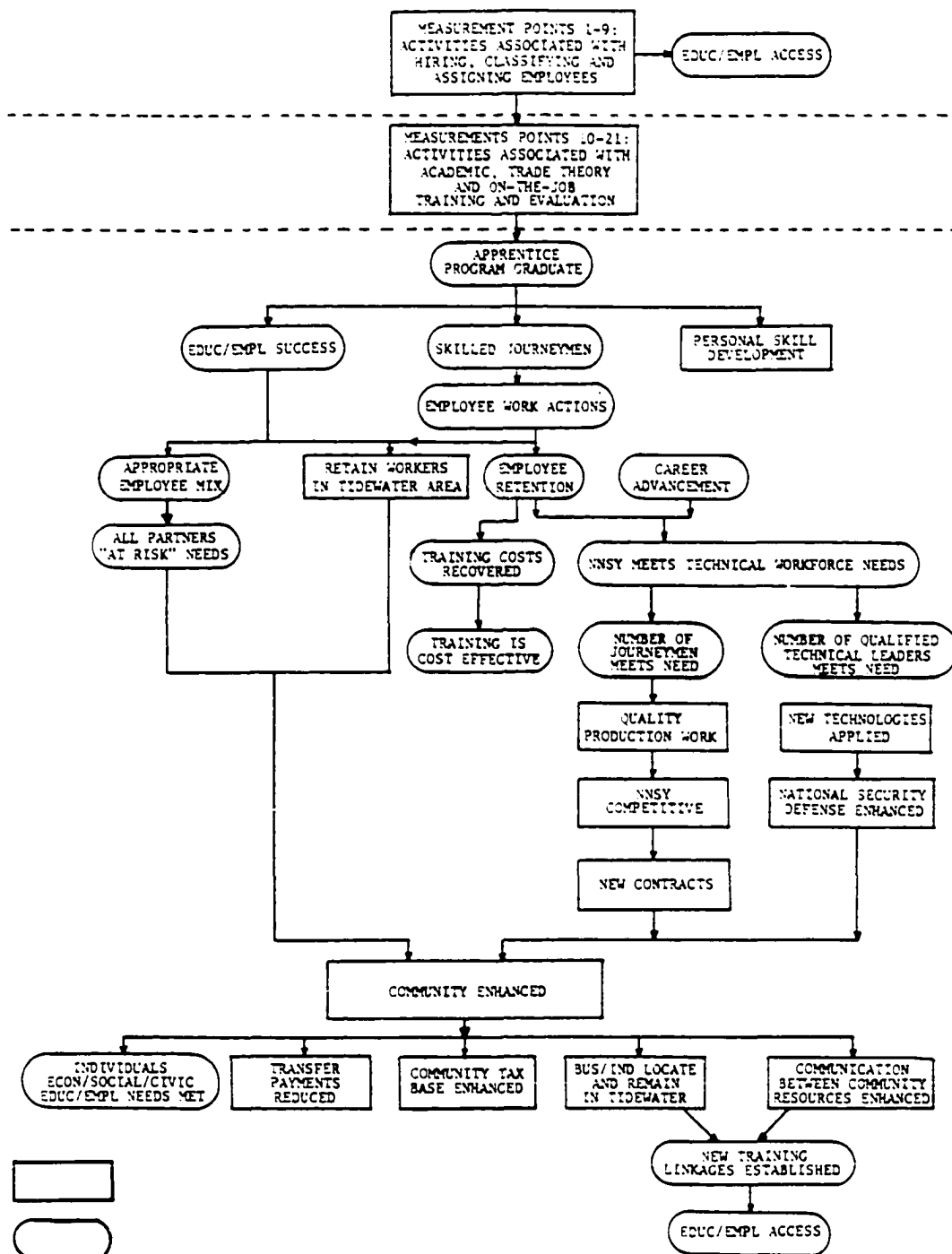


Fig. 10. Overview of Evaluable Models

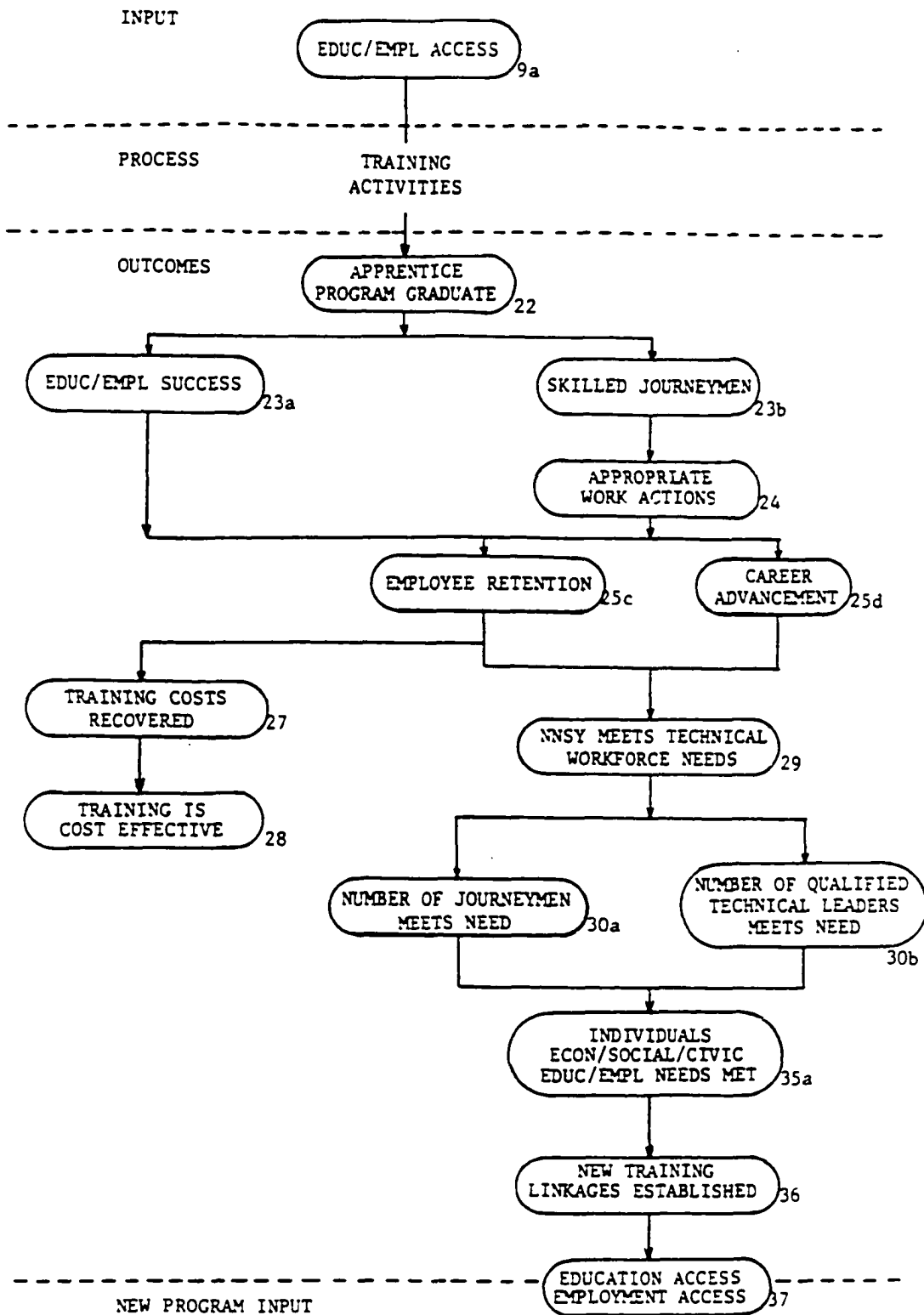


Fig. 11. Evaluable Impact Model

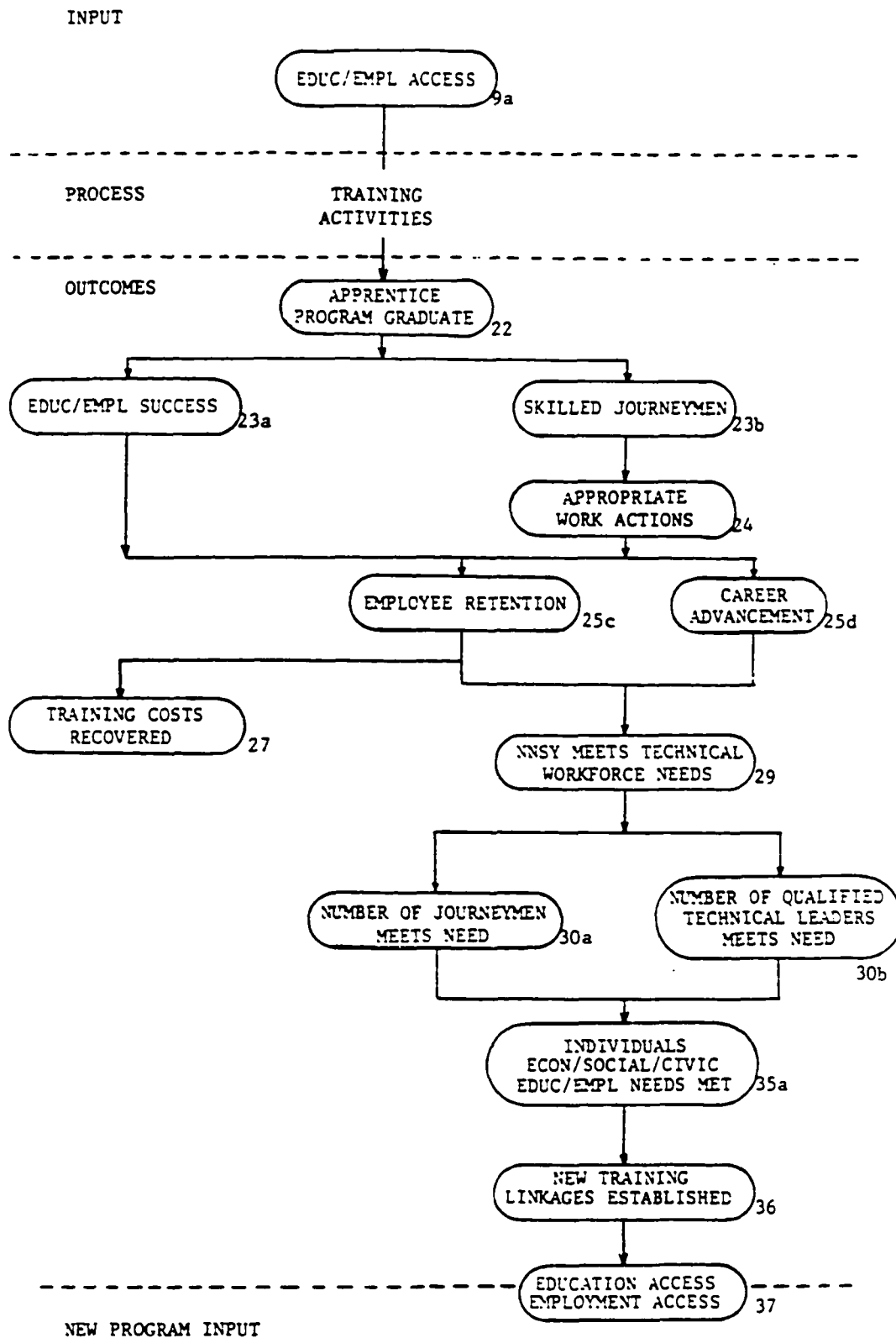


Fig. 12. Performance Monitoring Model

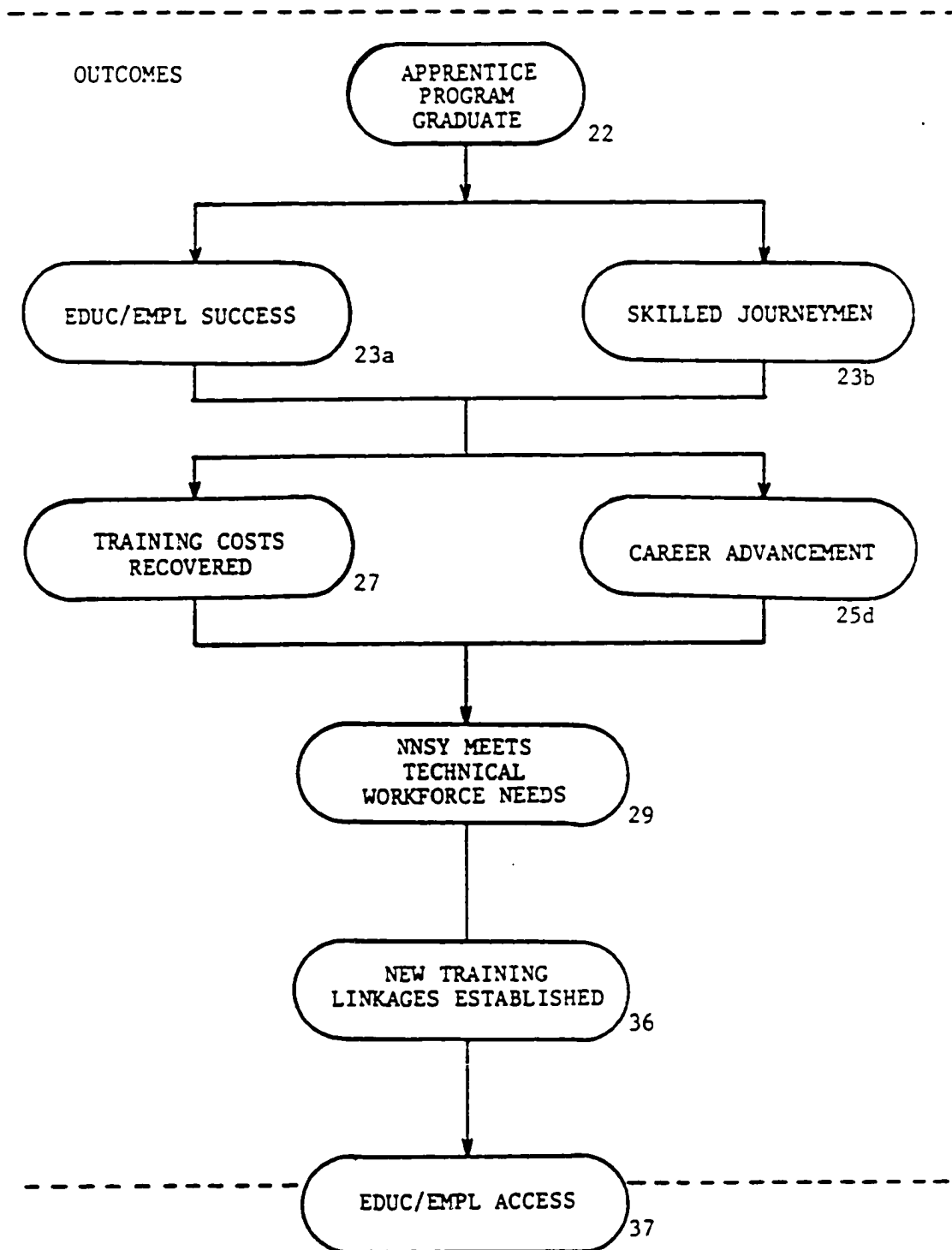


Fig. 13. Rapid Feedback Model

various partners, which may be thought of as the degree of conflict or mutual exclusion between expectations

2. The plausibility of the expectations which is concerned with the likelihood that the program being conducted will lead to the identified expectations
3. The measurability of the expectations is concerned with assuring that both an indicator of achievement and the means to verify or provide evidence of achievement is available

None of the objectives identified by any of the program partners were considered to be incompatible or in conflict with other identified objectives. No objectives were considered to mutually exclude any other objective. All of the activities included in the equivalency models were considered to be plausible considering the reality of the program activities and the identified logical relationships between activities and outcomes. Table 1 identifies all of the activities in the equivalency model and indicates those activities that were determined to be measurable. With no other elements to consider, the evaluable model could simply be represented by repeating the equivalency model and indicating all outcomes that were measurable in Table 1. However, several important elements in addition to compatibility, plausibility and measurability were identified during the process of documenting

program reality and must be considered in making recommendations for an evaluable model. These additional elements included the probable uses of evaluation information by the various program partners, the logistics of a multi-agency evaluation and the practical cost constraints imposed by the evaluation users. With cost constraints being the most significant limitation, this element and its relationship with the other elements will be addressed first. Allocation of new monetary or human resources to an evaluation effort is not possible considering the budget constraints of the various agencies involved. All public policy leaders outside the community college believe that the community college should be the active element representing community development interests in any joint evaluation effort with industry. Tidewater Community College would entertain any proposal that required the cooperative use of existing resources, and would cooperate in extracting needed data from its data base. The allocations of any new resources by Tidewater Community College would not be possible. At Norfolk Naval Shipyard, any additional evaluation effort would be the responsibility of the Employee Development code with the cooperation and support of Industrial Relations and the Production Department. Federal fiscal constraints at the shipyard have resulted in budget cuts that reduced human resources and funding within the Employee Development code. An increased emphasis on evaluation and physical resource enhancement in the form of

computers, computer software, and/or computer time can reasonably be expected over time to assist the employee development code in its evaluation efforts.

In designing the evaluable model it was a concern that if an evaluation were conducted with existing resources from Norfolk Naval Shipyard and Tidewater Community College an impact assessment would probably not be practical. Any attempt to conduct impact assessment would require, at a minimum, the temporary services of one additional person knowledgeable in evaluation principles and preferably neutral to NNSY and TCC to allow an unbiased outside perspective. A possible solution to this concern is based on the possibility of using a qualified graduate student or an Employee Development code intern as the program evaluator. The Employee Development code has agreed, on occasion, to allow a graduate student to participate in evaluation studies. The code had previously agreed to cooperate in an outcome based evaluation of selected student outcomes in the apprentice program. (Appendix five references)

None of these funding constraints indicate a lack of interest in program evaluation or a lack of support for program evaluation. Rather, the constraints indicate the realities of field evaluation and the desire of program partners to integrate program outcome evaluation into the existing program structure and resources. These constraints must be considered in designing an evaluation for

this training linkage. The following summary of resource limitations impacted the design of practical, evaluable models for future evaluation choices:

1. Public policy makers and funding authorities believe that the community college is the valid representative of community interests and that program evaluation is an integral element in their current instructional mission. Therefore, no new resources are needed
2. Tidewater Community College considers that program evaluation efforts should be conducted within existing funding, but that these efforts must be very concise in specifying measures in order for evaluations to be cost effective. Evaluation costs are a significant concern, considering the regressive funding policy for higher education
3. Norfolk Naval Shipyard considers program evaluation to be a major task of the Employee Development Code and believes that these efforts should be conducted within existing resources. Considering budget cuts over the last two years, the evaluability assessment must be very specific in determining critical outcomes in order that scarce evaluation resources be maximized

Given the above considerations, the concern about multi-agency evaluation logistics is a mute concern. The

two major evaluation players will be Tidewater Community College and Norfolk Naval Shipyard. These two agencies have been working together in a cooperative alliance since 1968 and cooperation in an evaluation project is not a concern of either agency.

The primary usage of evaluation information by the various partners was an important consideration in constructing the evaluation models. Public policy makers indicate that evaluation information will help them make decisions on the following issues:

Does The NNSY/TCC training linkage:

1. Meet the educational and employment needs of the student?
2. Meet the needs of industry?
3. Meet the needs of the local "at-risk" population?
4. Provide a model program, including program information, for economic development marketing?

For Tidewater Community College, the primary use of evaluation information is to provide needed justification on program productivity in terms of education/employment access, retention and career advancement. Additional important uses would include assessment of the training linkage as a feeder program for continuing formal education, improvement in programs and services, improvement in information links with its constituency and promotion of community college/industry training linkages.

For the Shipyard, the evaluation will be used to

assess the program from the perspective of program improvement and cost control. Evaluation information could be used in making program changes to enhance manpower outcomes, to manage program costs, and, hopefully, to justify and promote the program to non-production elements that may not be supportive of the program.

### Modeling Overview

Input and process measurement points from the equivalency model are consolidated in the overview of the evaluable models shown in figure 10 using the block format suggested in evaluation planning for the National Institute of Mental Health.<sup>9</sup> All of the consolidated events are a part of an effective and continuous input and process performance monitoring evaluation program. Input/process activities that are of special interest to community development partners, or, that are not primary to normal monitoring evaluation activities at the shipyard, are indicated in the model separate from the consolidated events. Separate representation is not an indication of higher importance than the consolidated events. Outcome measurement points shown in figure 10, the overview of the evaluable models, correspond to the same points shown in the equivalency model figure 9 and reference to table 1 for program performance information is still valid. Those outcomes that are considered to be evaluable are indicated by an ellipse while other outcomes continue to be

represented by a rectangle. Figure 11, 12 and 13 are individual evaluable models intended for impact assessment, performance monitoring and rapid feedback respectively. These models are keyed to table 2 which includes only those measurement points that are considered measurable on one of the models. Numbering of measurement points coincides with table 1 and all of the other program models. Table 2 provides data sources that are additions to the sources shown in table 1. These data sources would be established as part of the impact evaluation process. Table 2 provides some expansion in detail to clarify performance indicators when appropriate. All of the outcomes indicated by an ellipse are evaluable in the model intended for an impact assessment (figure 11). Those outcome measurement points, or elements in a measurement point, that are deleted from evaluation in the model intended for performance monitoring (figure 12), are indicated with an asterisk in table 2. Additional measurement point deletions for the rapid feedback evaluation model (figure 13) are marked with a double asterisk in table 2.

The models shown in figures 11, 12 and 13 include only evaluable program elements. Evaluable outcomes are measurable, compatible across partnership interests, plausible considering the logic and reality of the program and practical considering identified additional resource possibilities and the existing and expected agency resource limitations. It was possible to represent the program

TABLE 2

## EVALUABLE MODEL MEASUREMENT POINTS

Measure Point	Activity, Event Objective	Performance Indicator	Measure Data Source
9A **	Education/Employment Access	Number of persons hired from each of the following categories:	
		Women	yes
		Veterans	yes
		Underutilized Employees	yes
		Minorities	yes
		Handicapped	yes
		*Welfare	graduate survey
		*Tidewater residents/high schools	graduate survey
22	Apprentice Program Graduation	Tidewater Community College	yes
		Number of Graduates	yes
		Percentage of entering students who graduate	yes

TABLE 2-Continued

Measure Point	Activity, Event Objective	Performance Indicator	Measure Data Source
		Percentage of students who complete the academic program and graduate	yes
23a	Education/Employment Success  *same as 9a	Number of persons who successfully complete the apprentice program and are given permanent appointment as journeyman craftsmen in the categories from (9a above)	same as 9a above
		Percentage of (9a) categories of entering students who eventually receive permanent appointments	same as 9a above
		Percentage of (9a) categories of students who complete the academic program and receive permanent appointments	same as 9a above
23b	Skilled Journeyman Craftsmen	Total number of Journeymen in the workforce meets NNSY manpower needs	yes
24	<u>Employee Work Actions</u>		
	Quality work	Work is evaluated as high quality and there is a low incidence of rework	yes
	Low incidence of absence	Number of incidents	yes

TABLE 2-Continued

Measure Point	Activity, Event Objective	Performance Indicator	Measure Data Source
	Continuation of formal Education	Number of graduates who complete additional college work	yes TCC
	Selection for specialized training	Number of graduates who participate in specialized training	yes
25c **	Employee Retention	The number of apprentice graduates retained at NNSY as career employees	Yes, need agreement on time
25d	Career Advancement	The number of apprentice program graduates who hold WG 12-15, WS, WD, WL, or WN positions	yes
27	Training costs Recovered	Number of apprentice graduates retained 2 1/2 years	yes
28 * **	Training is Cost Effective	Cost to prepare a skilled journeyman (shipyard) as compared to other similar shipyards	Data to be gathered from other shipyards
29	NNSY meets manpower requirements	Trade/craft workforce necessary to meet commitments (see 30a and 30b)	30a and 30b
30a **	Number of journeymen meets need	Apprentice program graduates provide the shipyard with adequate numbers of journeymen	yes

TABLE 2-Continued

Measure Point	Activity, Event Objective	Performance Indicator	Measure Data Source
30b **	Number of workers qualified for technical leadership	WG 12-15, WS, WD, WL and WN positions filled without resorting to outside recruiting	yes
35a	Individual Social, Economic and Civil Status Enhanced	Income growth	yes
		Career advancement	yes
		*Lack of dependence on public assistance	graduate survey
		*Active in community and civic affairs	graduate survey
		*Perceived impact of apprentice program on personal growth	graduate survey
36	New training linkages established	Number of new training linkages established by Tidewater Community College	yes
37	Tidewater Community College/Local Industry Educational/Employment Access for area residents	Number of new students and "at-risk" students who are provided Education/Employment access through new and/or renewed training linkages in the Tidewater area	

using only evaluable elements without losing the logic of the program as a community development training linkage or as a traditional industry training program. The fact that program logic is clear with only evaluable elements included in the models, suggests that the elements that are critical to program logic are also critical evaluable elements. An evaluation using these models should meet the evaluation needs of the program managers and the program users.

#### Impact Assessment Model

Figure 11 is the most comprehensive evaluable model and would require the greatest allocation of resources. In addition to data that are currently available at Norfolk Naval Shipyard and Tidewater Community College, a survey of program graduates would be necessary to assess student impact. Data on journeyman training cost and retention at similar public and/or private shipyard apprentice programs would also need to be gathered to evaluate cost effectiveness. Figure 11 includes all of the expectations of all of the partners that can reasonably be measured considering existing limitations on resources and practically available measurement data. If the evaluable model shown in figure 11 were evaluated, program management could acquire significant approximations of program impact. Additionally, program cost effectiveness in relation to other public and/or private shipyard apprentice programs could be

obtained. Evaluation impact assessment would be limited to approximations of program impact because evaluation resources are limited and because there are few available research controls for conducting rigorous student outcome assessments. Even constructed controls would be impractical in an apprentice training linkage that is essentially the only available supply of journeymen and technical leaders. The fact that rigorous research methodology may not be practical for this training linkage, does not mean that useful approximations of program impact cannot be obtained. As indicated by Rossi, ". . . a good outcome measure is one which is feasible to measure, given the constraints of time and budget, and which is more or less directly related to the goals of the program."<sup>10</sup> Carefully conducted estimates of student change, over and above what could have been expected to occur without the program, is more than adequate to meet the indicated needs of the program managers and policy leaders. Estimates of program impact can be obtained by using a program graduate survey and measurement of performance indicators using existing data sources. Program cost is a major concern to industry. In the evaluable model, cost effectiveness is recommended over a cost benefit analysis primarily because that was the outcome requested by management as a measure of interest. It is also more appropriate in this case because the desired outcome of a skilled journeyman craftsman is a difficult benefit to monetize. It is even

more difficult to identify and monetize indirect and external benefits associated with this type of intervention.<sup>11</sup> A cost effectiveness study relates the achievement of program outcomes to the monetary value of the resources used to accomplish the outcome. This study would assess how cost for the cooperative training linkage compares to other program training arrangements that seek the same program outcome, a skilled journeyman craftsman. This is the most meaningful measure for program managers who will continue to run an apprentice program because no other supply of journeyman and technical leaders exist. Management simply desires to run the program in the most cost effective manner. Figure 11 indicates corresponding measurement points on table 2. Measurement and/or data sources indicated in table 2 include the assumption of data to be gathered in a survey of program graduates and program cost data to be gathered from corresponding shipyard apprentice programs. Data from the graduate survey and cost data from other programs do not exist in table 1, which display existing program reality.

Using figure 11 and table 2 as guides, an evaluator could measure Education and Employment Access (measurement point 3a) directly from available program data at NNSY or TCC for veterans, women, under-utilized employees, minorities and handicapped students who are admitted to the apprentice program. By using the graduate survey, the evaluator could determine access information on students

who were dependent on welfare transfer payments at the time of admission. This information was of specific interest to several community policy leaders. The graduate survey would also allow the evaluator to determine access to the apprentice program as a post-secondary educational alternative for graduates of area high schools. Measurement point 22, apprentice program graduation measures graduation statistics in terms of the number of graduates, the percentage of entering students and the percentage of students who complete the apprentice academic program at TCC. Measurement point 23a Education/Employment Success is a measurement of the numbers of persons in each category from measurement points 9a who achieve permanent civil service appointment status as a journeyman craftsman. The evaluator will again need to use the graduate survey to measure these data for prior welfare recipients and graduates of area high schools. Measurement point 23a is concerned, in addition to the total number of permanent appointments, with the percentages achieving permanent appointment in relation to Education/Employment Access (measurement point a). Measurement of percentage statistics for welfare recipients and Tidewater high school graduates will not be possible using the recommended model. The percentage outcomes are confounded because the number of participants in the graduate survey who indicate they are prior welfare recipients and graduates of area high schools will all have achieved education/employment

success. Therefore, the percentage of access and opportunity computed would necessarily yield an erroneous 100 percent success rate. Measurement point 23b, Skilled Journeyman provides a measure of the total journeymen available in relation to the actual need. The existing NNSY data base is adequate for this measurement. Measurement point 24, Employee Work Actions, measures a variety of desired employee behaviors. While it was not considered practical in this study to evaluate development of the various personal skills that were important desired student outcomes, management believes that development of these skills are necessary to achieving a demonstration of the desired employee work actions. The evaluator agrees that confirmation of appropriate work actions by the employee would lend indirect support to the development of an employee who was adaptable to change, knows how to learn, is able to think, analyze and make critical decisions, communicates effectively and needs little direct supervision. The Employee Work Action measurements recommended as evaluable includes:

1. The evaluation of work quality and the incidence of documented rework. The evaluator has some concerns about the level of subjectivity in these evaluations but NNSY trade superintendents have a great deal of faith in these evaluations
2. The number of disciplinary incidents
3. The number of tardy/absenteeism incidents

4. The number of graduates who complete additional college work
5. The number of graduates who participate in specialized training

Data on items two through five are available in the NNSY data base although the accuracy of the number of graduates who complete additional college work would be dependent on how faithfully the student had reported these activities. Also, acquiring these data would require retrieval from personnel records rather than a computer data base. Data on students who return to TidewaterCommunity College is readily accessible. Since most managers believe that apprentice program graduates who return to college initially return to Tidewater Community College, Tidewater Community College data should provide a valid approximation of these outcomes. Additional support for the use of the Tidewater Community College data included the desire by college officials to know how many apprentice graduates return to Tidewater Community College for additional college work. The evaluator recommends using the Tidewater Community College data base to estimate the number of students who complete additional college work.

Measurement point 25c, Employee Retention has measurement data readily available in the NNSY data base. The concern with this measurement is the lack of agreement on what constitutes adequate retention. The desire in this outcome is to create stable employment for the worker and

an experienced career workforce for the shipyard. With tenure considerations during work reductions at least partially based on longevity, retention time should be long enough to prevent lay-off from cyclical work reductions. On the other hand, some trade superintendents indicated that the learning curve had only begun with graduation from the apprentice program and that work with the tools-of-the-trade for six years or more may be necessary in some cases for a person to become a real craftsman. Cost recovery for the shipyard is based on two and one-half years of service after graduation. This evaluator recommends that if the evaluation is actually conducted, a retention time for this measure must be negotiated with program users. The evaluator senses that an agreement could be reached on a total retention time of approximately 7-10 years from the hire date. This period should encompass cost recovery, the learning curve and provide at least some insulation from workforce fluctuations.

Measurement point 25d, Career Advancement is concerned with the number of Apprentice graduates who hold WG 12-15, WS, WD, WL, or WN position in the shipyard. This data exists in the NNSY data base and is a desired employee history expansion item from the Employee Development code.

Measurement point 27, Training Costs Recovered, is an extension of the measure of employee retention and is concerned with retaining apprentice program graduates until they have repaid training costs with service (approximately

two and one-half years). These data are available in the NNSY data base and are a desired employee history expansion item for the Employee Development code. The evaluation concern with this measurement is that while it may measure cost recovery for the successful student, training costs incurred for the unsuccessful student are not addressed. The measurement should be conducted with this limitation in mind.

Measurement point 28, Training Cost is Effective, is an important impact in most public programs. Few persons argue with the desirability of program outcomes that aid the productivity of industry or result in the enhancement of the education and employment levels of student participants. However, both public policy leaders who fund public education and program management must be concerned with assuring that these outcomes are achieved in a cost effective manner. Cost effectiveness studies for this program could be conducted by gathering program cost and costing data from other Naval Shipyard apprentice programs that are governed by the same Department of the Navy guidance and agreements with the Department of Labor and Veterans Administration. These programs also seek a skilled journeymen as the primary outcome but may be involved in different linkages with outside educational resources or may conduct their own academic instruction. Cost effectiveness studies in relation to private shipyard apprentice programs was also indicated as a special

interest of program management. Equating the product of the program with private shipyard apprentice programs may be more difficult as most large private shipyards in the region are not tasked specifically for ship repair, overhaul and modernization. Therefore, there is some concern for the validity of cost effectiveness studies with private shipyards.

Measurement point 29, NNSY Meet Manpower Requirements, is concerned with assessing if the shipyard has the trade and craft workforce necessary to meet its commitments. Actual achievement of this outcome is dependent on the satisfactory measurement of Measurement points 30a and 30b which measures the number of journeymen in relation to need and the number of workers qualified for technical leadership. Data for these measures are readily available in the NNSY data base.

Measurement point 35a, Individual Economic, Social and Civic Status is Enhanced, is the primary indicator of program impact on the graduates. Measurement of estimated impact will use data from the existing NNSY data base and information gathered from the graduate survey. Economic indicators are available from existing wages and career advancement data, however, the students perception of economic and social status and civic involvement would depend on the graduate survey.

Measurement point 36, New Training Linkages Established, is the measure of a community development outcome

that theoretically would result from using the NNSY/TCC linkage as a model program. The measure would simply be the number of new training linkages established by Tidewater Community College. This information is readily available.

Measurement point 37, Tidewater Community College/ Local Industry, provides Educational Access for Area Residents, is a multi-dimensional expectation. It is an expected outcome of the NNSY/TCC linkage being used as a model program for marketing and is an input expectation for new open market training linkages which could begin a "Cycle of Opportunity" to help combat the more common "Cycle of Despair" created by lack of marketable skills and employment opportunity.

#### Performance Monitoring Model

A Performance Monitoring Evaluation using the alternate evaluable model shown in figure 12 could be conducted using the existing resources of Norfolk Naval Shipyard and Tidewater Community College.

The Employee Development code at NNSY is currently anticipating a gradual expansion of its performance monitoring activities in the monitoring of expected program outcomes. The code has an ongoing effort to expand its computerized employee history for apprentice program participants and graduates. Figure 12 could serve as a model for the gradual expansion of current performance

monitoring activities. Cooperation with Tidewater Community College in this effort is not anticipated to be a concern, considering the mutual interest in evaluation and the current level of cooperation.

Figure 12 is essentially the same as figure 11 with the exception that one measurement point and elements of several other measurement points are deleted as being not evaluable. Table 2 is keyed to figure 12. Measurement points or elements of measurement points on table 2 that are not appropriate for this model are indicated with an asterisk. Deleted outcomes are considered to be not evaluable because the activities of an outside evaluator who would collect the data for these measurement is deleted. Rather than repeating the discussion of figure 11, this discussion will be limited to those activities and measures that are deleted and the outcomes that are no longer evaluable.

The evaluation activities that would be conducted in an impact assessment using figure 11 that would not be considered in a performance monitoring evaluation using figure 12 includes the graduate survey to measure the student perception of program impact on social, economic and civic status, and the cost effectiveness study to determine if the NNSY/TCC linkages is cost effective in comparison to similar programs. Deletion of the cost effectiveness study resulted in the cost effectiveness being deleted as an evaluable program outcome (measurement

point 28) on the alternate program model figure 12. Deletion of the graduate survey does not delete any measurement points however, it does change the measures available at several measurement points. The measurement changes include the loss of evaluable measures of graduates from Tidewater area high schools and prior welfare recipients as a category of interest in the "at-risk" population. All other categories in the "at-risk" population, veterans, women, minorities, handicapped and underutilized employees remain evaluable. The most significant change is that rather than measurement point 35a being a measure of the graduates perception a program impact on social, economic and civic status, measurement point 35a will monitor income growth and career advancement as an indicator of desired change.

#### Rapid Feedback Model

Figure 13 is an alternate evaluable model that could be evaluated as a means of providing management with a rapid feedback of program performance on critical outcome expectations. The data gathered from an evaluation of this model will allow management to make an informed decision of the need for additional evaluation sequences. Management could decide that the rapid feedback evaluation provides adequate program performance information. In this case, the decision would likely be made to not initiate any additional evaluation sequences. Management could decide,

based on rapid feedback information, that they should gradually integrate the performance monitoring model into their existing evaluation program or they could decide that an impact study was needed.

Figure 13 is keyed to table 2. The measurement points on table 2 that are not a part of the Rapid Feedback Model are indicated with a double asterisk.

Evaluation using figure 13 would provide Norfolk Naval Shipyard with critical statistics on apprentice program graduation, the recovery of training costs through at least minimal employee retention and the degree to which it meets its technical workforce requirement. Community development interests would have access to the important Education/Employment success statistics that are critical to the evaluation needs of policy leaders and the urban community college.

#### Additional Evaluation Question

The additional evaluation question addressed outcomes of the evaluability assessment that are separate from establishing the expectations of the program partners and establishment of an evaluable model of the program to be used in future program evaluations.

The additional evaluation question is: What important secondary impacts will likely result from the conduct of this study? The most significant secondary impact of conducting this evaluability assessment is increased

understanding and knowledge concerning the concept of community development training alliances in general and the Norfolk Naval Shipyard/Tidewater Community College partnership in particular. Discussions in addition to the structured interview became a learning experience from some of the interview participants. Typical of this impact included a better understanding by interview participants that the training linkage represents a substantial investment by the Commonwealth of Virginia in addition to the contracted training price paid by industry. This understanding included a new recognition that this investment is based on the assumption of mutual benefit to industry, area residents and the community. Related to this outcome is the important information provided to the community college that there is virtually unanimous support among public policy leaders for direct community college involvement in training linkages with industry. Most of these leaders wanted community college officials to expand their efforts to work directly with industry. Some leaders who indicated their support for these linkages had not been aware of the linkage between NNSY and TCC and indicated that knowledge of the linkage had enhanced their positive perception of the community college. An additional secondary outcome is the opportunity presented to improve interagency understanding by reviewing the summary of all of the documented agency expectations and perceptions of program expectations across program management levels. For example, some

managers may not recognize that promotion of the economy is a documented expectation of their agency while other management levels may not understand the degree of support for strong academic instruction at the trade management level. Interagency understanding is in addition to the important expectations that the study will result in an increased recognition and appreciation for the special needs of the diverse partners to community development. The most important secondary impact and perhaps the most important result of this study is that program operation is already changing to an acceptance of the concept of a community development training alliance rather than as simply an industrial training program with the community college providing the contracted services. Perception of the program as a community development training alliance will provide focus for program improvement activities. Improvement in program performance as a community development training alliance can be enhanced in the immediate future by addressing the information needs identified in the study and by communicating the expectations identified as part of Evaluation Question I to all of the partners. Initiation of enhanced information systems and an understanding of the expectations of others will allow the program to operate as a unified program with clearly identified expectations that are, in fact, universally accepted by all of the partners rather than a series of loosely linked individual programs. Chapter Six will

address specific recommendations for implementing program improvement activities.

## ENDNOTES

<sup>1</sup>Wholey, Evaluation: Promise and Performance, p. 71.

<sup>2</sup>Interview with Mr. Jack L. Morrell, Apprentice Program Administrator, Norfolk Naval Shipyard, Portsmouth, Virginia, 24 June 1986.

<sup>3</sup>Ibid.

<sup>4</sup>Evaluation Planning at the National Institute of Mental Health: A Case Study, cited by Joseph S. Wholey, Evaluation: Promise and Performance (Washington: The Urban Institute, 1973), p. 23.

<sup>5</sup>Wholey, Evaluation: Promise and Performance, p. 63.

<sup>6</sup>Interview with Mr. Leonard M. Peddy, Group Superintendent, Norfolk Naval Shipyard, Portsmouth, Virginia, 25 June 1986.

<sup>7</sup>Interview with Mr. Eugene B. Shull, Group Superintendent, Norfolk Naval Shipyard, Portsmouth, Virginia, 27 June 1986.

<sup>8</sup>Interview with Mr. Luther T. Messick, Group Superintendent, Norfolk Naval Shipyard, Portsmouth, Virginia, 26 June 1986.

<sup>9</sup>Evaluation Planning at the National Institute of Mental Health cited in Wholey, p. 23.

<sup>10</sup>Rossi, Freeman and Wright, Evaluation: A Systematic Approach, p. 166.

<sup>11</sup>Ibid. p. 248.

## CHAPTER VI

### CONCLUSIONS AND RECOMMENDATIONS

#### Overview

The current political climate strongly supports open market solutions to the urban problems of manpower training and retraining, employment and education access and success, and economic development. Training alliances established in the open market between the urban community college and local industry may be a practical resource for meeting these needs.<sup>1</sup> Before community college/industry alliances can be actively promoted, their utility as a community development tool must be demonstrated.

The current study documents, within a single unified evaluable model, all of the important program outcomes and information needs of all of the partnership elements who have a vested interest in an open market training alliance between Norfolk Naval Shipyard and Tidewater Community College in the Tidewater area of Virginia.

Documenting the expectations of the program partners and development of evaluable models of the program demonstrates that it is realistic to conceptualize and model the program as a unified community development training alliance. The program expectations of both industry and

the community are compatible with each other and in many cases they are identical or parallel. All of the desired outcomes of the program partners that are shown in the evaluable models were considered to be plausible expectations considering the actual program activities that were being conducted. The activities and outcomes shown in the evaluable models are measurable, with data or data sources available both to indicate achievement and to verify achievement.

The process of identifying the expectations of the program partners and of conceptualizing and modeling the program as a unified community development training alliance established new levels of understanding both across partnership lines and within existing organizations. The evaluability assessment also identified needed information links between the various partners with a program interest.

Evaluation utilizing the unified models can be conducted with minimal additional resource allocations. Evaluation models are available for purchasing sequentially more comprehensive evaluation efforts that will provide all partners with the information they need for important program decisions and possible promotion of similar alliances as a community development resource.

The conduct of this study narrows a significant evaluation research gap concerning community college/industry training alliances. No other available study

documents and describes the expectations and information needs of all of the partnership elements in an urban community college/industry training alliance. No other available study demonstrates that a unified evaluable model of these alliances can be developed that will allow the simultaneous evaluation of the important evaluable outcomes of all of the program partners.

The conclusions and recommendations provided in this chapter apply specifically to the NNSY/TCC training linkage; however, application of methodology, findings and information system recommendations may apply in broad settings. The view of many community policy leaders and some industry leaders concerning training linkages and industrial training needs has wide application to other industrial training programs. The proposed concept of visualizing open market educational training linkages with industry as unified community development alliances between industry and the broader community applies universally.

The format for this chapter will be to present the major conclusions of the evaluability assessment as they relate to identified outcomes, information needs and the evaluable models. The conclusions section of the chapter will be followed by the evaluator's recommendations for program improvement and program evaluation. The final topic of the chapter will discuss the concerns and plans associated with the presentation of evaluation information to policy makers and program managers.

### Conclusions

The long term program expectations, desired student outcome objectives and performance indicators identified in this study suggest that a substantial degree of consensus exists between industry and community development interests. Many of the long term program expectations and desired student outcomes are identified as appropriate to both partners. While determining consensus was not a planned element of this study and no attempt was made to measure the degree of consensus, the fact that the partners share many common expectations suggests that a mutually beneficial training alliance is a practical and logical expectation.

Desired student outcomes and long term program expectations differ across partnership interests primarily in the degree of emphasis on various outcomes rather than actually having substantially different expectations. The shipyard, for example, is primarily concerned with acquiring the manpower it needs to remain competitive in the ship repair business and insure a strong national defense. In the process of strengthening national defense the shipyard has been able to offer educational and employment access, and success to a substantial "at-risk" population who may have previously been subjected to reduced opportunity in education and the workforce. For the community development partner, educational access, and success were of primary concern. These desired student outcomes were viewed as

leading to the enhancement of the economy and positive community development while assisting Norfolk Naval Shipyard in meeting their manpower requirements. Most important student outcomes of the partners were determined to be evaluable with appropriate performance measures and data sources identified.

Almost unanimously, community policy leaders were most interested in evaluating education/ employment student outcomes, shipyard outcomes that would promote stability and growth and the number of new training linkages that were established by the community college. Achievement of these objectives were viewed as promoting new educational/ employment options for area citizens and the economic health of the Tidewater area. There was virtually no expressed interest in conducting economic impact assessments other than industrial expansion associated with new training linkages.

Norfolk Naval Shipyard is most interested in measuring those critical student outcomes that indicate achievement of their identified manpower goals. In addition to evaluating critical manpower requirements needed to meet their ship repair commitments, NNSY is interested in evaluating their success in recovering training costs through service and in measuring the cost effectiveness of their apprentice training program.

## Information Needs

Most of the industrial and community leaders involved in this study were satisfied with the current information system. The information system for the actual conduct of the training linkage by the operational managers is structured and meets the needs of both Tidewater Community College and Norfolk Naval Shipyard. Most of the upper level managers and policy leaders indicate that their information on specific community development training linkages is adequate and tends to be informal. Others who were not aware of the NNSY/TCC linkage and some who were aware of the program suggested that the community college should assume the responsibility for increased public relations to inform both the community and industry of an important and largely unknown service resource. The most structured information need was identified with the economic development officials at both the state and local levels. These officials would like to see a brief report initiated at the Virginia Community College System level and/or at the local level that indicated training linkages established, the length of the training provided, the number of students trained and a contact person at the college who could provide additional program information. The broad consensus of industrial and community leaders was that the community college should assume responsibility for meeting additional information needs in the community and should establish any reasonable system that would promote

the use of cooperative training linkages. The need to increase public awareness of services available was also identified to Tidewater Community College in the recent Self-Study report. The college has placed increased emphasis on public information concerning services to industry. However, college administration indicates that these efforts are constrained by budget and appropriate limitations on efforts that could be considered to be advertisement of services rather than public information.

#### Evaluable Program Models

Three evaluable models of the Norfolk Naval Shipyard/Tidewater Community College Training linkages were established. The most comprehensive of the models includes all of the expectations of all of the partners that are evaluable. The most comprehensive model is shown in Figure 11. Evaluation using this model would require the greatest allocation of resources and would have impact assessment as the evaluation objective. Evaluation using this model would require the services of one outside evaluator to conduct a graduate survey to estimate student impact and to gather measurement data from other shipyard apprentice programs to conduct a cost effectiveness study.

Figure 12 is an alternative evaluable program model that includes all of the evaluable expectations that could be assessed without using the services of an outside evaluator to conduct and analyze a program graduate survey

and conduct a cost effectiveness study. An evaluation using this model could be conducted with the planned future resources of the two partners. Some redirection of resources might be required and an expansion of the current employee history would be necessary to initiate evaluations using this model. While it would not be possible to assess program impact using this model, an evaluation using this model would be appropriate to monitor program performance in relation to the important evaluable program expectations and student outcomes identified in this study. This model would not assess cost effectiveness in relation to other similar public and private shipyard apprentice programs, however, it would allow the shipyard to determine if their expenditures on training were being recovered through service. Performance monitoring of program outcomes could be gradually integrated into current performance monitoring activities of input and process goals.

Figure 13 is an alternative evaluable model that includes only critical program expectations of the industrial and community partners. Program evaluations using this model could be conducted using existing resources and would provide a rapid feedback of evaluation information. After completion of the rapid feedback evaluation, program managers could have the data necessary to facilitate decisions on the need for additional evaluation sequences.

Recommendations

1. Ensure that all policy makers and program managers are aware of the program objectives of all of the other partners in the training alliance. Clarify to all partners that, while there was a high degree of agreement on program objectives, the degree of emphasis on various objectives varied substantially. Particular emphasis in discussing identified outcome objectives with program management should be placed on clarifying inter-organizational expectations and the expectations identified at the various organizational levels. The industrial partner should be made aware that all partners placed significant emphasis on meeting the unique needs of industry as an important program objective.

2. The Virginia Community College system should consider initiating a cyclical report on community college/industry training linkages across the Commonwealth of Virginia. The report should be concise and provide:

- A. The college and the industry involved in the linkage
- B. The length of the training program
- C. The number of students trained
- D. The college contact person for the training alliance

3. Tidewater Community College should consider initiating a cyclical report similar to the report recommended for the community college system that would be

distributed locally. A possible alternative in the local setting would be to coordinate a local report of industry/education linkages through the Tidewater Consortium of Higher Education or other similar regional support agency. Management briefings at Tidewater Community College concerning the results of the evaluability assessment will include discussion of information system enhancement.

4. Norfolk Naval Shipyard should expand their available data on apprentice program graduates by establishing a formal dialogue between the Employee Development office and the Production Department training offices in the various shops.

5. Norfolk Naval Shipyard in cooperation with Tidewater Community College should initiate a Rapid Feedback evaluation using the alternate evaluable model shown in Figure 13. After completion of this study, management will have the data needed to determine if a full scale impact assessment using an outside evaluator is indicated, or if the more appropriate evaluation option would be to gradually integrate the performance monitoring model suggested in Figure 12 into current evaluation efforts. If the rapid feedback evaluation confirms that management is achieving all of the critical program objectives, it may be decided that no further outcome evaluation is needed as the current emphasis on continual evaluation and modification to program input and process activities appears to produce the desired results. This

evaluator recommends the gradual integration of the performance monitoring model into the current evaluation program. Integration of this model would begin with the outcomes indicated in the Rapid Feedback model.

#### Presentation of Evaluation Information

All of the policy leaders and program managers who participated in this study need to be made aware of the results of the evaluability assessment. According to Wholey, presentation of evaluation information to policy leaders and program managers presents two unique problems. For evaluation information to reach the policy level, Wholey suggests

Widespread dissemination of evaluation findings will be required. Any number of techniques may be used, including briefings, large scale mailings of evaluation summaries, press conferences, letters and articles in newspapers or magazines. Often, the information will come to policy-makers second or third-hand, through professional journals and newsletters read by staff assistants.<sup>2</sup>

For evaluation information to reach the proper levels of program management, Wholey suggests that it is necessary to brief the program managers and policy makers with major responsibility for the program. The purpose of the briefing would be to present the findings and recommendations of the evaluability assessment and assist management in translating evaluability assessment recommendations into decisions that would result in initiation of recommended actions. According to Wholey, it could take up to three months to properly brief six to twelve managers.<sup>3</sup>

The first major effort in presenting the results of new evaluability assessment will be aimed primarily at the policy market, but will also serve to alert program managers to the findings of the study.

All of the policy makers who participated in this study will be provided with a summary of the findings and recommendations of the evaluability assessment. Because of obvious resource constraints in this study, the other dissemination techniques listed as possibilities for the policy market are not planned. Some of the other dissemination activities could eventually become a reality as a by-product of the summary. Some policy makers indicated an intent for further utilization/promotion of the concept of a "Unified Community Development Model" if this study indicated that such a model were a practical reality and a usable concept. Any future policy market dissemination activities in addition to providing a summary are not included in the formal activities of this evaluability assessment. It is anticipated that the summary will be effective in reaching the desired policy-makers audience as over ninety percent of all of the public policy makers who participated in this study made the effort to overtly initiate a written request for a summary of the results of this study.

Program managers will be briefed on the results of the evaluability assessment at scheduled agency meetings at Tidewater Community College and Norfolk Naval Shipyard.

The evaluator has made arrangements for specific meetings to present evaluability assessment information to the President of Tidewater Community and his staff at a regularly scheduled staff meeting, to the Provost of the Frederick Campus of Tidewater Community College and her staff at a regularly scheduled staff meeting and the Norfolk Naval Shipyard managers and training specialists at a meeting scheduled by the Director of Employee Development.

## ENDNOTES

<sup>1</sup>Moser, "Business-Industry Linkage with Post-Secondary Institutions," pp. 4-28.

<sup>2</sup>Wholey, Evaluation: Promise and Performance, p. 201.

<sup>3</sup>Ibid., p. 200.

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## APPENDIX 1

### PROPOSED INTERVIEW GUIDES

## I. Strategic/Policy Level Managers and Planners

1. In your judgment, what are the objectives of the NNSY Apprentice Program as a Community Development Training Alliance?
2. What would you consider acceptable measures/evidence of progress toward those objectives?
  - a. What are the priorities from a community development perspective?
  - b. What are the desired student outcomes?
  - c. What specific information do you need to evaluate progress and/or program success?
3. What mechanisms exist to support achievement of these objectives?
4. Why do you think that the activities of the program will cause progress toward desired program objectives?
5. What are the most serious difficulties facing the NNSY program in meeting its community development objectives?
6. Is the NNSY program information system adequate for your needs?
7. How do you get the community development program performance information that you need?
8. How satisfied are you with this information?
9. How do you use this information?
10. What would you like to learn from an evaluation of this program?

## II. Operational Managers/Direct Product Users

1. What are your objectives for the Apprentice Program?
2. What mechanisms exist to (staff activities, etc.) achieve those objectives?
3. What evidence is necessary to see whether objectives are met? Is this evidence collected?

4. What happens if objectives are met? Not met?
5. How is the Apprentice Program related to local priorities?
6. What data or records are maintained?
7. How often are these data collected?
8. What is the accuracy of these data?
9. How is this information used? Does anything change based on these data or records?
10. What major problems are you experiencing?

Interview guides are adapted from "Guide For Interview With Local Project Staff" presented by Joseph H. Wholey in Evaluation: Promise and Performance, p. 68.

## APPENDIX 2

### SAMPLE INTERVIEW REQUEST


**TIDEWATER COMMUNITY COLLEGE**

Portsmouth, Virginia 23703

**DISTRICT OFFICE**

(804) 484-2121

May 29, 1986

Mr. Julian F. Hirst, Manager  
 City of Norfolk  
 City Hall  
 Norfolk, Virginia 23501

Dear Mr. Hirst:

Mr. Dick Witte, Associate Professor/Counselor at Tidewater Community College is completing a dissertation as part of his Ph.D. program at Old Dominion University. The focus of the study will be to establish evaluation criteria for community/economic development training linkages between the community college and industry. Mr. Witte will use the apprentice training partnership between Tidewater Community College and Norfolk Naval Shipyard as a case study. This training partnership is often cited as one of the most successful long term linkages within the Commonwealth of Virginia.

Research for this study calls for interviews with key officials from federal, state and local government, representatives from the community college system, and industry leaders.

Mr. Witte will be contacting your office to schedule an appointment. He and I would greatly appreciate it if you could take the time from your busy schedule to share your views on the important subject of promoting community development through linkages between education and industry.

Sincerely,

  
 George Pass  
 President

tf

CHESAPEAKE

NORFOLK

PORTSMOUTH

VIRGINIA BEACH

## APPENDIX 3

### SAMPLE THANK-YOU LETTER

October 6, 1986

Captain P. H. Fenton  
Production Officer  
(Code 300) Building 1500  
Norfolk Naval Shipyard  
Portsmouth, Virginia 23709

Dear Captain Fenton:

I would like to take this opportunity to express my appreciation for your participation in my dissertation study. Your interview provided me with valuable insight for use in my study of Community College training linkages with industry.

Hopefully, this study will clarify the objectives, expectations and information needs of the diverse public and private leadership who have an interest in the training alliance between Tidewater Community College and the Norfolk Naval Shipyard Apprentice Program.

As a part-time student/full-time faculty member, my pace of progress on this project is not always ideal. However, if you desire, I will be glad to provide a brief summary for your use.

I sincerely appreciate you taking time from your busy schedule to share your views.

Very Respectfully,

Richard E. Witte  
Associate Professor

-----  
PLEASE RETURN THIS REQUEST TO:

Tidewater Community College  
Frederick Campus  
Counseling Center  
Portsmouth, Virginia 23703  
ATTENTION: Dick Witte

I would like to receive a summary of your study of the Norfolk Naval Shipyard Apprentice Program/Tidewater Community College study when it is complete.

Please forward a summary of your study to:

## **APPENDIX 4**

### **EXECUTIVE SUMMARY**

Training alliances established in the open market between the urban community college and industry is considered to be a significantly underutilized resource. An important element in underutilization may be based on a failure to conceptualize and evaluate these programs as a unified community development training alliance between local industry, the urban community and the public policy makers who fund, operate and manage public community colleges. The current political climate strongly supports open market solutions to the problems of both the urban community and local industry.

If the concept of evaluable community development training alliances can be validated, a significant resource can be promoted to meet a broad spectrum of community development concerns including: education and employment access, economic development and cost effective industrial training and retraining.

The current study documents the important information needs and program outcomes for the open market training alliance between Norfolk Naval Shipyard and Tidewater Community College in the Tidewater area of Virginia. This study also establishes evaluable models of the program and makes recommendations for program improvement and future evaluation.

Documenting the expectations of the program partners and developing evaluable models of the program demonstrate that it is realistic to conceptualize and model the program

as a unified community development training alliance. The program expectations of both industry and the community are compatible with each other and in many cases they are identical or parallel. All of the desired outcomes of the program partners that are shown in the evaluable models were considered to be plausible expectations considering the actual program activities that were being conducted. The activities and outcomes shown in the evaluable models are measurable, with data or data sources available both to indicate achievement and to verify achievement.

Evaluation utilizing the unified models can be conducted with minimal additional resource allocations. The evaluation models provide for progressively more comprehensive evaluation options that will provide all partners with the depth of evaluation information that is needed and is practical.

#### Identified Outcomes

The long term program expectations and desired student outcome objectives identified in this study suggest that a substantial degree of consensus exists between industry and community development interests. Many of the long term program expectations and desired student outcomes are identified as appropriate to both partners. While determining consensus was not a part of this study and no attempt was made to measure the degree of consensus, the fact that the partners share many common expectations

suggests that a mutually beneficial training alliance is a practical and logical expectation. Desired student outcomes and long term program expectations differ across partnership interests primarily in the degree of emphasis on various outcomes rather than actually having substantially different expectations. Identified program outcomes, including an indication of the partner associated with the outcome, are included as an appendix to this summary.

Almost unanimously, community policy leaders were most interested in evaluating education/employment student outcomes, Norfolk Naval Shipyard outcomes that would promote stability and growth and the number of new training linkages that were established by the community college. Achievement of these objectives were viewed as promoting new educational/employment options for area citizens and the economic health of the Tidewater area. There was virtually no expressed interest in conducting economic impact assessments other than industrial expansion associated with new training linkages. Norfolk Naval Shipyard, on the other hand, is most interested in measuring those critical student outcomes that indicate achievement of their identified manpower goals. In addition to evaluating critical manpower requirements needed to meet their ship repair commitments, NNSY is interested in evaluating their success in recovering training costs through service and in measuring the cost

effectiveness of their apprentice training program.

### Information Needs

Most of the industrial and community leaders involved in this study were satisfied with the current information system. The information system for the actual conduct of the training linkage by the operational managers is structured and meets the needs of both Tidewater Community College and Norfolk Naval Shipyard. Most of the upper level managers and policy leaders indicate that their information on specific community development training linkages is adequate and tends to be informal. Others who were not aware of the NNSY/TCC linkage and some who were aware of the program suggested that the community college assume responsibility for increased public relations to inform both the community and industry of an important and largely unknown service resource. The most structured information need was identified with economic development officials at both the state and local levels. These officials would like to see a brief report initiated at the Virginia Community College System level and/or at the local level that indicated training linkages established, the length of the training provided, the number of students trained and a contact person at the college who could provide additional program information.

### Evaluable Program Models

An overview of evaluable models and three evaluable

program models of the Norfolk Naval Shipyard/Tidewater Community College Training linkages were established. The models and a table listing measurement points and data sources is included in the appendix to this summary. The most comprehensive of the models includes all of the expectations of all of the partners that are evaluable. This model is the impact assessment model. Evaluation using this model would require the greatest allocation of resources and would have impact assessment as the evaluation objective. Evaluation using the impact model would require the services of one outside evaluator to conduct a graduate survey to estimate student impact and to gather measurement data from other shipyard apprentice programs to conduct a cost effectiveness study.

An alternate evaluable program model is provided that includes all of the evaluable expectations that could be assessed without using the services of an outside evaluator to conduct and analyze a program graduate survey and conduct a cost effectiveness study. This model is the performance monitoring model. An evaluation using this model could be conducted with the planned future resources of the two partners. Some redirection of resources might be required and an expansion of the current employee history would be necessary to initiate evaluations using this alternate model. While it would not be possible to assess program impact using this model, an evaluation using this model would be appropriate to monitor program

performance in relation to the important evaluable program expectations and student outcomes identified in this study. This model would not assess cost effectiveness in relation to other similar public and private shipyard apprentice programs, however, it would allow the shipyard to determine if their expenditures on training were being recovered through service. Performance monitoring of program outcomes could be gradually integrated into current performance monitoring activities of input and process goals.

An alternative evaluable model is also provided that includes only critical program expectations of the industrial and community partners. This model is the rapid feedback model. Program evaluations using this model could be conducted using existing resources and would provide a rapid feedback of evaluation information. After completion of the rapid feedback evaluation, program managers could have the data necessary to facilitate decisions on the need for additional evaluation sequences.

#### Recommendations

1. Norfolk Naval Shipyard in cooperation with Tidewater Community College should initiate a rapid feedback evaluation using the alternate rapid feedback evaluable model. After completion of this study, management will have the data needed to determine if a full scale impact assessment using

an outside evaluator is indicated, or if the more appropriate evaluation option would be to gradually integrate the performance monitoring model into current evaluation efforts. This evaluator recommends the gradual integration of the performance monitoring model into the current evaluation program. Integration of this model would begin with the outcomes indicated in the rapid feedback model

2. The Virginia Community College should consider initiating a cyclical report on community college/industry training linkages across the Commonwealth of Virginia. The report should be very concise and should simply provide:
  - A. The college and the industry involved in the linkage
  - B. The length of the training program
  - C. The number of students trained
  - D. The college contact person for the training alliance
3. Tidewater Community College should investigate options for local training linkage information distribution

### Results

The results of the evaluability assessment identified several important considerations that are related to

community college and industry alliances:

1. Community development policy leaders strongly support direct community college involvement with industry
2. A significant level of consensus on program expectations exists with virtually all expectations being compatible across partnership interests
3. Conceptualizing this training linkage within unified evaluable program models that includes all important, compatible, plausible, and measurable expectations of the program partners is a practical means of demonstrating program reality and evaluation options
4. Evaluation utilizing the program models will provide the program partners with the information needed to assess program viability and improve program performance
5. Progressively more comprehensive evaluation options makes outcome evaluation a practical and realistic concept
6. A significant factor in low utilization of community college/industry training linkages is based on a lack of information and/or misinformation.

## APPENDIX 5

### INITIAL PROPOSAL

APPRENTICE SCHOOL  
NORFOLK NAVAL SHIPYARD12410  
180.1-00538

06 JUN 1985

## MEMORANDUM

From: Code 180.1  
To: Code 150  
Via: Code 180

Subj: DOCTORAL DISSERTATION OF RICHARD E. WITTE

Encl: (1) Ltr from R. E. Witte dtd 7 May 1985

1. I am forwarding a letter and brief dissertation proposal submitted by Mr. Richard E. Witte, a PH.D. candidate at Old Dominion University.
2. The proposed dissertation will evaluate the long term employee development that results from the Norfolk Naval Shipyard Apprentice Program, as an example of a community economic development partnership between the urban community college and industry.
3. The dissertation will compare a sample group of apprentice graduates who began academic training in 1976 to a comparison group of non-apprentice workers hired during the period of apprentice training period. The planned criteria for evaluating the groups will be wage scale, advancement within shop crafts, advancement to line supervisory positions, assignment to selected technical positions, retention in federal employment and participation in continuing education activities. The evaluation will also use a multi-variate analysis to determine predictors of employee success associated with age, race, sex, and initial educational level.
4. The research proposed by Mr. Witte will require access to training records and personnel files to obtain age, race, sex, educational level, hire date, entry level, and current employment status. Continuing education data will be obtained by comparing social security numbers to Tidewater Community College files. Mr. Witte understands that any information released must conform to the privacy act and has indicated that he will cooperate in any manner necessary to maintain confidentiality.
5. I have had prior positive relationships with Urban Services Ph.D. students from ODU and particularly with Mr. Witte as the ICC counselor for Norfolk Naval Shipyard apprentices since 1978. I strongly recommend that we cooperate with Mr. Witte in this project and suggest that the evaluation will provide Norfolk Naval Shipyard with valuable employee development information.
6. Mr. Witte has received formal approval from Tidewater Community College in this project. He will need a short letter from Norfolk Naval Shipyard acknowledging support for the evaluation and the availability of access to needed information in order to receive permission from Old Dominion University to conduct the evaluation as a dissertation project.

  
E. J. ALM



TIDEWATER COMMUNITY COLLEGE  
STATE ROUTE 135  
(804) 484-2121

DISTRICT OFFICE  
PORTSMOUTH, VIRGINIA  
23703

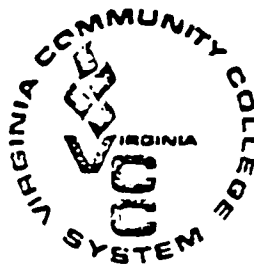
## M E M O R A N D U M

TO: Dick Witte, Counselor, Frederick Campus  
FROM: Bob Grymes, <sup>H</sup>Dean-Instructional and Student Services  
DATE: May 24, 1985  
RE: Dissertation Study

I enjoyed meeting with you on May 8, 1985 to discuss your proposal to study the effects of the training provided by Tidewater Community College through the Norfolk Naval Shipyard's apprenticeship program on employee success. As I mentioned at that time, the topic is an interesting one and should provide information which would be of value to Tidewater Community College. It would be of importance to know just how successful the training provided through the apprenticeship program is to the future success of those apprentices who participate.

I am, therefore, supportive of your efforts to conduct the study and you may accept this memorandum as my endorsement of your proposal. Please let me know if I may be of further assistance to you in your endeavors.

RJG,jr/ar



CHESAPEAKE

NORFOLK

PORTSMOUTH

VIRGINIA BEACH

## AUTOBIOGRAPHY

The author was born in Beeville, Texas, on December 9, 1938. The author graduated from Pensacola Junior College, Pensacola, Florida, May 1971 with an A.A. degree. The author graduated Summa cum laude from the University of Southern Mississippi in May 1964 with a B.S. degree. The author received an M.S. in Education from Southern Illinois University in December, 1976.

The author has held positions as an electronics technician, technical instructor, program manager and counselor. Since 1978 the author has been employed by Tidewater Community College in Portsmouth, Virginia. While employed at Tidewater Community College, the author helped to establish one of the first Employee Assistance programs in the Tidewater area of Virginia and is currently serving as a professional counselor with the rank of Associate Professor.

The author attended Pensacola Junior College as a scholarship student in the U.S. Navy Associate Degree Completion Program and has achieved honors recognition in all prior degree programs.

The author is active in professional organizations. The author currently serves on the Executive Council of the Virginia College Personnel Association and on the Student Services Commission of the Virginia Community College Association.