MARINE TECHNOLOGY
INITIAL ASSESSMENT

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MARINE TECHNOLOGY
EXECUTIVE SUMMARY

This report represents an initial assessment of the proposed Marine Technology program. Important facts identified in this study include:

Background

- Marine Technology prepares students for employment as marine mechanics.
- Training includes diesel engine repair, marine electrical systems, welding, fiberglass repair, and fuel, cooling and exhaust systems repair.
- The abundance of lakes and marinas in Oakland County indicate a potential job market.
- Current research on the subject of Marine Technology is inconclusive.

Occupational Outlook

- Occupational information related to marine mechanics is listed under small engine repair.
- An inexperienced mechanic has the potential to earn between $160 and $220 per week while an experienced mechanic has the potential to earn between $240 and $400 per week.
- Employment trends are expected to remain strong over the next ten years.
- A preliminary survey of boat dealers indicated a need for a local training site.

Educational Opportunities

- Mid-America Vocational Curriculum Consortium, Stillwater Oklahoma developed an instructor's manual for small engine repair which focuses on outboard engines.
- Anne Arundel Community College and Chesapeake College plan to initiate a curriculum in maritime trades.
- Wayne County Community College offer two courses in outboard motor repair through their small engine repair program.

- Florida Keys Community College has an extensive program in Marine Technology covering all aspects of boat repair and maintenance.

- Mercury Marine runs factory training schools for mechanic certification in Canada, California, Florida, Minnesota and Wisconsin.

Recommendations

- Conduct a market analysis including marina owners, boat dealers and boat storage companies to determine employment needs and projected market outlook.

- Assess the Marine Technology program at Florida Keys Community College in terms of enrollment and placement rates.

- Compare market conditions between Florida Keys Community College service area and Oakland Community College's service area.

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OVERVIEW

Introduction

The purpose of this report is to assess whether there is enough evidence to justify further inquiry into the establishment of a Marine Technology program at Oakland Community College (OCC). For the purposes of this report, Marine Technology refers to the recreational boating industry. Such programs train people to become marine mechanics and deck engineers. The intent of such a program is to meet the needs of the recreational boating industry and residents in the district who own boats, thereby upholding the stated mission and goals of the college.

Initiated by William J. O'Mahoney, Dean of Academic Services, this initial assessment involved an examination of the appropriate literature, an analysis of the Michigan Occupational Information System (MOIS) and a review of related community college programs in the United States. In addition, information was obtained from five recreational vehicle companies in Michigan regarding their employment and training needs.

Background

The proposed program in Marine Technology is expected to prepare students for employment as marine mechanics. Training would include developing skills in diesel engine repair, marine electrical systems, basic welding, diagnosis and repair of fuel, cooling and exhaust systems, fiberglass construction and maintenance procedures as well as general business skills.

Due to the abundance of lakes and marinas in Oakland County and neighboring counties, it is felt that there is a potential job market for trained individuals in Marine Technology. In the Detroit Metropolitan Yellow Pages there are over seventy-five boat dealers and twenty-five marinas and/or boat storage companies listed. Some marina owners have expressed the need for trained workers to repair and maintain their clients' recreational vehicles which include boats, jet skis and snow mobiles.

The MOIS database information did not directly refer to marine technology careers, however information was obtained under small engine repair mechanics. Under this heading, outboard motor mechanic is listed as an occupational specialty.

LITERATURE REVIEW

A computerized search of the literature focused on Marine Technology and the need for formal training in the industry. In addition, the literature on the recreational boating industry, as it relates to growth and expansion, was explored. Most of the literature referring to marine vehicle repair was found under the heading "small engine repair", therefore, the search was conducted under that heading.

An instructor's manual for small engine repair which focuses on outboard engines was developed by Mid-America Vocational Curriculum Consortium in Stillwater, Oklahoma. The curriculum guide includes information on the repair of all two and four stroke cycle engines (Hires, 1977). There are four sections to the guide: orientation, basic small engine theory, electrical system and engine service with supplementary manuals for outboard motors.

In addition, Anne Arundel Community College and Chesapeake College plan to initiate a curriculum in maritime trades with classes scheduled to begin by 1990 (The Publick Enterprise, 1989). The curriculum will range from an introduction to the Boatyard to Marine Mathematics and Blueprints. Classes will be conducted on campus

and at marina sites. Topics to be covered at marinas include hauling, winterizing, rigging and fiberglass repair.

There are approximately 60 public marinas along the Great Lakes. By 1990, the state of Michigan expects to provide $2 million a year for new marinas and dockside services under the Harbor Development Program (Detroit Free Press, 1989). Most new marinas will be located near Detroit, Saginaw, Muskegon and other Lake Michigan ports. In addition, Michigan has the largest number of registered recreational boats in the United States (Almquist, 1987).

Locally, Macomb Community College undertook a needs study in the field of marine management (Almquist, 1987). A telephone survey was conducted of forty potential employers of marine managers in Macomb County and neighboring counties of Oakland, St. Clair and Wayne. Findings indicated that approximately 67% of marinas employ marine managers, but in the past, the field has been dominated by "Mom and Pop" operations. Furthermore, most owners currently hire employees through an informal network. According to the Macomb study, future hiring trends were inconclusive because of the difficulty in prediction of short-term economic conditions. However, 82% of respondents indicated an increasing need in the industry for more professionally prepared managers and 80% indicated that they encourage current employees to participate in a professional development program if available.

OCCUPATIONAL OUTLOOK

Utilizing the Michigan Occupational Information System (MOIS) a search was conducted of related occupations in Marine Technology, recreational vehicle repair and propulsion engine repair. Information on occupations in Marine Technology as it relates to boat repair was listed under small engine repair, (MOIS #300). Other related occupations under MOIS were investigated, but did not yield further information related to marinas and boats.

MOIS information did indicate however, that in 1985 there were an estimated 1,900 small engine repairers employed in Michigan with approximately 60% working in urban areas. Demand is expected to remain strong based on an increasing market in recreational vehicles which include boats, motorcycles and snowmobiles, as well as the need to maintain equipment such as snow blowers and lawn mowers. According to MOIS data there is a demand for routine maintenance on these devices which has a positive impact on the job market.

Earnings and advancement in the industry depend on the employer and experience of the mechanic. The national weekly wage in 1988 was between $200 and $599. By 1990, an inexperienced Michigan mechanic is expected to earn between $160 and $220 per week. Experienced mechanics have the potential to earn between $240 and $400 per week. Table 1 reflects the current 1990 employment levels for the top five regions in Michigan as well as projected levels in 1995.

TABLE 1
EMPLOYMENT OUTLOOK FOR SMALL ENGINE REPAIR

Area	# Employed 1985*	1995	% Growth
Statewide	1,900	2,200	15.8
Detroit	525	610	16.1
Kent	225	277	22.9
Ottawa-Allegen	175	216	23.3
N.W. Lower Peninsula	175	205	17
Saginaw-Bay-Midland	100	123	23.2

Source: Taken from MOIS transcript 300
* Rounded

A preliminary telephone survey of five boat dealers provided information regarding employment and training for the Detroit Metropolitan area. The boat dealers contacted were: Acme Boat Company-Ferndale, Action Marine-Dearborn Heights, K & N Boats-Redford, Gregory Boat Co.-Detroit, and Wonderland Marine-Detroit. All five dealers indicated that, on average, they employ five mechanics while K & M Boats currently employs eleven mechanics. Each dealer stated that they send their mechanics out of state for skill enhancement and certification. The training site used most often is Mercury Marine in Fond du Lac, Wisconsin. Furthermore, all five dealers indicated that there is a need for a local training site and they would rather utilize a local site than send their mechanics out of state for such training. Although Mercury Marine may not allow certification training to take place at sites other than their own factories, there is a potential need for marine mechanic training locally. Mechanics are required to have some basic training prior to attending the certification program at Mercury.

EDUCATIONAL OPPORTUNITIES

An examination of similar programs at other institutions in Michigan identified two colleges that offer limited training in the field and one college who may start a program in 1990. There is only one true degree program in Marine Technology which is located in Florida. In addition, Mercury Marine operates factory service schools in various locations.

Wayne County Community College, through their small engine repair program, currently offers two courses in outboard motor repair. Lansing Community College's diesel repair program also includes a course covering boat repair. Benton Harbor Community College is planning to introduce a Marine Technology curriculum in 1990 or 1991.

Only Florida Keys Community College has an extensive program in Marine Technology which covers all aspects of boat repair and maintenance. The curriculum provides students with an Associates in Applied Science in Marine Technology.

Mercury Marine operates certification training for mechanics of authorized dealerships from October through April. In order for dealerships to maintain their upgrade privileges and warranties, their mechanics must be factory certified. Mechanics must initially attend a two week class covering outboard motors and cruisers. A year later, they become certified after attending an additional one week seminar. Classes provide specific training on Mercury products and general skill enhancement. Mechanics must have prior mechanical training before attending. After the initial certification, mechanics must return every two years for one week to maintain their certification. In April, Mercury Marine offers training for mechanics connected with technical colleges and the government. Mercury Marine operates their factory service schools in California, Canada, Florida, Maine, Minnesota and Wisconsin where factories are located. Certification training is provided at no cost to the dealers or trainees. The only expenses incurred are travel and lodging.

SUMMARY

There was very little literature regarding this relatively new and potentially growing industry. The abundance of lakes in Southeast Michigan indicates a market for employees trained in boat repair. Employment numbers cited in this report are higher for the Detroit area. There are more mechanics employed in the Detroit area, however, the growth potential within the next ten years is not as high as such areas as Ottawa-Allegen and Saginaw-Bay-Midland.

Businesses that sell recreational boats and other motorized water vehicles hire mechanics. Local employers indicate that to maintain their factory warranties and upgrades, they must send their mechanics to Florida and Wisconsin for certification training.

A survey of marina owners, boat dealers and boat storage companies is recommended to determine the employment needs and projected market outlook of the industry. In addition, it is suggested that the program at Florida Keys Community College be further studied. Specifically, the program should be examined in terms of

enrollment and placement rates while considering differences in market conditions between the service areas of Florida Keys Community College and that of Oakland Community College.

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