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Monterey, California

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ASSESSMENT AND EVALUATION OF THE EMPLOYMENT OF THE MIDSHIPMAN INFORMATION SYSTEM (MIDS) AS A PERFORMANCE MEASUREMENT TOOL BY COMPANY OFFICERS AT THE UNITED STATES NAVAL ACADEMY

by

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June 2001

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The findings of this research allow the United States Naval Academy in general and the Company Officer specifically to more fully understand the importance of performance measurement in continually improving the development of midshipmen.

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ASSESSMENT AND EVALUATION OF THE EMPLOYMENT OF THE MIDSHIPMAN INFORMATION SYSTEM (MIDS) AS A PERFORMANCE MEASUREMENT TOOL BY COMPANY OFFICERS AT THE UNITED STATES NAVAL ACADEMY

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This research first examines the use of the Midshipmen Information System (MIDS) by faculty, staff and midshipmen as a performance measurement tool at the United States Naval Academy. Specifically, this project examines how Company Officers use MIDS to measure the performance and development of the midshipmen over time, what metrics they believe are important to midshipmen development, how current MIDS functionality meets the needs of end users and recommendations for improvement of the overall system. Research includes interviews of faculty, staff and midshipmen on their use of MIDS, an online survey given to all Company Officers and a detailed analysis of current performance measurement models in use today. Once this data was collected, a system capability analysis of MIDS and the WebIntelligence ad-hoc query software was completed. These results are included in an appendix that can be used by all Company Officers as a training guide to ensure more effective use of their time.

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I. INTRODUCTION

A. BACKGROUND

The United States Naval Academy (USNA) is a unique institution in that its primary mission is to develop midshipmen morally, mentally and physically. This mission is to provide graduates with the assets they will need to excel as officers in the United States Navy and Marine Corps. In order to know if the Academy is accomplishing this mission, a performance measurement tool must exist to ensure that each midshipman is performing at the required level. Many of the faculty and staff at the Naval Academy, specifically Company Officers, utilize the Midshipmen Information System (MIDS) as the primary source in obtaining quantitative performance measurement data used in tracking the development of midshipmen.

W. Edwards Deming introduced performance measurement as a new management technique in the 1950's. Historically, organizations measured their performance by financial status and not by any type of internal measurements, which limited their ability to analyze actual performance of the organization. The introduction of performance measurement gave managers and leaders the flexibility to endure new customer demands of better, faster and cheaper outputs (Frost, 2000). The success of performance measurement in the private sector prompted the U.S. government to create the Government Performance and Results Act of 1993 (Balanced Scorecard, 2001).

The Government Performance Results Act (GPRA) of 1993 was developed from an increased concern by taxpayers for more efficiency and effectiveness within

governmental organizations (GPRA, 1993). The act specifically established the requirement for all governmental organizations to set performance goals and define the level of performance needed to achieve these goals. The United States Naval Academy must adhere to the guiding principles of the GPRA because it is an agency under the Department of the Navy (Larges, 2000).

When Deming pioneered the idea of performance measurement in the 1950's, leaders in the management field began extensively studying the art of performance measurement, and many new models have been introduced. Two of the models that have had significant impact on the public sector are the Balanced Scorecard (2000) and the Measurement Linkage Model (Chang & DeYoung, 1995). A third approach to performance measurement is Frost's Strategy-Based Performance Management Model (2000). This model offers a more simplistic view of performance measurement and incorporates a more thorough explanation of the relationship between management and leadership.

The United States Naval Academy has always had some type of performance measurement tool available for Company Officers to use in conducting their job. Recently, the Midshipman Information System was brought online as the official midshipmen database system. The system was designed to enable faculty, staff, and midshipmen to have access to all types of performance based information of midshipmen. Being able to utilize and measure this information is key to the success of Company Officers specifically and the Academy in general. After all, continuing to improve on the development of graduates at the Academy is paramount to a successful future.

Recently, Leadership Education and Development (LEAD) graduate students have conducted three separate studies. The studies have examined the performance measurement at the Academy and developed software in an attempt to give Company Officers the best performance measurement tools to enable them to succeed and fully understand their responsibilities at the Academy. These studies have attempted to be a catalyst in introducing the leaders of the Academy to the importance of performance measurement and the understanding that if an organization wants to improve then it must measure performance and overall improvement on a continuous basis (Chang and DeYoung, 1995).

Performance measurement is a necessary tool for each Company Officer. It will enable them to be successful in developing midshipmen to the standards set by the Academy. For this to occur, Company Officers must fully understand the system, which they were meant to use. They must know the baseline of where they are to start in this development process. They must be given direction as to how the development is to take place, and they should be given a clear mission and strategy for success.

B. OBJECTIVES/PURPOSE

The purpose of this research is to examine the use of the currently deployed Midshipmen Information System (MIDS) by Company Officers towards performance measurement. The goal of all of this is to maximize the usefulness and efficiency of MIDS as a performance measurement tool. This will improve the effectiveness of Company Officers in dealing with midshipmen data, thereby allowing them more time for personal interaction with midshipmen. As a part of this overall goal, this thesis

should be the next step in a continuous process of evaluating and improving performance measurement at USNA as a whole and the MIDS system in particular.

The three principal parts of this research are a determination of which metrics for performance measurement are appropriate for Company Officers to use, an assessment of the capability of MIDS to measure these metrics, and an evaluation of the extent Company Officers actually use MIDS to track these metrics. Comparing the results of these three parts will lead to recommendations for improving the training, documentation, and design of MIDS as well as determining future areas of study in performance measurement.

The first objective of this thesis is to review previous research in the area of performance measurement in the public sector in general and at the United States Naval Academy in particular. Second, this research will use stakeholder interviews and a survey of Company Officers to analyze how they currently measure performance of midshipmen utilizing MIDS and how well the system and its supporting training and documentation support their needs. From the results of these two portions, a list of performance metrics will be developed. Finally, the existence and availability of data in MIDS to support tracking these metrics will be evaluated. Using these results, improvements to MIDS itself and its supporting training and documentation systems will be proposed in order to make it more useful and accessible to the Company Officer.

This is a continuing effort to assess the Midshipmen Information System and how information is applied to midshipmen development. Once complete, this study will assist the Naval Academy in improving the development of midshipmen by ensuring that the

performance measurement tools used by the faculty and staff have a direct impact on the mission.

C. BENEFITS OF STUDY

This study will enhance the performance measurement tools available to the USNA Company Officer directly and provide the foundation for an ongoing process of improvement in this area. The increased use of LEAD program resources to study performance measurement will reduce the strain on the Naval Academy administration. This will assist them in continuing to provide faculty and staff with cutting edge tools in the development of midshipmen while building a positive relationship between the Naval Academy and the Naval Postgraduate School. By analyzing the current knowledge base associated with the Midshipmen Information System, Academy administration can offer concentrated training to LEAD program students prior to their shift to the Company Officer role. The result of this training will be a more efficient access to data, reducing the time required for this function and increasing the time available for other leadership functions.

D. RESEARCH QUESTIONS

The fundamental question that this research aims to answer is *"How can Company Officers at the United States Naval Academy utilize MIDS to its fullest capability as a performance measurement tool for the development of midshipmen?"* The following supplemental research questions detail how specifically various portions of this research support answering the primary research question.

1. What prior research has been conducted on using management information systems as performance measurement tools at the United States Naval Academy? What were the relevant conclusions of this research?
2. What lessons learned and best practices are there in the area of performance measurement in the public sector? How can these be applied to performance measurement at the United States Naval Academy?
3. How is MIDS currently being used by Company Officers in measuring performance of midshipman?
4. How well does the current MIDS training and documentation support Company Officer needs? What improvements can be made in these areas?
5. What performance metrics do Company Officers consider important to the overall development of midshipmen?
6. Is the data for these performance metrics present in MIDS? Can it be accessed by the Company Officers in an efficient and useful form?

The first two questions will be addressed in the literature review portion of this thesis. Questions three, four, and five will be the focus of the interview and survey portions. The final question will be addressed in the MIDS system capability analysis.

E. SCOPE AND METHODOLOGY

Scope of this research is limited to quantifiable performance measures used by Company Officers, and is primarily focused on the use of MIDS for measuring midshipmen on individual and group performance. The scope will include: (1) a review of previous research in the areas of performance measurement in general and

performance measurement tools at the United States Naval Academy in particular, (2) an evaluation of the current use of MIDS by Company Officers for performance measurement, (3) an assessment of the capability of MIDS to measure the metrics that Company Officers consider important. The research will conclude with recommendations for various enhancements such as training, documentation, and query design. Also, recommendations will be made for further research and implications for the continual improvement of performance measurements and performance measurement tools at the United States Naval Academy.

The methodology used in this research will consist of the following steps:

1. Conduct a thorough literature search of books, journals, Naval Academy instructions relevant to the application of performance measurement.
2. Conduct group interviews consisting of Company Officers, a Battalion Officer, Commandant's Staff and their midshipmen counterparts. Topics will include how Company Officers use MIDS, ideas for improvement of MIDS and the knowledge level of these stakeholders about MIDS.
3. Conduct a survey of Company Officers to determine how they measure the performance of their midshipmen and how they use MIDS as a tool to that end.
4. Analyze data collected from interview sessions, survey, and MIDS usage data from the system itself.
5. Develop a list of performance measurement indicators that Company Officers can use in measuring their midshipmen.

6. Analyze the MIDS system for the presence of data required to measure these indicators and how accessible this information is to Company Officers.
7. Develop recommendations for improving the documentation, training, and design of the MIDS system.

F. ORGANIZATION OF STUDY

This study is divided into five chapters, and includes two appendices. This first chapter, the introduction, describes some of the goals and reasoning underlying the research, the benefits that are hoped to be gained from it, and provides an overview of the entire project.

Chapter II includes a review of the previous research in the area of performance measurement at USNA, a brief overview of three general models of performance measurement, and a brief description of the use of management information systems for performance measurement by Company Officers, including a description of the current MIDS system.

Specifics of the research methodologies used in this study are described in Chapter III. It explains the protocols used in conducting stakeholder interviews, the methods used in developing and administering the survey to Company Officers, and the procedures used in conducting the MIDS system capability analysis.

Chapter IV reports the results of the research described in the prior chapter. In the first portion of this chapter, major themes and important findings from the interviews are presented and results of the survey are examined. The second portion of the chapter details the conduct and results of the MIDS system capability analysis.

Chapter V concludes the research by summarizing the important conclusions derived from the previous chapters. It outlines suggestions for improving the application of MIDS by Company Officers for performance measurement, particularly in the areas of module design, training, and documentation. Finally, recommendation for future research are presented.

The appendices contains supporting information important to understanding the research. Appendix A consists of the Company Officer survey and its results. Appendix B is the procedural guide for Company Officers produced during the MIDS system capability analysis.

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II. LITERATURE REVIEW

A. INTRODUCTION

W. Edwards Deming introduced performance measurement as a new management technique in the 1950's. Historically, organizations measured their performance by financial status and not by any type of internal measurements. These companies were limited in their ability to collect data, see performance baselines and targets or obtain feedback. Financial status was uncomplicated and easily recognized. Performance measurement gave managers and leaders the flexibility to endure new customer demands of better, faster and cheaper outputs (Frost, 2000). The success of performance measurement in the private sector prompted the U.S. government to create the Government Performance and Results Act of 1993 (Balanced Scorecard, 2001).

The Government Performance and Results Act (GPRA) of 1993 was developed from an increased concern by taxpayers for efficiency and effectiveness inside governmental organizations. This act found "waste and inefficiency in Federal programs that undermine the confidence of the American people in the Government..." (GPRA, 1993). The act specifically established the requirement for all governmental organizations to set performance goals and define the level of performance needed to achieve the goals. The act also required performance goals to be objective, quantifiable and measurable. To set these goals, each organization is required to submit a strategic plan. Stakeholder's desires drive the development of the strategic plan. Finally, the plan is required to cover how these goals are measured.

This chapter examines current trends in performance measurement geared toward public sector organizations and why they have become important to their success. It will discuss the use of these practices in the public sector and specifically how the current practices are in use by Company Officers at the United States Naval Academy. The chapter will summarize the findings of three previously written theses in the area of performance measurement as applied by Company Officers at the United States Naval Academy. Finally, this chapter examines the Midshipmen Information System, which is the performance measurement tool used by Company Officers in the development of midshipmen.

B. PERFORMANCE MEASUREMENT

Numerous performance measurement models exist that can be used to improve the performance of both private and public organizations. It is however more difficult to distinguish performance results in the public arena since these organizations gauge success from their mission rather than a financial statement. This section covers four main areas. The first subsection is a review of current strategies on performance measurement in the public arena. The second discusses historical and current application of information technology to performance measurement at the United States Naval Academy. The third subsection will review previous theses written in this area, discuss the models used in the research and briefly look at the metrics this research found important to midshipmen development. The final subsection discusses the Midshipmen Information System currently in use by Company Officers for measuring the performance of midshipmen.

1. Current Performance Measurement Models

Since Deming pioneered the idea of performance measurement in the 1950's, leaders in the management field have introduced numerous performance measurement models. Private organizations have realized that by collecting and analyzing the correct data they can affect their financial and overall status both internally and externally. The Government Performance and Results Act of 1993 institutionalized performance measurement for government organizations and required organizations to create strategic plans and measure performance in completing the mission (Boone, Hagen, & Utroska, 1999). Two of the models that have had significant impact on the public sector are the Balanced Scorecard (2001a) and the Measurement Linkage Model (Chang & DeYoung, 1995). A third approach to performance measurement is Frost's Strategy-Based Performance Management Model (Frost, 2000). This model offers a more simplistic view of performance measurement and incorporates a more thorough explanation of the relationship between management and leadership. This subsection will address each of these models as they present an exciting approach to performance measurement in public organizations and namely the United States Naval Academy.

a. Balanced Scorecard

Drs. Robert Kaplan and David Norton developed the Balanced Scorecard in the early 1990's. This new concept gave organizations a clear understanding of what they should be measuring in their organization "in order to 'balance' the financial perspective" (Balanced Scorecard, 2001a, p. 1). Traditionally, organizations only looked at the financial dimension. The Balanced Scorecard approach is multidimensional. In both the private and public sector the idea is the same—accomplishing goals means producing an output faster and cheaper. In the public sector, specifically, taxpayers are

the customer and suppliers. The taxpayer's money plays a large part in the strategy and mission that exists in public organizations. To obtain these goals, the organization must measure all aspects within the organization and not limit its focus to the final output. This model directs organizations to look at four different perspectives: (1) learning and growth, (2) the business process, (3) customer, and (4) financial. The management system centers these perspectives around the organization's strategy and vision. Analysis of the strategic plan allows organizations to create metrics to measure performance within the four areas of the organization. The Balanced Scorecard model is Figure II-1.

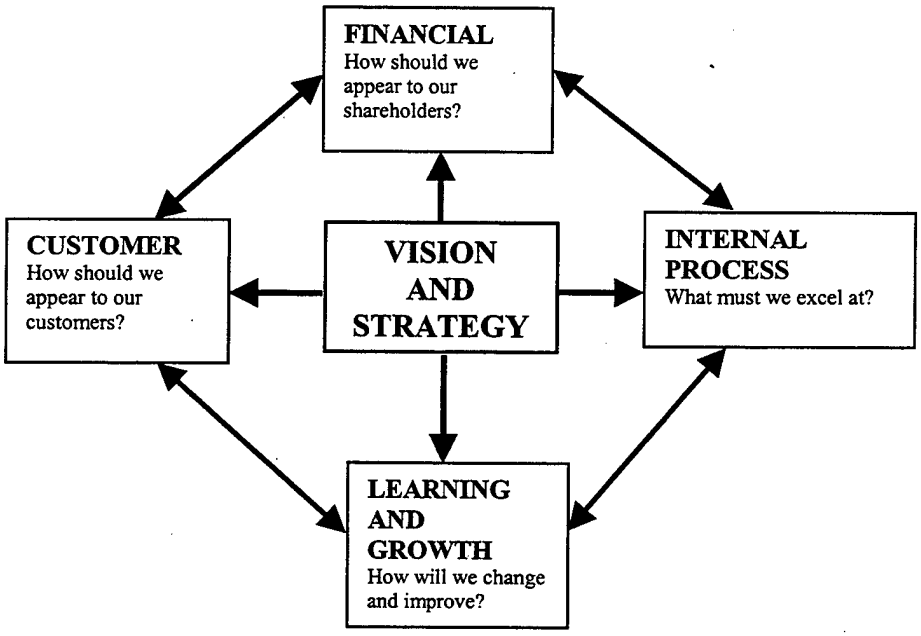

Figure II-1: Balanced Scorecard Model (After: Balanced Scorecard, 2001a)

The organization identifies metrics from the strategic plan. A method is created to transform information into numerical data. The company utilizes an information data system to collect, display and analyze the information. According to Kaplan and Norton, this information has the ability to provide: (1) current status of an organization from a variety of perspectives, (2) feedback for continuous improvements,

(3) feedback on performance measurement methods and what metrics are beneficial to track, and (4) inputs for forecasting models for decision support systems (Balanced Scorecard, 2001b).

b. Measurement Linkage Model

Chang and DeYoung (1995) designed the Measurement Linkage Model to assist work groups of an organization in creating and implementing a performance measurement system. The basic concept is organizations "...must continually improve the quality and productivity of our products and services to stay ahead of the competition" (p. 5). Chang and DeYoung state that organizations can effectively improve only that which they can effectively measure. The model consists of eight steps that guide the work group through an improvement plan from development to implementation and outcome. These steps allow work groups to link their performance measurements to that of the larger organization through key result areas (KRA's) and key result indicators (KRI's). As outcomes are achieved, the work groups analyze their own performance measurements and the organization monitors its overall performance. Feedback allows the organization to reassess what it is measuring and adjust for continuous improvement. The Measurement Linkage Model is shown in Figure II-2.

Chang and DeYoung (1995) identify three critical reasons why organizations should measure improvement. The first reason is to provide focus, direction, and a common understanding. A well-designed and executed strategic plan and organizational vision will focus the organization on what to measure. The second is to provide knowledge for making better decisions. Understanding the process of the organization allows improvements. Having access to good data allows managers to make

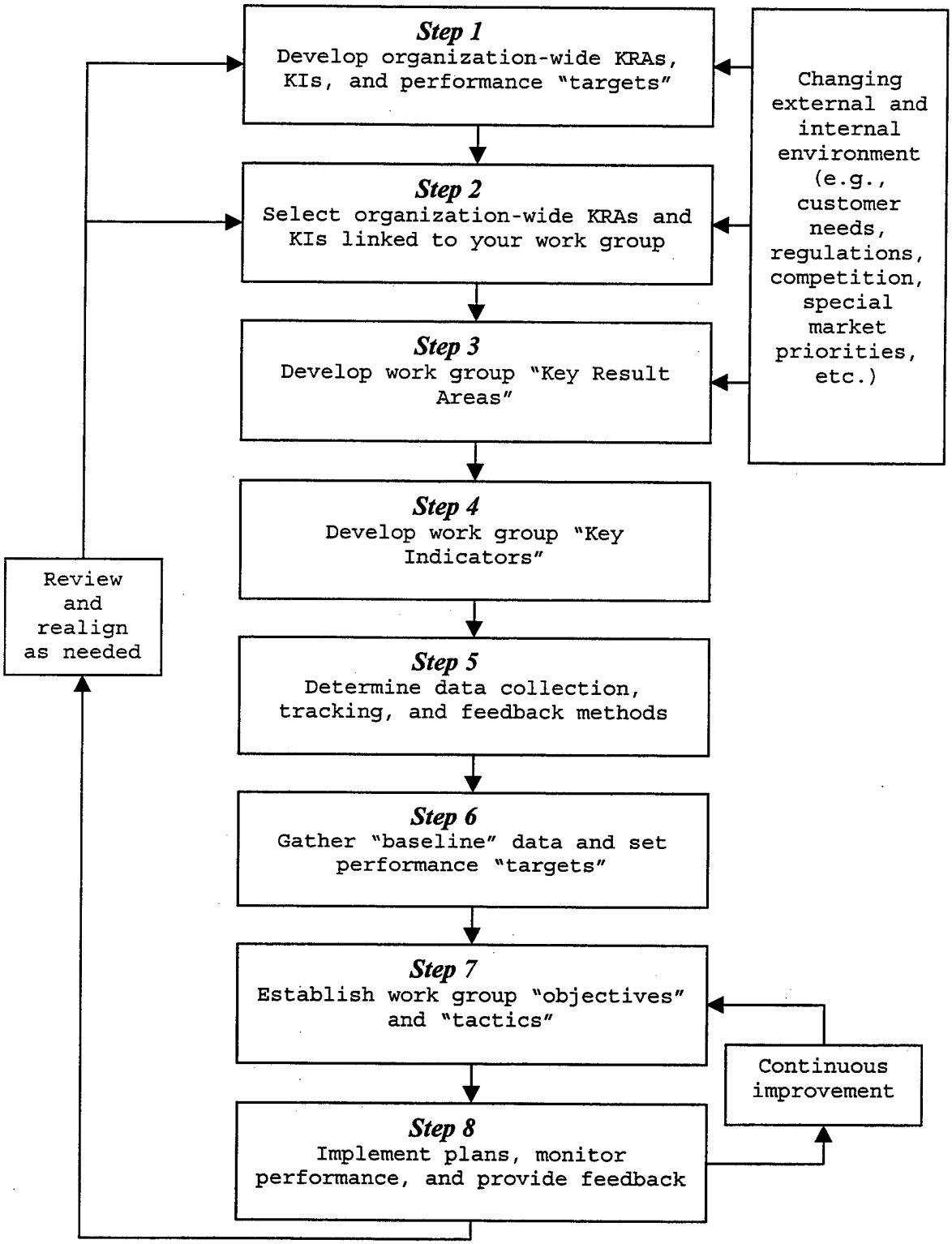

Figure II-2: Measurement Linkage Model (From: Chang and DeYoung, 1995, p. 16)

good decisions. Having too much data or an inability to transform data into information can result in "information overload" (Boone, et. al., 1999). Harbour stated, "Increasingly, companies are moving from management by opinion to management by fact." (1997, p. 8) Having access to good data is allowing this to occur and having a successful performance measurement system in place provides this data. The final reason organizations should measure performance is to provide feedback on organizational improvement efforts. Without obtaining data, an organization will be unable to identify improvements in their processes. This data gives a snapshot status of where an organization is and how far it has to go.

Following these three reasons on why to measure, Chang and DeYoung produced ten strategies for a successful performance measurement system (1995, pp. 8-10).

1. A system should provide information-rich data that is "actionable."
2. A system should contain a masterful blend of both efficiency and effectiveness indicators.
3. A system should include measures that focus on accomplishment, reward-oriented categories.
4. A system should not measure A and hope for B.
5. Measures should be easy to understand.
6. Managers or employees should be accountable for measurement accuracy and results.
7. A work group should only be accountable for measures over which they have control.

8. Measurement information should be analyzed and acted upon in a timely manner.
9. Measures should be cost-effective to collect.

A measurement system should focus on continuous improvement, rather than just compliance and control.

Chang and DeYoung (1995) developed the Measurement Linkage Model to ease the measurement process and aid organizations in the improvement process. It starts with a clear understanding of the organization direction followed by the development of metrics on what performance areas to measure. The next step identifies starting points and performance targets. Once these targets are known, the work groups set objectives to reach the targets. Finally, the work groups analyze the collected data, provide feedback and adjust for a continuous improvement process.

c. Strategy-Based Performance Measurement

Frost (2000) developed the Strategy-Based Performance Management model for two reasons: (1) to provide managers a practical approach to performance measurement and give them the ability to decipher data into usable information and (2) to explain how leadership plays an important part in deciding what metrics to collect with regard to the strategies and goals of the organization. Frost used the analogy that old metrics, primarily financial measures, were "...more like a rearview mirror than a windshield or a steering wheel" (2000, p. 7). Now, leaders understand that an organization's strategic plan is the "steering wheel" and that metrics developed from this plan are the key to success.

Frost (2000) identified four vital roles that metrics play in the activities of a leader. These roles are reporting performance, making decisions, implementing strategy, and improving performance.

In reporting performance, metrics allow the leader to fully understand the value of the measurements and guarantee employees receive full credit for the goals and missions they have accomplished. To accomplish this task, leaders must remember three key items; graphs, which are easily recognized and understood, consistency with measurement definitions, and comparatives that allow the organization to gauge itself against another organization.

Opinion-based decision making in management is no longer a viable option in today's fast paced, technology driven economy. Having the right information extracted from the metrics being tracked allows the leader to practice fact-based management by utilizing hard numbers to measure current performance and to set desired performance levels (Harbour, 1997).

The leader within an organization has the responsibility of implementing strategy and ensuring that employees fully understand the mission and goals of the organization. Developing metrics that will properly align and direct activities of the employees can assure success in all areas.

"You can't improve, what you can't (or don't) measure." (Harbour, 1997, p. 1) The only way to guarantee what you are doing as a leader is correct is to start from a baseline and measure the outcome. Metrics supply information to the leader that enables him to get the job done. The Strategy-Based Performance Management Model is shown in Figure II-3.

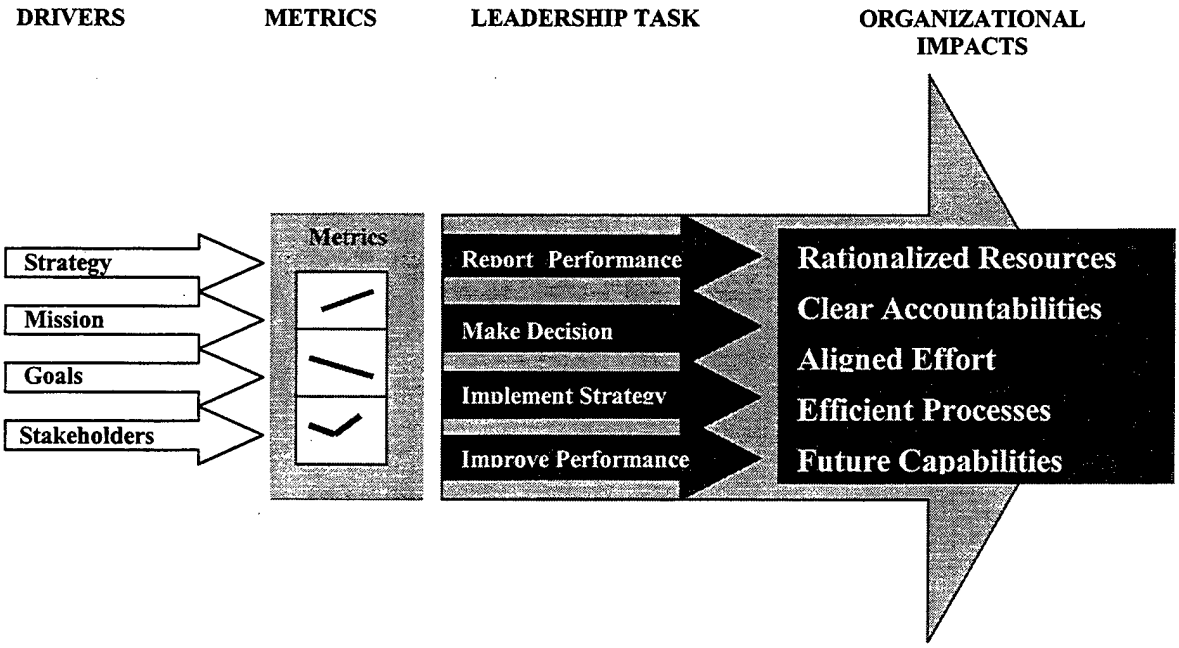

Figure II-3: Strategy-Based Performance Management Model (From: Frost, 2000, p. 81)

Deciding what measures to track can be the most important decision organizations make. Frost (2000, pp. 28-33) identified three areas that should be examined when deciding on these metrics and the following four "drivers" behind the creation of these metrics:

1. Strategy
2. Mission
3. Goals
4. Stakeholders

The four drivers can be divided into two areas. Strategy, mission and goals make up the first and stakeholders make up the second area. The metrics identified must correspond to where the organization wants to go and how it wants to get there. The ideas for metrics come primarily from an organization's strategy; however, "Because strategy documentation sometimes does not capture all that is important, you'll also want

to check your mission and goals as additional sources" (Frost, 2000, p. 28). For example, one initiative in the United States Naval Academy's strategic plan is to support "the ethical development of current and future leaders at the Naval Academy, the Navy, Marine Corps, Department of Defense and beyond" (USNA, 2000, p. 1). Add to this, the Academy's overall mission is:

> To develop midshipmen morally, mentally and physically and to imbue them with the highest ideals of duty, honor and loyalty in order to provide graduates who are dedicated to a career of naval service and have potential for future development in mind and character to assume the highest responsibilities of command, citizenship and government (USNA, 2001a, p. 1).

These examples elicit a number of areas that could be measured to track how the Academy is doing in developing midshipmen.

Stakeholders are the second area of concern for choosing what metrics to track. This group can have a large impact on the organization, especially in the public arena. When basing success on the mission and not on financial outcome, public organizations can find it difficult to identify stakeholders, decide what is important to each, and select the metrics from this information. For example, it is difficult to identify stakeholders at the United States Naval Academy. This list can include: taxpayers, congress, U.S. Navy and Marine Corps, midshipmen, and midshipmen's parents. By identifying stakeholders, organizations have the ability to develop strategy and subsequently identify the metrics to promote success.

"Major failures in business come not so much from unmet goals, as from lack of response to unforeseen changes." (O.L. Duff in Frost, 2000, p. 33). When dealing "snoozing alligators" the final area of concern, it is very important for leaders to understand that the strategic plan or mission may not hold everything that is important to

the organization. At the United States Naval Academy, the environment is continually changing. New leaders, such as the Superintendent and the Commandant of Midshipmen, continue to update the goals of their subordinates and this can be one example of why it is important to be on watch for the "snoozing alligator".

Once metrics are identified and the processes in place to track them, leaders and managers have the ability to perform the four key roles outlined earlier. Performing these roles, the leaders can affect the organization in the following five areas:

1. Rationalized resources allow the organization to understand the scope of its capabilities.
2. Clear accountabilities ensure goals are set, employees understand job descriptions, performance measurements are reviewed and rewards are presented.
3. Aligning effort behind a structurally sound strategic plan will ensure people are working on things that matter to the success of the organization.
4. Efficient processes ensure the people get the job done the cheapest, fastest, and best way possible.
5. Future capabilities are destined for success when leaders and managers continue to evaluate the strategic plan and performance measurements (Frost, 2000, pp. 35-52).

Dr. Frost designed the strategy-base performance management model for executives and managers attempting to improve their organization with the latest in performance management. He places great emphasis on the importance of metrics and

leadership. Not only should these metrics present good data, but also the leaders should be able to use the information extracted from the data to improve the performance of the entire organization.

d. Summary of Models

The three models addressed show the importance strategic planning, goal setting, and stakeholder involvement in identifying metrics and making informed fact-based decisions. The Balanced Scorecard and Measurement Linkage Model were included for two distinct reasons. The first is that both models have been successfully used in previous studies to create a more complete understanding of performance measurement at the Naval Academy. The second reason is both models comply with the directives introduced by the Government Performance and Results Act and they provide clear guidance for improving the overall performance of public organizations. The Strategy Based Performance Measurement Model was included because it incorporates leadership as an integral part of the model and leadership is a crucial part of a Company Officer's job at the Naval Academy.

2. Performance Measurement Application at USNA

Performance measurement has always existed at the United States Naval Academy. In order to rank each midshipman, the Academy has regularly collected performance data. From the data, Company Officers obtain information that allows them to make informed decisions. The signing of the Government Performance Results Act (GPRA) and studies completed by the National Partnership for Reinventing Government made performance measurement mandatory and required the public sector to recognize and abide by the same performance measurement and management standards as their civilian counterparts (Larges, 2000). Two performance management applications have

been created that allow the United States Naval Academy to collect the data to be used in the development of midshipmen. These applications are NATS and the currently-employed Midshipmen Information System. Two portions of MIDS, the Company Officer System module and the Company Officer – Summary Information module, are designed to help the Company Officer with performance measurement by displaying various midshipmen information. Discovering how Company Officers are using these tools is an important part of this research. COMIS was a third performance management program that was developed for use by the Company Officer in performance measurement, however, it has not been implemented for Academy use. The following three subsections describe these applications in performance measurement management.

a. Naval Academy Time Sharing (NATS)

The NATS system was the first computer-based performance measurement program available to Company Officers. NATS ran off a Honeywell mainframe that was particularly limited for data and the capability to extract information (Cloughley, W. R., personal communication, January 2001). These limitations would make it very difficult to track trends, create graphs for review and compare performance of midshipmen or entire companies.

b. Company Officer Management Information System (COMIS)

COMIS was designed as a stand-alone system in 1999 prior to the Midshipmen Information System going online. COMIS was designed to work in conjunction with the data held in the Midshipmen Information System. The system allowed Company Officers to manipulate the data into practical information beneficial to the development of midshipmen. COMIS complied with all aspects of the GPRA of 1993 and enhanced the Company Officer's ability to improve performance (Larges,

2000). In order to fully implement the system a database manager would need to be identified from the Information Technology Systems Division (ITSD) or Master's program (Larges, 2000).

c. *Midshipmen Information System (MIDS)*

Company Officers use the Midshipmen Information System at the United States Naval Academy as their only online performance measurement tool. This system and the metrics used to track midshipmen development is the crux of this thesis. The system is discussed comprehensively in the "Overview of MIDS" section of this chapter. The metrics used by Company Officers are discussed in chapters three and four.

3. Previous Research at USNA

The commencement of the Leadership and Education Development (LEAD) Masters program has brought an abundance of attention to performance measurement activities at the United States Naval Academy. Company Officers have completed a plethora of research in the general area and more specifically with the tools available for them to complete their job. This research has always been to advance the knowledge base and improve the overall performance of both midshipmen and Company Officers. Three theses written on performance measurement at the academy include: "Performance Measurement for the Company Officer" (Belz, 1999), "A Performance Measurement-Based Company Officer Management Information System Prototype for the United States Naval Academy" (Boone, Hagen, and Utroska, 1999), and "Analysis of the Company Officer Management Information System" (Larges, 2000). The following subsections will discuss the performance measurement models used in this research, the metrics identified as important by Company Officers in the development of midshipmen, and summarize the findings of the research.

a. Belz (1999) "Performance Measurement for the Company Officer"

Belz's research analyzed the extent Company Officers use performance measurement in the development of midshipmen (1999). This research began by taking a historical look at the roles Company Officers have had in leadership and management of midshipmen. This research involved an interview and questionnaire of Company Officers to look at the different techniques used in measuring performance at academy. From the interviews, Belz identified sixteen metrics used by Company Officers to assess their midshipmen's and overall company's performance (Belz, 1999):

1. Physical Readiness Test (PRT) scores
2. Physical Education (PE) grades
3. Overall Grade Point Average (GPA)
4. Changes in GPA
5. Class Absences
6. Extra Instruction (EI) hours
7. Number of D's and F's in military performance
8. Number of semester Academic Board cases
9. Number of Weight Category 5 and 6 cases (Belz, 1999, p. 54)
10. Sick-in-room chits per midshipmen (Belz, 1999, p. 55)
11. Attendance at company functions
12. Morale
13. Success in intramurals
14. Drill Grades
15. Drill performance
16. Honor offenses

Chang and DeYoung (1995) believe that each Key Indicator (KI's) of performance is a way of measuring the progress of an organization. Each KI should "...provide critical/important data, be easily understood, be controllable by actions, track actual performance change, align with existing data or be clearly established, and measure efficiency or effectiveness." (Change and De Young, 2000, p. 63). By looking at the mission's three key result areas, moral, mental and physical development, Belz used the Measurement Linkage Model to identify five KI's from the list of sixteen shown above that clearly met each requirement. The KI's so identified were PRT grades, PE grades, Overall GPA, Class Absences, and Drill Grades. These KI's were tested against three key areas of performance measurement, "data collection and tracking, baselines and performance targets, and effective feedback" (Belz, 1999, p. 70). This breakdown concluded that only overall GPA and Absences were actually used in the performance measurement sense (Belz, 1999).

b. Boone, Hagen, and Utroska (1999) "A Performance Measurement-Based Company Officer Management Information System Prototype for the United States Naval Academy"

Boone et al. (1999) developed the Company Officer Midshipmen Information System (COMIS) prototype to enhance the development of midshipmen well into the next century. Chang and DeYoung's Measurement Linkage Model was utilized to interview Company Officers. These interviews had parallel findings in Key Result Areas (KRA's) and key indicators (KI's) to Belz's research. Boone et al. did add one additional KRA, professional development. This research loosely identified the KI's used to measure the performance of midshipmen by Company Officers in each KRA. The KI's under mental development included: academic grades, number of honor

students in company, academic extra curricular activities (ECA's), academic boards, probation and UNSATS, and study hours. Physical development KI's included: physical readiness test (PRT) results, PE failures and marking office failures, PE curriculum grades, weight and body fat standards. Moral development KI's included: number of honor and counseling offenses, number of conduct offenses and demerits, amount of community involvement. KI's under professionalism were: absences/unauthorized absences, professional development grades, uniform inspection/inspection results, room inspection results, 4/C professional quiz/board results, and performance grades (Boone et al., 1999, p. 51).

After identifying the metrics needed by Company Officers to succeed in developing midshipmen, Boone et al. conducted a system requirement and analysis. This analysis looked at three separate areas: performance measures; the Midshipmen Information System Company Officer module; and Brigread Plus (Boone et al., 1999). This analysis provided the information lacking from the Midshipmen Information System that would be included in the COMIS prototype. The analysis also assisted in the logical and physical design of the prototype. COMIS was designed to be a flexible, user-friendly tool that utilized the latest in technology and that could interface with the MIDS system.

At conclusion of the research, it was the intent of the authors that their findings be used to continually upgrade MIDS; however, that has not been the case. Their significant findings were the Professional Development KRA and the KRI's associated with it. By identifying new areas to measure the development of midshipmen, the study of COMIS could be a catalyst for further improvements to MIDS.

c. *Larges (2000) "Analysis of the Company Officer Management Information System"*

Larges (2000) conducted the third thesis research to determine the capability and feasibility of implementing the Company Officer Management Information System (COMIS). The COMIS program was designed utilizing Chang and DeYoung's Measurement Linkage Model for use by Company Officers. This research included a survey of Company Officers that investigated the requirement for a performance measurement tool that would generate the information required by the Company Officers from data stored in the Midshipmen Information System. The survey concluded that COMIS was a viable performance measurement tool. Company Officers recommended COMIS be incorporated into the Midshipmen Information System as a separate module. Incorporating COMIS into the Midshipmen Information System would entail the need for a database manager provided by the Company Officer Masters Program or a member of ITSD. Finally, a feedback mechanism would be crucial to the success of this database manager to ensure all stakeholders are capable and efficient in the use of this program (Larges, 2000).

This study exposed the critical need for a dynamic performance measurement tool to be available to Company Officers. By allowing Company Officers access to information more specific to their needs, they can complete their jobs more efficiently and improve the overall performance and development of their midshipmen.

d. *Summary of Prior Theses*

Belz (1999) provided a basis for the academic study of performance measurement at USNA by reviewing the history of leadership development of midshipmen and introducing performance measurement models to the behavior of Company Officers. Belz used the Measurement Linkage Model to identify sixteen

measures of midshipmen performance. Boone, Hagen, and Utroska (1999) extend this study by using the Measurement Linkage Model as the basis for the design of the COMIS prototype. Larges (2000) examined the COMIS prototype by comparing it with current performance measurement literature and conducting a survey of Company Officers to determine how useful COMIS would be to them as a performance measurement tool.

4. Overview of MIDS

The Midshipman Information System (MIDS) is a custom-designed enterprise database for use by Naval Academy faculty, staff, and midshipmen (Cloughley, W. R., personal communication, January 2001). MIDS was created to serve as a repository for a wide variety of midshipmen-related data for the use of the faculty and staff. It is used by the academic faculty, members of the Commandant's staff, Company Officers, as well as other assorted staff members around the Academy.

The main system was developed entirely in-house by members of ITSD, while the ad-hoc query functions are provided through a third-party data mining tool. The system was initially rolled out with its basic functionality in January 1999. Since that time, functionality has been expanded by incrementally adding additional components as the needs of the users and the resources of ISTD has allowed.

Data is stored in an Oracle relational database that runs under UNIX on three linked Compaq AlphaServers. These servers are accessible from anywhere inside the Naval Academy's intranet, and can support up to 6,500 users. Information in the MIDS database is periodically transferred into a separate data warehouse maintained by the Academy's Institutional Research Department, adding to the historical record of academy information.

The standard user interface for MIDS is a collection of web-based modules that provide access to pre-determined subsets of the data. There are several hundred of these individual modules. Each module is typically designed for a specific purpose, such as recording class absences, viewing midshipmen grades, or maintaining sports and club rosters. Different users have access to different collections of modules based on the individual's place in the Academy organization. This is designed so that users have access to the information that they need to do their job, while preventing unauthorized access to sensitive personal data.

In addition to the standard, web-based interface, there is another access method to the data in MIDS. This access is through two pieces of third-party data mining software called WebIntelligence and InfoView. WebIntelligence is a query-creation tool and InfoView is a tool that is used to view these queries. This software allows users to access all data contained in MIDS through a variety of user-created ad-hoc queries. These queries are purpose-built reports, typically for a specific user's unique needs. Queries can be constructed using the WebIntelligence software's Java-based interface by any user who has access to the system. Since this access allows the user to view any portion of the database, and because of the high cost of the third-party licenses, only a few select users have access to this capability. Among those groups that have this access are Company Officers, Battalion Officers, and Commandant's staff members. WebIntelligence, while very powerful, is also correspondingly complicated to learn and use effectively. Because of this, although it is possible for any of these users to create ad-hoc queries, in practice ITSD personnel, responding to requests from these users, construct most of these queries. Queries that are created with WebIntelligence can also be viewed, but not modified, by

user who have access only to the InfoView portion of the system, which includes a larger portion of the Academy staff. Queries, once created, can be shared with any other user that has InfoView access, allowing one person's work to benefit others around the Academy (Business Objects, 2000).

Nearly all of the documentation for MIDS is contained in online help web pages accessible from any of various MIDS modules. ITSD recently produced a pocket guide to the MIDS specifically for Company Officers (USNA, 2001b) that provides basic information on how to gain access to the system and perform some basic tasks. Beyond this, though, all other information on system use is contained in the online help pages.

C. CHAPTER SUMMARY

This chapter reviewed Chang and DeYoung's Measurement Linkage Model, Kaplan and Norton's Balanced Scorecard and Frost's Strategy-Based Performance Management model in use by private and public organizations. The foundation of each model is the proper development of measurement indicators from the organization's strategic plan. After identifying the metrics, leaders and managers can collect data, obtain first-rate information and ultimately improve the performance of the organization.

Information technology applications used at the United States Naval Academy have included the Naval Academy Time Sharing system and the Midshipmen Information System. COMIS, although a viable prototype, has never been implemented as a stand-alone performance measurement tool or incorporated as an additional module in MIDS. Nevertheless, development of COMIS has highlighted the necessity for the

frequent reassessment of Company Officer performance measurement needs that ensure the successful development of midshipmen.

Belz (1999) used Change and DeYoung's Measurement Linkage Model to ascertain what performance metrics were used by Company Officers at the United States Naval Academy. Boone et al. (1999) also used this model to identify an additional KRA and tie metrics to all KRA's. With this information, Boon et al. designed the COMIS prototype. Continuous study in the area of performance measurement and information systems can only benefit the Academy, Company Officers, and the overall mission of developing midshipmen.

The remaining chapters of this research will focus on identifying the metrics used by Company Officers to track performance of midshipmen, the techniques to which Company Officers can extract that information from MIDS, and attitudes of Company Officers and other stakeholders with respect to MIDS and performance measurement. This will include the extent to which Company Officers can extract trends, graph relevant outcomes and to actively, not passively, track the performance of their midshipmen. The next chapter describes the various methods used in this research.

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III. RESEARCH METHODOLOGY

A. INTRODUCTION

The purpose of this research is to examine the currently deployed Midshipmen Information System (MIDS). The first major area will examine current trends in performance measurement geared toward public sector organizations and why they have become important to their success. This area will also assess the Midshipmen Information System currently employed at the United States Naval Academy to identify the metrics being used by Company Officers to measure the performance and development of midshipmen. By keeping appraised of new ideas regarding performance measurement, public organizations can continue to meet the expectations of the stakeholders and fully understand their goals.

The second area of research involves gathering data from the end users of the Midshipmen Information System. Groups of Leadership Education and Development (LEAD) program graduates, currently serving as Company Officers, will form the basis for evaluation and assessment of MIDS. These groups will also be involved in generating ideas for improvements and evaluating prototype enhancements to the system. The cooperation and participation of key personnel in the Academy's Information Technology Systems Division (ITSD), Company Officers, Battalion Officers, and Commandant's Staff is crucial to the success of this and follow-on research in this area. The data will be collected primarily as part of a class project for the Performance Measurement class in the LEAD curriculum. The current LEAD program students will be broken into four groups. The four groups will conduct interviews with the previously

mentioned personnel. Standardized questions will be asked, followed by a brainstorming and open discussion session on the benefits of the system and possible improvement areas. Members of the focus group will be solicited for ideas to improve the utility of MIDS, reasoning behind the metrics they use in performance measurements and the knowledge level of Company Officers about MIDS. The data from these interviews will assist researchers in focusing the questions to be asked in the online survey to be given to current Company Officers as part of the next step of the research.

The third area of research involves gathering user information from Company Officers who are the primary user of the Midshipmen Information System as a performance measurement tool. A fifteen question survey will gather feedback in the areas of metrics currently being tracked by Company Officers, what measurements they feel are important to the development of midshipmen and how the Company Officers utilize graphs and charts for easy recognition of trends, and any training being conducted on MIDS and Web Intelligence. The research will then examine if the implementation of supplementary training, documentation, and design enhancements is needed to ensure Company Officers have the knowledge and understanding of the capabilities of the program.

Analysis of interview and survey responses will assist in accurately summarizing the current use of MIDS, identify the techniques used to extract usable information from the program for Company Officers to be successful in their job and identify any future training requirements that would be beneficial to the Company Officers and the institution. This process will assist in generating conclusions and follow on research to

guarantee the Midshipmen Information System continues to be updated with the most current ideas in performance measurement.

In order to assess the validity of the self-reported information in the survey, the fourth portion of the research performing a statistical analysis of actual usage data generated by the MIDS software. Two specific questions will be answered by this statistical analysis. These are how much Company Officers use MIDS on a day-to-day basis and how frequently Company Officers access various portions of the system.

The final portion of the research will focus on MIDS itself. Based on the results of interview and survey data, several key performance metrics will be selected for analysis of MIDS system capability. Various portions of MIDS, as well as the WebIntelligence ad-hoc query tool, will be examined to determine the most effective methods of transforming data in the system into information useful for tracking selected metrics. The goal of this portion will be to develop a simple set of procedures that Company Officers can employ to analyze each of these metrics regularly. Also, any WebIntelligence queries/reports, spreadsheets, etc. required by these procedures will be developed. At the completion of this research these procedures and supporting documents will be supplied to ITSD for dissemination to Company Officers. Finally, possible design and training enhancements discovered in this phase will be included in the recommendations for further study.

B. REVIEWING PERFORMANCE MEASUREMENT

The initial process used in evaluating the Midshipmen Information System entails thorough review of current performance measurement models being utilized by public

sector organizations. A number of performance measurement models exist, however this research will review only three models. The Balanced Scorecard is presented because it has been increasingly used in the public sector. Chang and DeYoung's Measurement Linkage Model is included since it has been used extensively in previous research conducted at the United States Naval Academy to establish the best metrics for Company Officers to track the development of midshipmen. Frost's Strategy-Based Performance Management model is included because it incorporates the Balanced Scorecard model with current leadership practices and provides a simple and easily understood approach to performance measurement.

The second step in evaluating MIDS is to study the current functionality and use of the program by Company Officers. This information will identify a starting point for the remainder of this research. By determining what metrics are being used by Company Officers, the research can isolate these metrics and evaluate the ease of which they can be manipulated into information useful the end users. This data will be collected via two sources. First, the LEAD program students will conduct group interviews. These interviews will include battalion staff, faculty and midshipmen. The second form of data collection will be in the form of a survey given to Company Officers.

Lastly, the information collected on the metrics will enable the research to identify useful training, documentation and design enhancements. These new features will make program use easier which will correlate to Company Officers having more useful information, faster access and subsequently more time to spend in a mentor role to their midshipmen.

C. INTERVIEW COMPOSITION AND TOPICS

The purpose for this interview is to develop a thorough understanding of the way faculty, staff and students use the MIDS system. The interviews will assist in determining what performance metrics are important and how the system is currently being used. Students in the Leadership Education and Development program will lead the group interviews. Each group will conduct two interviews. The first group will interview a Battalion Officer and two midshipmen assigned to the Battalion staff. The second group's first interview will include the Performance Officer, Conduct Officer and a civilian employee assigned to performance measurement on the Commandant's staff. Their second will include two midshipmen assigned to the Commandant's staff. The third group's first interview will include four currently assigned Company Officers. Their second will include two midshipmen holding the position of Company Executive Officer.

During these interviews the LEAD students will ask a number of predetermined questions concerning the MIDS system and how it is used by each of the interviewees. The questions include:

1. What metrics are important in measuring the development of midshipmen.
2. How much of the assignment of military performance grades by Company Officers is subjective and how much is objective? What sort of process do you go through in assigning these grades? What factors influence your rankings? How does this subjectivity or objectivity affect the development of midshipmen? (Company Officers only)

3. What metrics are used by Company Officers (Battalion Officers or Commandant staff) in measuring performance? Why are these particular factors used? Do the midshipmen know what these are and understand the reasons behind them?
4. How are these factors recorded and how is that data used?
5. Does MIDS currently provide the functionality that you require?
6. What new functions or data would you like to see from MIDS?
7. Does the current MIDS documentation (Pocket Guide, online help, etc.) meet your needs?
8. Does MIDS training support your needs? If not, what improvements be in the areas?
9. What measures are in place to ensure the continued relevance of MIDS to Company Officer performance measurement needs?

D. DEVELOPING A SURVEY

As mentioned previously, the survey is used to collect data from Company Officers about the utility of Midshipmen Information System. This survey is designed to collect three different sets of data. The first collects data on metrics Company Officers feel are important in tracking the development of midshipmen. The second collects feedback on Company Officer opinions toward functionality and usage data. The third set attempts to identify the quality of training and documentation that currently exist with the MIDS system and what, if any, improvements can be made. The complete Midshipmen Information System survey is included in Appendix A.

1. Survey Format

The survey will be taken by each Company Officer via the Internet. This medium allows the Company Officers to complete the survey independently without interruption and allows them access to the MIDS system if needed during that time. The survey includes fourteen questions designed to identify metrics used by Company Officers, training and functionality of the program and any improvements that should be made to the program.

2. Explaining the Survey Questions

Each of the fourteen question is designed to elicit feedback in one of the three areas of research for this thesis. Listed below is each question and the reasoning behind asking each of them.

1. **Which of the following metrics do you use to track the performance of individual midshipmen or your company as a whole? (check all that apply)** This question attempts to identify trends in the metrics being used by Company Officers to evaluate their midshipmen for performance grades.
2. **Do you track changes in performance *over time* for either individual midshipmen or your whole company?** This question determines if MIDS is being used to track performance in general which would identify possible problems with training or standards associated with Company Officer responsibilities.
3. **Do you use any visual representations (graphs, etc.) of performance for your use, your company's, or your Battalion Officer's?** This question determines whether Company Officer understand the relevance

of visual representation of performance measurements, how they can be used to easily show trends and if they are a requirement by the Company Officer's superiors.

4. **Which of the following most closely describes how often you use the MIDS system?** This question is answered on a scale from "once a week" up to "four times a day". It would determine the likelihood of Company Officers benefiting from this study and also whether they understand the importance of the MIDS system as a performance measurement tool.

5. **What do you use MIDS for? (Please rank in order of importance.)** This question allows the Company Officers to rank how they use MIDS in general and give researchers an idea of where the Academy could benefit from increased training and documentation. The answers Company Officers have to choose from include:

    1. Track the performance of individual midshipmen
    2. Track the performance of your company as a whole
    3. Produce required reports for your Battalion Officer
    4. Gather information for conduct/honor/ academic/performance boards
    5. Enter midshipmen performance grade

6. **Other (please state below)** This question allows Company Officers to list any other uses of the program they feel is important to accomplishing the mission of the Academy.

7. **Which module of MIDS do you use the most?** This question is used to identify what modules in MIDS are used the most by Company Officers. It will assist the researchers in identifying the training associated with each module and developing recommendations for additional training and

documentation if needed. Choices to be provided were identified from usage data obtained from the Academy's Information Technology Systems Department (ISTD), charged with maintaining the MIDS system. Company Officers can select from:

1. Company Officer Page
2. Company Officer – Summary Information
3. Matrices – Query Current Midshipmen
4. Weekend Eligibility
5. Absences
6. Other, Please Specify

8. **Do you use the ad-hoc query system (WebIntelligence)?**

9. **If so, how many times per week?** These questions were developed from the interview process. Many faculty indicated difficulties in using this feature and the questions are designed to determine the accuracy of these claims and to identify how often the feature is used. It will also identify whether trends are being evaluated since this is a major function of the query system. The Company Officers can choose from:

   1. None
   2. Once
   3. Three times
   4. Five times
   5. Seven times
   6. Nine or more

10. **How well does MIDS functionality meet your needs?** This question reveals to what degree MIDS supports, and is a useful tool for, the Company Officers. The Company Officers can chose from:

1. Not at all
2. A little
3. Somewhat
4. Mostly
5. Completely

11. **What new functions or data would you like to see from MIDS?** This question is used to identify new functions not currently covered by a certain module. In other words, the data is in the system but is difficult or impossible to manipulate into useable information.

12. **How well does the current MIDS documentation (Pocket Guide, online help, etc.) meet your needs?** This question reveals to what degree how useful the recently-published pocket guide and online help functions are to Company Officers in using the MIDS program. Company Officers can chose from

    1. Not at all
    2. A little
    3. Somewhat
    4. Mostly
    5. Completely

13. **How well does current MIDS training support your needs?** This question is similar to question 12, but it is addressing whether current training is adequate for Company Officers to properly use the system to the fullest extent possible. Company Officers can chose from

    1. Not at all
    2. A little
    3. Somewhat

4. Mostly
5. Completely

14. **What improvements can be made in these areas (training and documentation)?** The final question attempts to use the expertise of the Company Officers and the knowledge gained through their experience and the LEAD program's Performance Measurement class to identify any improvements that should be made to the MIDS program. These recommendations could include the removal or addition of certain functions within the program.

E. USAGE DATA ANALYSIS

Information gathered via survey is self-reported and thus may be subject to conscious or unconscious bias of the respondents. Conscious bias in the responses is unlikely because the survey given for this project is voluntary, the information collected is not personally identifiable, and individual results will not be divulged to the respondent's superiors. In order to provide some check for unconscious biases, two of the survey questions will be cross-checked with usage data generated by the MIDS software. The questions selected for this checking are those that lend themselves to straightforward quantitative verification. Specifically, responses to the questions dealing with the frequency of overall MIDS usage (question #4) and the most commonly-used module of MIDS (question #6) can be readily compared to the objective usage data.

MIDS generates a daily log of system usage that summarized that day's activities. This log is broken down into four sections. The first section is a summary of the number of times each module (component part of MIDS) was accessed by midshipmen and by

non-midshipmen. The second section is a listing, by module, of which users accessed that module and how many times. The third section repeats this data, but is sorted by user instead of by module. The final section lists the total number of times each module was accessed that day.

It is the third section of these files that is the source of the data that will be used in this analysis. The format of this portion of the data files is the simplest form from which to separate Company Officer usage from other system users. Two weeks worth of usage data (ten working days, for a total of ten data files) will comprise the scope of this data analysis. First, the targeted (third) section of each of the ten files will be singled out and combined into a single file. This data will then be filtered to select users that are Company Officers and remove all others. The processed Company Officer data will then be analyzed using various statistical and spreadsheet software (SPSS and Microsoft Excel) in order to answer the desired questions. Finally, the calculated results of this analysis will be compared to the reported results from the survey and a qualitative assessment of the validity of the survey data can then be made.

F. ANALYSIS OF MIDS FUNCTIONALITY FOR TRACKING SELECTED PERFORMANCE METRICS

The final portion of this research will focus on the ability of Company Officers to obtain useful, timely performance measurement data from the MIDS database. Based on the results of the previously-conducted interviews and survey, the metrics considered most important by Company Officers will be selected for analysis. Both MIDS and the WebIntelligence ad-hoc query tool will be employed to determine the most effective way

for Company Officers to access the information that will allow them to track these selected metrics. The goal of this section of the project is to provide the Company Officers with a procedure to follow in assessing each of these metrics, as well as any supporting WebIntelligence documents or other files needed for those procedures. These procedures and the supporting documents could be distributed to the Company Officer as-is or could be the basis for the development of new core MIDS capabilities.

For each metric in question, the following procedure will be employed. First, the currently-available modules of MIDS will be examined to determine what information is available in those modules how it relates to the metric in question. If sufficient information can be obtained using these modules, the procedures for doing so will be documented and the analysis will move to the next metric.

If the current functionality does not provide an adequate way to measure and track the metric in question, the WebIntelligence software will be used to generate an ad-hoc query document that retrieves, analyzes, and displays information pertinent to the metric in question in the most effective manner possible. If analysis beyond the capabilities of WebIntelligence is required, desktop software such as SPSS, Microsoft Access, or Microsoft Excel may be employed to work with data extracted from the MIDS database. Finally, a procedure stepping the user through each phase of the analysis will be created and this, along with any queries, spreadsheets, or other files will be compiled in Appendix B.

G. CHAPTER SUMMARY

This chapter describes the five areas of research methodology required in this thesis. The first area reviews three performance measurement theories currently in use today. The second area consists of interviewing faculty, staff and midshipmen to ascertain their current use of the system and what they believe to be important to the development of midshipmen. The third area involves gathering information in the form of a survey given to all Company Officers. This survey will identify what metrics they feel are important, how they use the system to do their job and their opinions as to the training and documentation associated with the program. The results of the survey are the most critical element of the research. This information will categorize the metrics being used by, and any differences between, each Company Officer. By identifying these differences, the research will be able to recommend future action to Company Officers in utilizing the performance measurement data to ensure all midshipmen are evaluated with the same set of metrics in the future. This data will be vitally important to any follow-on research conducted in the area of performance measurement at the Academy as it sets a baseline of current practices. The fourth area of research complements the survey by providing an objective, quantitative cross-check of its validity in those areas where an objective analysis is possible. This is accomplished by analyzing actual usage data generated by the MIDS software and comparing the results with the corresponding portions of the survey. The final portion of the thesis work involves assessing the ability of MIDS and WebIntelligence to provide timely, useful information to the Company Officer for use in tracking selected performance metrics. Currently-available functions

will be assessed and, if those do not provide all of the required information, ad-hoc queries will be created to fill any gaps discovered in the system.

The next chapter analyzes and summarizes the results of the interviews, survey and usage data analysis, as well as generates procedures for obtaining data from the Midshipmen Information System that will best assist Company Officers in their job. The final chapter will detail recommendations to improve the performance measurement tools available to Company Officers so that they are up to date with the most current performance measurement practices and desires of the Academy.

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IV. DATA ANALYSIS

A. INTRODUCTION

In the previous chapters, the relevant research questions for this thesis were presented and developed, the previous literature relevant to the subject matter was summarized, and the methodology used in this research was described. This chapter continues that progression by covering the application of that methodology to the study's research questions as well as the detailing the outcomes of that work.

The chapter is divided into three distinct areas. The first area analyzes the responses given during group interviews conducted by LEAD program students during the Performance Measurement class. During the interviews, faculty, staff and midshipmen answered a variety of informal questions regarding their use of the Midshipman Information System (MIDS). Answers to the interview questions were used in generating the survey that was disseminated to all Company Officers via the Internet.

The second area analyzes the responses given to the survey. Company Officers answered fourteen questions in three separate areas of the program: (1) which metrics are used to measure performance, how they are used, what modules are used and to what extent, (2) how training and functionality of the system meet current needs of the Company Officers, and (3) recommendations by Company Officers for improvements of the overall system to increase their effectiveness in its use.

The third area exploits the information gathered from the interviews and survey by developing standardized methods for extracting the data from the MIDS database. The methods shown will assist Company Officers in using their time efficiently.

Additionally, it will aid them in using MIDS as a more effective performance measurement tool. The methods are shown in-depth in Appendix B.

B. GROUP INTERVIEW RESULTS

As mentioned earlier, LEAD program students were divided into three groups and each group was to conduct two separate interviews consisting of faculty, staff, or midshipmen. The first group had two interviews scheduled: the first included one Battalion Officer and the second (canceled due to time constraints) would have included two midshipmen assigned to the Battalion Staff. The second group interviewed the Performance Officer, Conduct Officer and a civilian employee assigned to performance measurement on the Commandant's Staff in their first interview. Their second included two midshipmen assigned to the Commandant's staff. The third group conducted interviews with four Officers currently assigned as Company Officers and two midshipmen holding the position of Company Executive Officer. Each interview was designed to gain insight into current usage of MIDS, training and documentation of the program and the general feelings toward the program by Company Officers and midshipmen alike.

1. Group One Interview Results

a. Battalion Officer

The Battalion Officer interviewed has been in the position for approximately two years. She stated that the most important metrics to her were those that had a reflection on the morale of the battalion. These included absences, conduct and overall grades. She stated that "we use MIDS as a snapshot of the condition of the battalion but not in any other way" and that most of her Company Officers did not have

the requisite knowledge of the system to use it effectively. This statement also included her own ability to manipulate data in MIDS. She also maintained that there was no real way to measure overall moral development and that metrics should be added to the program functionality to measure this area. The Battalion Officer specifically stated that she does not mandate a standard for metrics that should be tracked in MIDS nor in the administering of performance grades. She feels that performance grades are given out in a strictly subjective fashion without relying on data in MIDS to assign grades.

The Battalion Officer's responses to the interview questions assisted greatly in the generation of questions relating to the use of metrics, what Company Officers felt were important to midshipmen development, and to training issues.

2. Group Two Interview Results

a. Commandant's Staff Personnel

This interview focused primarily on performance measurement at the Brigade level and intended to assess their general feelings toward the use of MIDS. The staff members identified three major issues associated with the use of MIDS as a performance measurement tool at the Academy. The first was measuring performance at the macro level, the second was the MIDS program itself, and the third was the ramifications of using the system as a measurement tool at the Brigade level.

The issue of tracking performance measurement at a macro level was that it was not being done. One interviewee stated that "we spend a great deal of time investigating areas of performance within the organization, but they do not measure, overall, how the organization is accomplishing their mission". Additionally, this interview identified the feeling that individual/small unit analysis was being conducted on a small scale, such as the number of absences assessed to a particular midshipman;

however organizational analysis was not being performed. They also stated that no guidance had been given at the organizational level on what performance metrics were important to the Academy nor on how various metrics were linked to the Academy's mission or goals.

The second issue related to advantages and disadvantages of the MIDS system itself. Advantages to the system included user-friendliness, a good source of quantifiable information, and quick access to information. Disadvantages to the system included a weakness with comparisons, a lack of readily available training, insufficient information on the help screen, lack of depth to the information in the new pocket guide, a distinct lag time exists between data entry and the database updating, and a potential loss of personal interface.

The third issue dealt with the ramification of the use of MIDS at the Brigade level for evaluating performance measurement. Personnel interviewed felt that the use of MIDS was sort of a "double-edged sword" in that there was a definite communication improvement between them and the Company Officer. However, they could see where this would look like "big brother" is always watching how a particular company is doing. They could see where this could impact the decision making process of the Company Officer.

The interviewees identified performance and conduct as two areas they felt could be improved. In performance, they felt the inability to accomplish comparison reports on each company was detrimental to the organization. In conduct, they identified the ability to track loss of privileges, restriction, weekends, and special request chits as important to the Company Officer and to them at the Brigade level.

b. Brigade Staff Midshipmen

The midshipmen interviewed held positions on the Brigade staff. They identified four areas that they used the system. These included the generation of Form 2's (conduct reports), attending to personal records, checking their Order of Merit within their class (class standing) and checking class absences for members of their company. The midshipmen interviewed had the opinion that Company Officers could get the same information "just by talking to the midshipmen" and they felt many midshipmen saw MIDS as "leadership by computer". Overall, the midshipmen interviewed had no real understanding of MIDS as a performance measurement tool or as something that could be used to improve the performance of midshipmen and the United States Naval Academy.

Interviews by the second group concluded that MIDS as a whole was very useful when used to keep track of data. Currently, they felt that "it is not used to great extent by the Company Officers or the midshipmen".

3. Group Three Interview Results

a. Company Officers

The Company Officers interviewed consisted of two LEAD program graduates and one post-Department Head. Overall, the Company Officers interviewed used MIDS primarily for tracking academic performance, conduct, physical fitness and some historical data extraction. In general, all agreed that little to no direction was given to them regarding how MIDS should be used to meet the goals of the Academy. They also stated that every company uses a different set of measurements to determine the performance grades of midshipmen at the end of each semester.

With regard to functionality, the Company Officers felt that, as a whole, MIDS did not give them the tools they required. Specifically, one stated that the "ad hoc

query function could be very useful, however there is no training and the queries are hard to construct". Additionally, they had been exposed to training and documentation for MIDS, but users primarily learned only what they needed.

The responses to the interview questions supported questions regarding the metrics used to assess midshipmen performance, training and documentation, and the overall functionality of MIDS given to Company Officers in the online survey.

b. Company Executive Officer Midshipmen

The two midshipmen interviewed held the position of Executive Officer within their company. These midshipmen were asked the same general questions as the officers about their use of MIDS in relation to the metrics used, training and documentation and functionality of the system. Overall the midshipmen interviewed felt that the information in MIDS had no bearing on performance grades and the only utility the program had was looking at metrics such as class absences, movement orders and academic matrices. Training and documentation for the midshipmen was non-existent but they did state that was sufficient for their limited use.

The third group's interviews produced two important recommendations. First, separate user's guides should be created for the Company Officers and the midshipmen. Additionally, performance standards should be more clearly defined across the Brigade along with a standardized performance grade assignment policy. This would alleviate some of the subjectivity in the assignment of performance grades.

C. SURVEY RESULTS

Company Officers had an array of opinions regarding the usefulness of MIDS as a performance measurement tool in evaluating the development of midshipmen. The

fourteen questions presented to the Company Officers attempted to evaluate the current use of MIDS, what metrics Company Officers believe are important in midshipmen development, and assess current training, documentation and functionality of the system. This section presents the responses given by the Company Officers to the previously mentioned survey questions along with any comments offered. A copy of the complete survey and all results is presented in Appendix A.

1. Survey Question and Response Evaluation

a. Which of the following metrics do you use to track the performance of individual midshipmen or your company as a whole? (Check all that apply)

As mentioned in the previous section, Company Officers for the most part must decide individually what metrics are important. Although no guidance exists as to what metrics are important to the institution, Company Officers are definitely capable of making these decisions. Unfortunately, problems may arise from differences in how performance measurement and how performance grades are disseminated in each company. Question one was designed to allow the Company Officer the ability to choose from a list of metrics readily accessible on MIDS. The question also allowed the Company Officer to add any metrics they tracked and deemed important to their job. Metrics being tracked by 70% or more of the Company Officers along with the exact percentage include: PRT scores (88%), overall QPR (96%), changes in QPR (72%), number of absences (76%), number of midshipmen on academic probation in Company (80%), number of D's and F's in military performance (72%), and number and severity of conduct offenses (88%). Additional responses included: conduct history, conduct action pending, and movement orders; chain of command input; number of midshipmen on merit lists (Deans, Superintendent's, Commandant's); company QPR (semester and

cumulative); company QPR difference (semester); PE deficiencies (swimming, PE failures, etc.); and time spent talking with professors.

It is important to note that each of the twenty-two metrics listed in question one received at least one vote and that five additional responses, citing metrics not on the list, were received for this question. These responses show conclusively that each Company Officer has a somewhat different opinion about what metrics are important to the successful development of midshipmen. Frost's states that "stakeholders are the second major source for choosing performance topics and that , Stakeholders are simply those who have a significant stake in your performance and an ability to create consequences for you, good or bad" (2000, p. 30). To ensure Company Officers understand the mission and goals to midshipman development, guidance and direction from the Academy administration and other stakeholders in choosing metrics must occur and is crucial to success in meeting the needs of the entire organization.

b. Do you track changes in performance "over time" for either individual midshipmen or your whole company?

Twenty-four (96%) Company Officers answered positively to this question while one (4%) answered negatively. The idea of tracking changes over time is successfully explained in Frost's Strategy-Based Performance Management Model. The model shows that by tracking metrics leaders are capable of reporting performance, making informed decisions, implementing strategy and finally improving performance (Frost, 2000). The responses given by Company Officers show they fully understand the importance of tracking changes in performance over time and conduct this process on a continuous basis.

c. Do you use any visual representation (graphs, etc.) of performance for your use, your company's, or your Battalion Officer's?

Ten (40%) Company Officers stated that they did utilize visual representation for their own use, their company's, or their Battalion Officer's. Sixteen (60%) stated that they did not utilize any form of visual representation of midshipmen performance for their own use or for others.

Research in performance measurement suggests that this attitude is problematic. For example, Harbour stated that "having hard data to assist an organization in their planning is invaluable" (1997, pp. 17-18). Being able to show the employees, or in the case of the Academy, midshipmen, where the institution currently stands is likewise invaluable. By doing this, all personnel, from midshipmen to the Commandant can and should know exactly where they stand and where improvements can be made. Utilizing trend measurements, charts, graphs and comparative charts is considered by many to be the best way to show performance information. The lack of visual representations for performance metrics is a significant shortcoming in MIDS that will be addressed in the system capability analysis.

d. Which of the following most closely describes how often you use the MIDS system?

This question was answered on a scale from "once a week" up to "four times a day". Two (8%) Company Officers stated they used MIDS once a day. Nine (36%) stated they used MIDS twice a day. Fourteen (56%) stated they used MIDS four or more times per day. The responses to this question indicate that Company Officers are using the system and can benefit greatly from a study in performance measurement tools. It also identifies an understanding by Company Officers of the importance of MIDS as a

performance measurement tool. This question identified that the system is being used and the next question explains how Company Officers are using the system.

Analysis of the system usage data generated by MIDS supports this conclusion. For the two week period studied, the Company Officers averaged about 110 page hits per day on all modules of MIDS. As can be seen from the P-P plot (Figure IV-1), the variation in usage was approximately normal. The variation on this data was quite large, with a sample standard deviation of 92 hits/day and the average for the time period

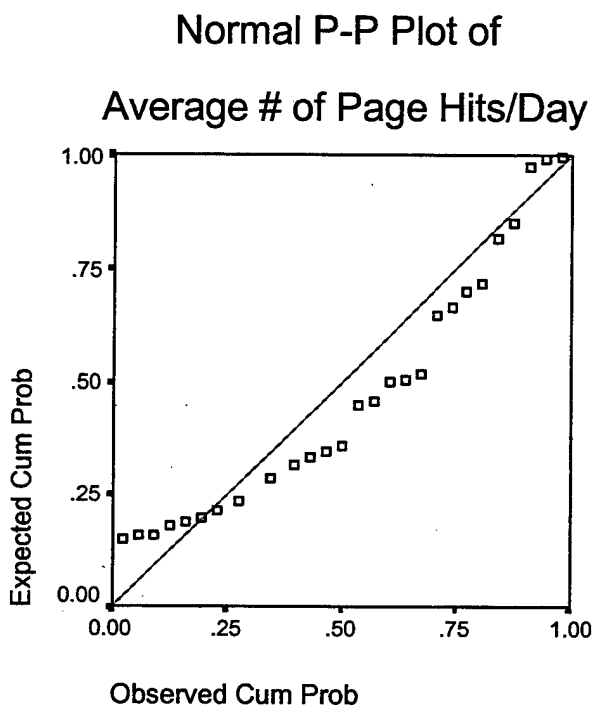

Figure IV-1: Normality Plot for MIDS Module Usage

ranging between 15 hits/day for the least frequent user to 360 hits/day for the most frequent user. Although this measure of page hits cannot be directly translated into the number of sessions that a Company Officer accesses MIDS, it is clear that Company Officers are using the system quite frequently in their daily routine.

e. What do you use MIDS for? (Please rank in order of importance.)

This question offered Company Officers five popular uses of MIDS to ascertain how frequently they conducted each of them. Uses were developed from the group interviews conducted before survey launch. The follow-on question allowed the Company Officers to add other tasks for which they used MIDS. The five listed uses are shown below with frequency of use by Company Officers. Nineteen (76%) Company Officers responded that they used MIDS to track the performance of midshipmen most frequently, while one (4%) responded he or she utilized the tracking of performance the least frequently. Five (20%) Company Officers responded they used MIDS to track the performance of their entire company, while ten (40%) responded they used the system for this purpose the least frequently. Interestingly, two (8%) Company Officers stated the use was not applicable to them. Four (16%) responded they used MIDS to create reports for their Battalion Officer, where seventeen (68%) responded they used MIDS least frequently in this area. Seventeen (68%) Company Officers used MIDS most frequently to gather information for conduct/honor and academic/performance boards. Conversely, six (24%) stated this was a least frequent use. Lastly, one (4%) Company Officer asserted he or she used MIDS to enter midshipmen performance grades where sixteen (64%) answered this as a least frequent use.

Seven additional uses of MIDS were listed by Company Officers which included:

1. Find personal information (e.g. major, home of record, sports activities, contact phone numbers for leave periods.

2. Mostly checking individual records when they submit chits, checking absences and cross referencing them with Movement Orders, etc.
3. Approving excusals/movement orders, finding out free periods so I can talk to one of my Mids.
4. Initiate, Review, and Approve Movement Orders (MO) and Excusals.
5. MO/Excusal approval; Misc INFO re: MIDN [movement order and excusal approval, miscellaneous information about midshipmen]
6. Gather information for things other than conduct/academic/etc. boards.
7. Counseling, spot-checking and MOs.

The uses of MIDS listed aided the research in focusing efforts to show the most efficient ways to manipulate the system in extracting information for the most frequently used functions.

f. Which module of MIDS do you use the most?

The Information Technology Systems Division (ITSD) at the Naval Academy has developed separate modules for obtaining performance measurement data on midshipmen. This question was used to identify which modules in MIDS were used the most by Company Officers. Choices provided were identified from usage data obtained from ITSD. ITSD personnel recently developed the Company Officer – Summary Information module. This module was designed specifically for the Company Officer's to spend their time more effectively. Responses show; however, that one (4%) of Company Officers actually uses this module as their most frequent. Twenty-two (88%) utilize the Company Officer Page module as their most frequent. Two (8%) "Other" responses were given which included the ad-hoc query function and Movement Order/Excusal pages.

Again, actual MIDS usage data conforms quite closely with reported survey results. Table IV-1 shows the percentage of all page hits for the two-week time period studied that were in each of the listed categories. As with the survey response data, the Company Officer System module is clearly the most frequently used, garnering over 80% of all page hits for the week. This closely corresponds to the 88% of Company Officers that reported they used that module most frequently. Interestingly, in the case of the Company Officer – Summary Information module, usage data indicates that Company Officers access that module even less frequently (less than 0.1 percent of the time) than was reported in the survey.

These responses specifically show that almost no one utilizes the Company Officer – Summary Information module, which a large amount of money and time was spent to create.

Category	%
Company Officer System	80.921%
Movement Orders	6.188%
Absences & Excuses	5.696%
Conduct – Record Offenses	3.519%
Midshipmen - Query General Information	1.570%
Midshipman - Academic Summary	0.819%
Summer Striper Billets - Assign Midshipmen	0.719%
Midshipmen - Performance Record	0.181%
Company Officer - Summary Information	0.081%
Summer Training - Query Assignments	0.065%
ECA's and Athletics	0.053%
Ac Boards & COMAPs	0.034%
Section List - Query by Specific Course/Sect	0.031%
Provide Security for Entering Section Grades	0.016%
Audit - Query Relative Information	0.012%
MIDS Recent Fixes - Query	0.012%
Midshipmen - Query Academic Information	0.012%
Schedules – Query Midn Schedule for Current Semester	0.012%
Grades - Enter by Section	0.009%
Offered Courses and Sections - Query	0.009%
Section List - Query	0.009%
Summer Striper Billets - Maintain	0.009%
Display Errors From File Input	0.006%
Instructor – Query Schedule	0.006%
PRT Results - Query	0.006%

Table IV-1: Company Officer Usage of MIDS, by Module

g. Do you use ad-hoc query system (Webintelligence)?

The ad-hoc query system is capable of analyzing data and presenting the data in many forms. With this system, Company Officers can create a variety of visual aids, such as graphs and charts. As mentioned earlier, showing visual aids to the midshipmen helps them to understand what performance metrics are important. It sets a baseline for where they are currently and gives the midshipmen direction while informing them on what areas they need work. Twenty-three (96%) Company Officers stated that they use the ad-hoc query system while one (4%) stated that they do not use the system. The question also attempted to establish the number of times per week the query system was used by Company Officers. Responses indicated nine (39%) Company Officers used

the system once per week. Twelve (52%) used the system three times per week. One (4%) used the system five times per week and one (4%) used it nine or more times per week. Further research would need to be conducted to ascertain the current specific uses for this system. With the previously mentioned data on the number of Company Officers using graphs and charts to show trends in their company, it is safe to say that this is not a primary use of the ad-hoc query system.

h. How well does MIDS functionality meet your needs?

The responses to the question address the ability of MIDS to perform the required functions that enable Company Officers to successfully complete their job. It does not however address what functions are required of the Company Officers. The responses are opinions that solely indicate to what extent MIDS functionality meets Company Officers' personal needs. Responses available included: not at all, a little, somewhat, mostly, and completely. Twenty-two (84%) Company Officer responses reveal that MIDS functionality "mostly" meets their needs while three (12%) indicate that MIDS only "somewhat" meets their needs. Surprisingly, only one (4%) indicated that MIDS functionality "completely" met a Company Officer's needs and not one response indicated "not at all" or "a little". The responses show the importance of continuing the improvement process of MIDS. In fact, certain functions may already exist in the MIDS program; however, Company Officers have not been given training or direction on how to best utilize the system. Therefore, they use the areas of the system that they understand and, unfortunately, these may not be identical. This shows how crucial Company Officer participation is in creating new functions in MIDS and to the future of MIDS. The follow on question to this identifies new functions Company Officers would like to see implemented into the MIDS system.

i. What new functions or data would you like to see from MIDS?

Eighteen responses were submitted to this question and the complete list can be viewed in Appendix A. The devotion of time and energy required for the ITSD to make changes or additions to the MIDS system is substantial. Therefore, substantial follow-on research on these recommendations would need to take place before starting the implementation process. The Academy administration would also need to decide if these recommendations are congruent with the strategies and goals of the institution. The following are a few of the recommendations given by the Company Officers.

1. Develop a running commentary section on midshipmen that included results and problems discussed in counseling, performance notes, etc…
2. It's great that we pull everything from a real-time database, but I would like to see MIDS work from a cached copy on my computer. The vast majority of the data never changes. We should use a locally cached copy as the default and update it on user request. This would work well, since I almost always look at the records of the same 137 mids (the ones in my company). Also, the ad hoc queries should be simpler and more intuitive to construct. Very few people know how build a good one. The laundry list of corporate documents is a soup sandwich. That mess should be significantly streamlined.
3. I would like to see the MO system updated to be more user friendly. Mids often come to see me because they don't know why they were disapproved for a given MO.
4. Ad Hoc queries are not always accurate depending on when and where the data is drawn. This often leads to confusion. I would like to see more

functions that enable me to look at my company, as a whole, over time. Company Officer – Summary Information is only marginally useful.

5. Graphs for trends at the company and individual level.

The recommendations provided show that most Company Officers are significantly concerned with performance measurement at the Academy. They seem to understand the importance of continually evaluating the metrics being tracked and also visually showing the midshipmen how their performance is comparing their own past performance and that of their peers.

j. How well does the current MIDS documentation (Pocket Guide, online help, etc.) meet your needs?

Documentation on MIDS includes the recently-produced pocket guide and the on-line help functions. The pocket guide is designed to introduce system capabilities and access procedures to end-users. Some of the procedures included in the guide are how to access MIDS, how to get help on the system, Commandant's staff module capabilities, Logistic module capabilities, and how to log into the WebIntelligence ad-hoc query tool. Eight (32%) Company Officers indicated that this documentation did not meet their needs at all while six (24%) indicated that the documentation met their needs a little. Another six felt the documentation met their needs somewhat. Significantly, only four (16%) Company Officers indicated that the documentation mostly met their needs while only one (4%) indicated that it completely met his or her needs. Overall, fourteen of twenty-five (56%) Company Officers indicated that MIDS documentation did not meet their needs, and five (20%) indicated that it met their needs.

k. How well does current MIDS training support your needs?

The research conducted has discovered that no organized training exist for Company Officers to learn the functional capabilities of the MIDS system. Training

received on the system includes informal training given by ITSD to personnel that wish to attend their training sessions, on the job self-training and by word of mouth between end-users. Fourteen (58%) Company Officers indicated that current MIDS training did not meet their needs at all while another four (17%) indicated that the training met their needs a little. Three (13%) Company Officers felt the training met their needs somewhat. Only two (8%) Company Officers indicated that the training mostly met their needs while only one (4%) indicated that it completely met their needs. Overall, eighteen of twenty-five (75%) Company Officers indicated that MIDS training did not currently meet their needs and three (13%) indicated that it met their needs.

l. What improvements can be made in these areas (training and documentation)?

The survey responses show conclusively that the Company Officers use the MIDS system for a variety of applications centered around performance measurement of midshipmen. This question attempted to determine new recommendations Company Officers would like to have implemented in the area of training and documentation. Seventeen recommendations were provided and are listed in Appendix A. The following summarizes that list. The most common recommendation was for the Academy to provide formal training on the functionality of MIDS. This would enable Company Officers to understand exactly what data is available and how the data can be manipulated. A large portion of the responses to this question emphasized the point that no real training exists and that most Company Officers learn the system by "messing around with certain modules until I found out which ones were most useful for me" and "on the job training". Additionally, training in the area of the ad-hoc query function was

deemed very important because of the difficulty experienced in creating new queries and generating graphs and charts to show individual and company wide performance.

D. USING MIDS TO MEASURE PERFORMANCE

This portion of the research focuses on developing easy-to-use methods of extracting information contained in the MIDS database and displaying it so that Company Officers can use it to help measure the performance of their company as a whole and their individual midshipmen. Before commencing this work, the specific performance metrics that would be analyzed needed to be determined. The basis for making this decision was the results of the survey which, as detailed above, was developed based on the results of stakeholder interviews and information garnered from the literature review. Specifically, the first question in the survey asked Company Officers to list the metrics that they used to track the performance of their midshipmen. Any metric selected by more than half of the Company Officers surveyed was included on the list for analysis. The list is shown in Table IV-2. Each of the selected metrics will be discussed in turn.

Metric	Response Ratio
PRT scores	88%
Overall QPR	92%
Changes in QPR	76%
Class absences	72%
Number of midshipmen on academic probation	80%
Number of D's/F's in military performance	72%
Pro quiz grades	64%
Appearance/personnel inspection results	68%
Room inspection results	56%
Number of academic board cases	60%
Number/severity of conduct offenses	88%
Company drill grades	56%

Table IV-2: Metrics Selected for Analysis

Most of the selected metrics are applicable to both tracking the performance of individuals and the performance of the company as a whole. Thus, methods for extracting information pertinent to tracking both individual and company performance were developed as appropriate. The currently-available MIDS modules, particularly the Company Officer System module, is quite comprehensive when it comes to individuals, providing nearly all the information necessary to track a single person's performance. Company-aggregate information is somewhat harder to come by. A few company-wide metrics in MIDS are found in the Company Officer – Summary Information Module.

Where information for a particular metric was available in currently-existing MIDS modules, the assessment consisted of locating that information and detailing how it could be accessed. This was how the reports for most individual performance measurements and few company-wide measurements were created. In cases where

adequate information could not be extracted from existing MIDS modules, the WebIntelligence software was employed to access and display the needed information. Most reports for company-wide metrics were developed in this manner. When possible, charts and graphs are used to enhance the visibility of trends in the data. Since all modules of MIDS are text and tables only, WebIntelligence queries were required to produce any sort of graphics. In two cases, the structure of the data in MIDS was such that neither currently-existing modules nor WebIntelligence provided a sufficient method for viewing the desired information. In these cases, WebIntelligence was used to acquire the data, which was exported to Microsoft Excel for further manipulation and display.

Finally, for four of the twelve metrics selected, no data exists in the MIDS database that is pertinent to that metric. Because of this, it was impossible to create any performance measurement methods for those metrics. The metrics so affected were pro quiz grades, appearance/personnel inspection results, room inspection results, and company drill grades. If, at some point in the future, information on these is added to the MIDS database, procedures similar to those outlined below could be used to track and display individual and company performance in these areas. The remaining eight metrics are dealt with in detail below. Step-by-step procedures on how to access and produce the reports discussed below are provided in Appendix B.

1. PRT Scores

Current and previous PRT scores for individual midshipmen were easily accessed through the MIDS Company Officer System module. A table provided in each midshipman's report lists his or her scores for each of the component tests and the PRT as a whole for every instance they have taken the test (Figure IV-2). This table allows the

Company Officer to rapidly assess both the current PRT status of an individual as well as showing any trends in that person's PRT performance over time.

PRT Results

Ac Yr Ending	Sem	Exam Date	Curl Ups	Push Ups	Sit & Reach	Run	Optional Bike	Optional Swim	Score	Validated	Passed
2000	FALL	07-OCT-1999	74	72	PASSED	10:02			72.6	NO	YES
1999	SPRING	07-JAN-1999	86	65	PASSED	10:02			75.4	NO	YES
2000	SPRING	01-MAR-2000	71	84	PASSED	10:15			73.1	NO	YES
2001	FALL	11-OCT-2000	90	98	PASSED	09:45			86	NO	YES
2001	SPRING	09-MAR-2001	83	80	PASSED	10:00			78.1	NO	YES

Records 1 to 5 of 5

Figure IV-2: Individual PRT Results in MIDS

No MIDS module provides PRT scores for the company as an aggregate, so a WebIntelligence query was created to extract the average score for each company in the battalion for each semester over the course of several years. (The user can set the period covered by the report.) The resulting table of scores was imported into Microsoft Excel and converted into a line chart showing each of the scores for each company in the battalion, by semester, over the reporting period. Excel was chosen to produce this graph because of its ability to dynamically scale the y-axis of the plot to best show the range of scores covered (Figure IV-3). WebIntelligence was capable of producing a plot as well, but since the scale is fixed (in this case, from zero to 100) and the variation in average scores between companies and over time is relatively small, all the lines were clustered at the top of the axis and different lines were indistinguishable.

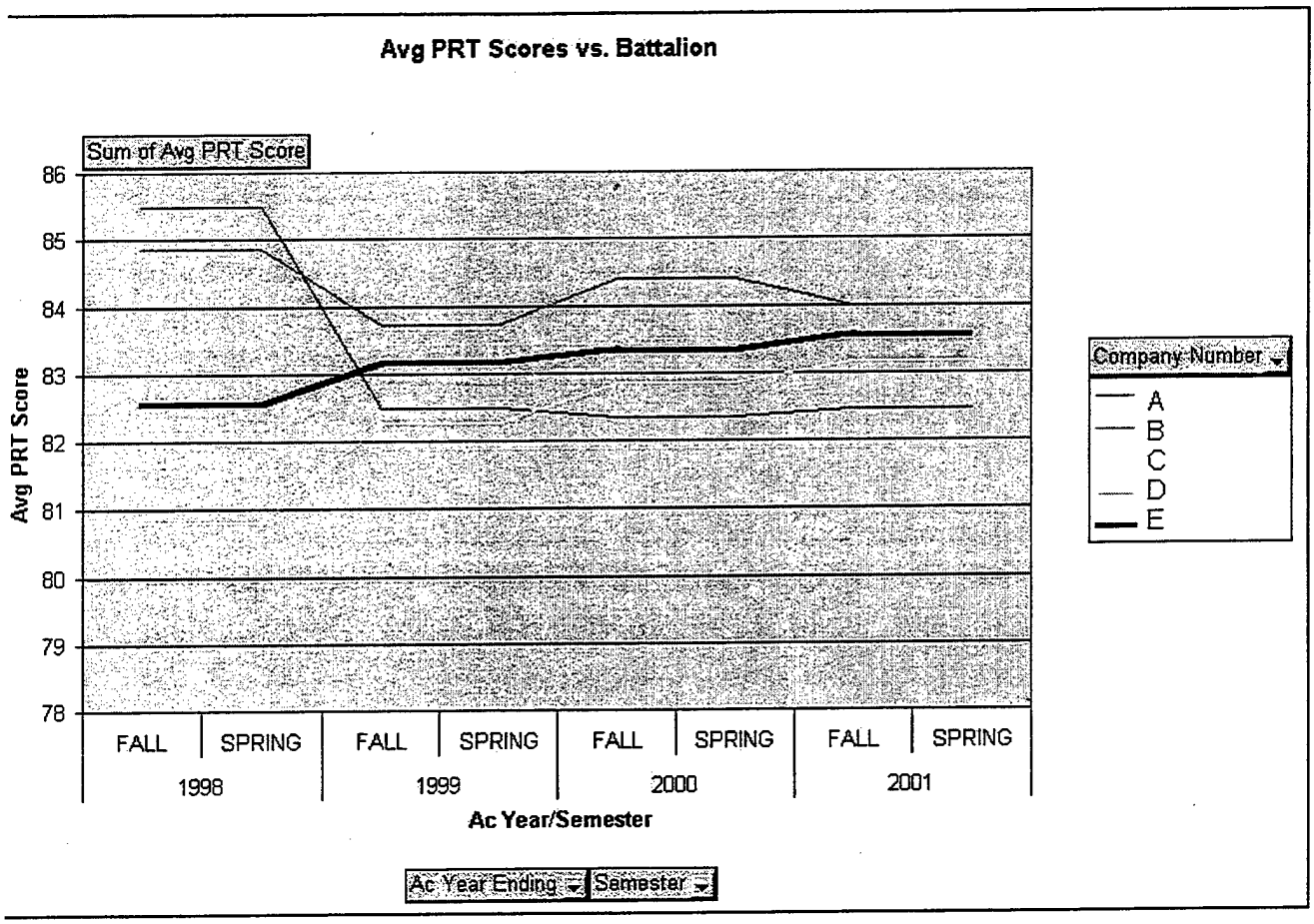

Figure IV-3: Company PRT Scores Within the Battalion

2. Overall QPR and Changes in QPR

As with PRT scores, individual academic grades (and QPR's) were available as part of the Company Officer System module report on the individual midshipman. In order to better visualize an individual's trends in QPR, a graph was created using WebIntelligence that shows, for a given midshipman, his or her semester QPR and cumulative QPR (through the corresponding semester) for each semester of attendance at the Academy (Figure IV-4). The cumulative QPR line shows the individual's general trend in academics, while the semester QPR line highlights uncharacteristically good and bad semesters.

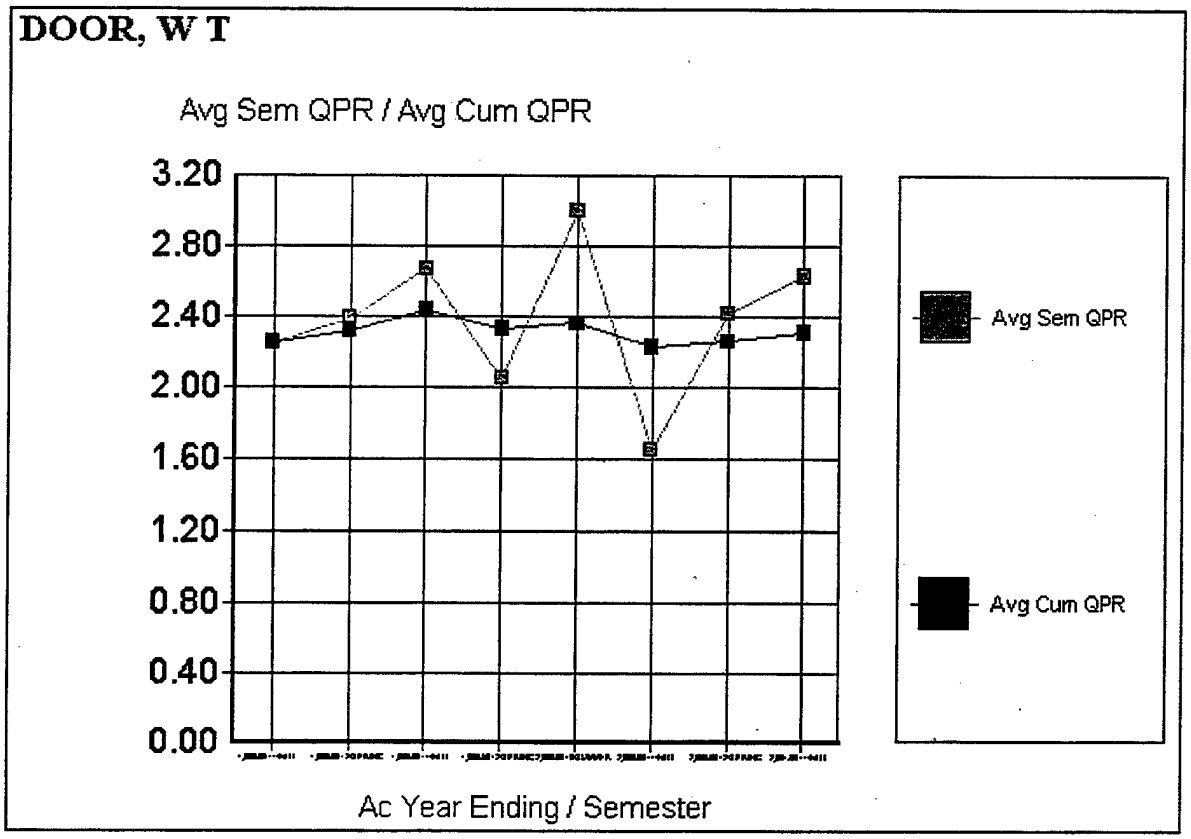

Figure IV-4: Individual Semester and Cumulative QPR Over Time

In order to track company-wide academic performance using QPR's, two separate reports were created. The first report, a bar graph created using WebIntelligence, is a line graph showing the average semester QPR for each class year group of midshipmen in the company (Figure IV-5). This report allows the Company Officer to compare the performance of different portions of his company over several years.

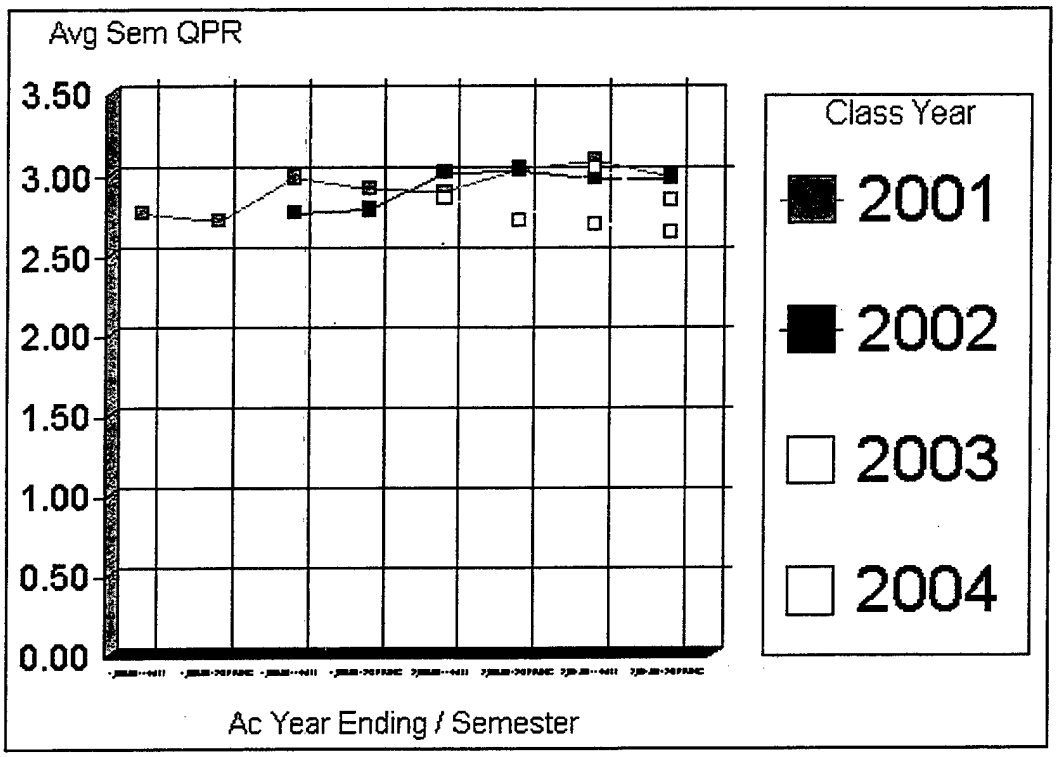

Figure IV-5: Company QPR Trends, by Class Year

The second company-wide report is a comparison of the average semester QPR for each company in the battalion over a user-selectable time period (Figure IV-6). This report is an Excel-generated line graph created from data extracted using a WebIntelligence query. As with the PRT scores, this combination of WebIntelligence and Excel was used because of the axis-scaling limitations of WebIntelligence and the small variation in scores relative to the size of the scale. This plot allows the Company Officer to track how his company is doing over the period of the report as compared with other companies in the battalion over the same period.

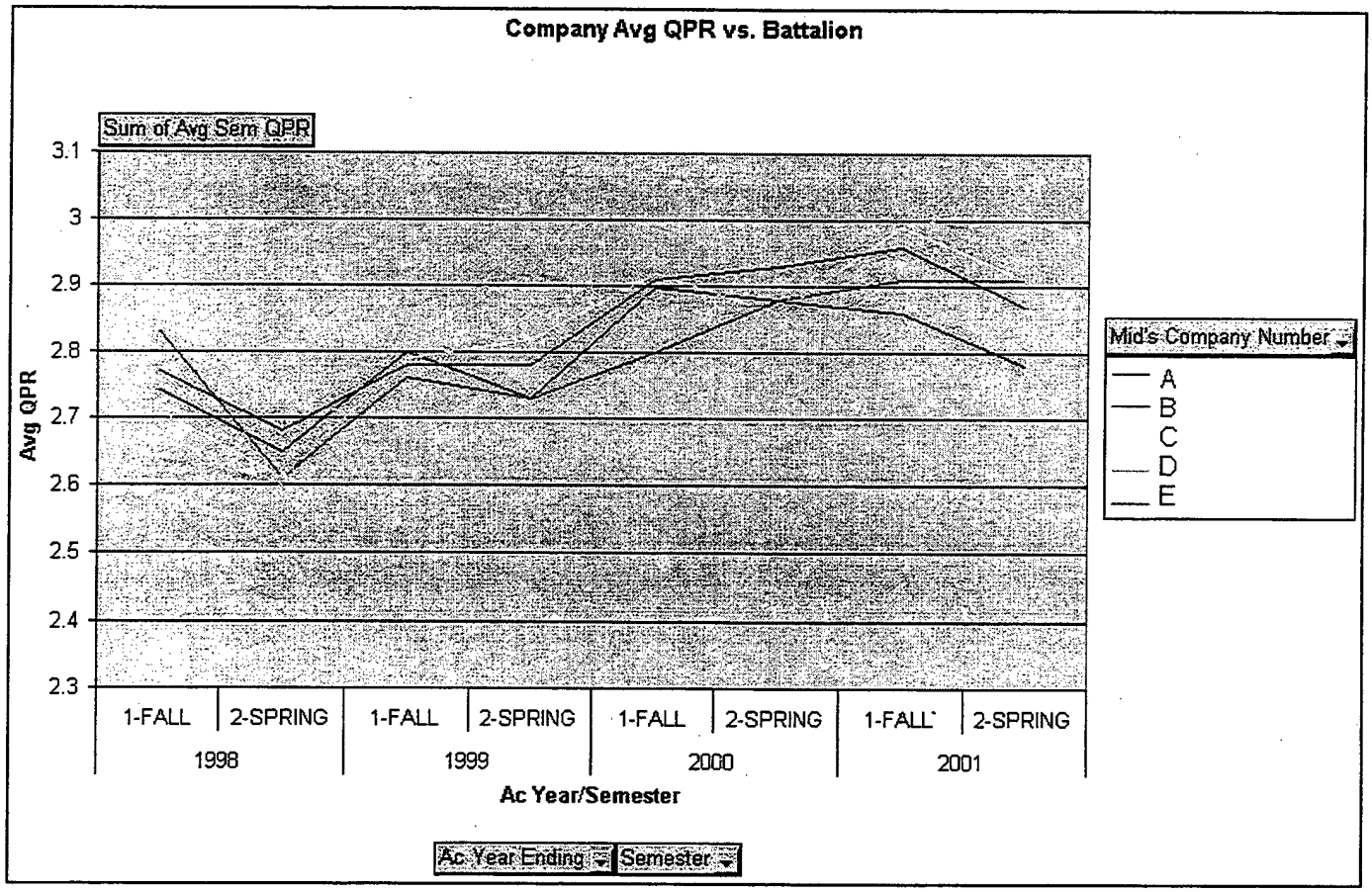

Figure IV-6: Company Semester QPR Within the Battalion

3. Class Absences

Absences were a more complicated metric than the previous two. In addition to the individual and company levels of analysis, there were distinctions to be made between total absences, including those for legitimate reasons, and unexcused absences. The latter is typically a responsibility and conduct-related matter, while the former may serve to explain changes in academic performance. To try to capture some of this complexity, six reports were employed. Two of these are based on individuals within the company, one compares class year groups within the company, and three compare the companies within the battalion.

The most comprehensive information on individual absences within the company is provided through the Company Officer - Summary Information MIDS module. Entering the company in question and selecting "Absences: All" for the type of report (Figure IV-7) generates a matrix list of all midshipmen in the company and their total number of absences for the current semester, broken down by the various types of excusal reasons. With this matrix, the Company Officer has access to detailed information on class attendance for all midshipmen in the company. There are three significant drawbacks to this report. First, the report is sorted alphabetically, which makes it difficult to spot problem areas. Second, it only provides cumulative data for the current semester, precluding analysis of either short-term phenomena or multi-semester trends for particular individuals. Finally, there is no aggregation of company-wide information in the report.

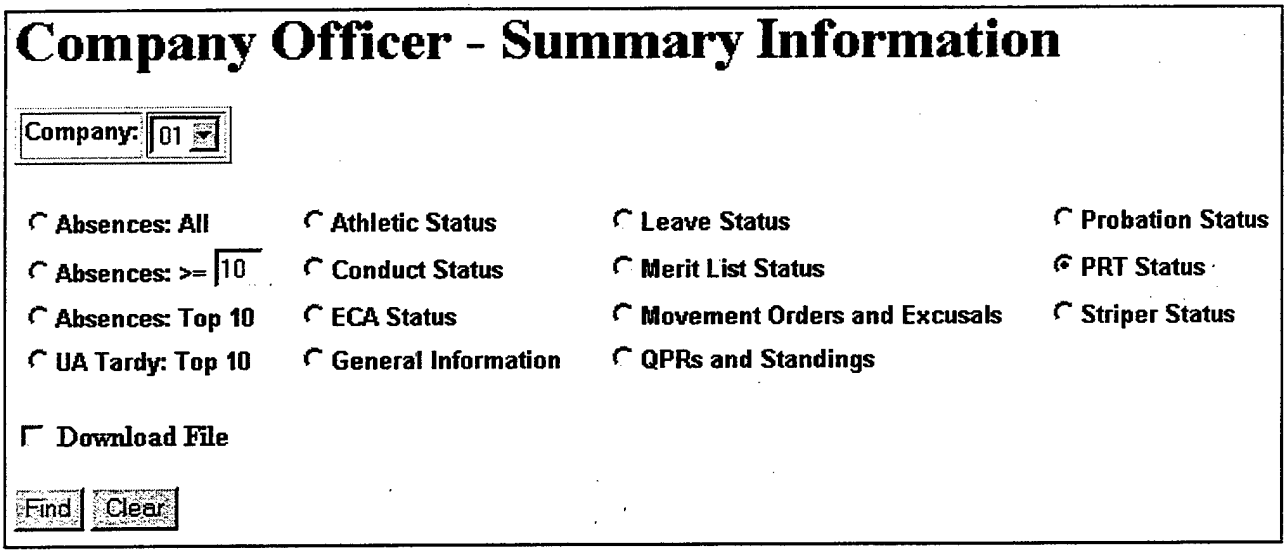

Figure IV-7: Company Officer – Summary Information Module Input Screen

Another portion of the Company Officer – Summary Information MIDS module addresses the first problem. By selecting the "Absences: Top 10" checkbox, the Company Officer can generate a list of the top ten midshipmen with the most total

absences in the company, sorted by the number of absences. This allows the Company Officer to immediately spot midshipmen with potential excessive absence problems. This report, though, also is based on cumulative semester data, and thus suffers from the same scope-of-analysis problems as the "Absences: All" report.

The remaining four reports deal with company-wide data. They also address the scope-of-analysis problem by providing user-selectable time periods that can be as little as a single day or as much as several semesters. The simplest of these reports is a WebIntelligence-created bar graph showing the total number of unexcused absences in the company over the selected period (Figure IV-8). The example shown is for a two

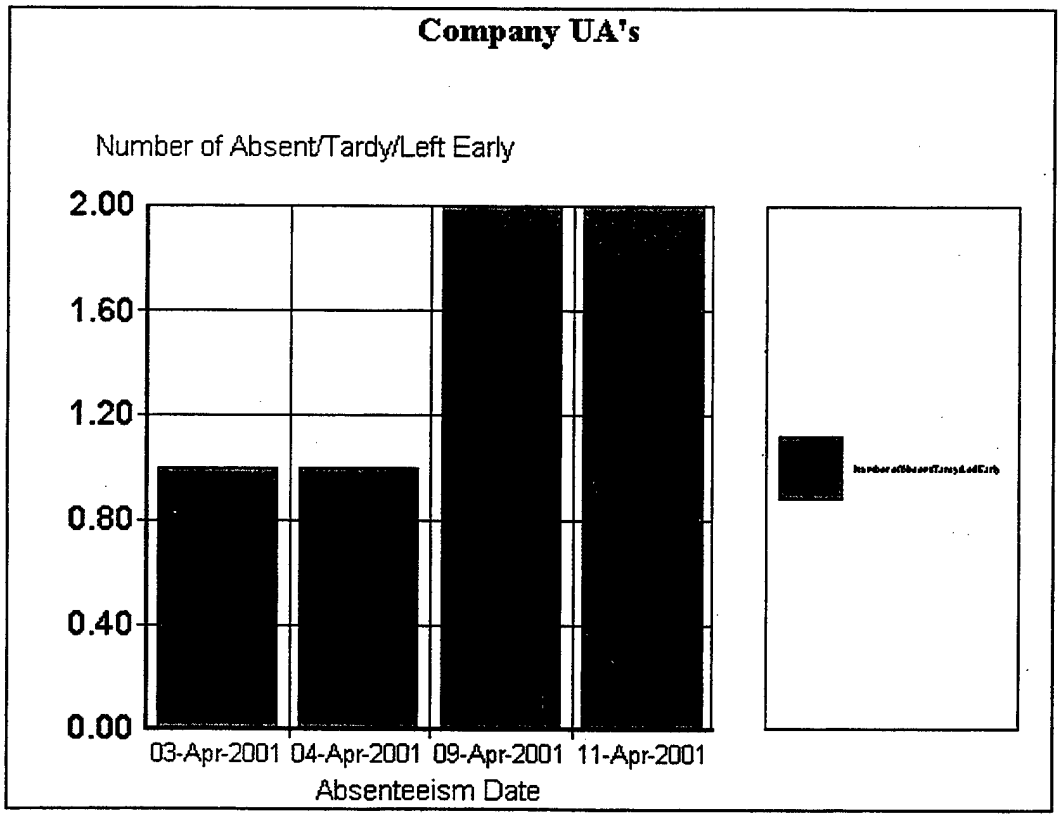

Figure IV-8: Company Unexcused Absences

week period. Note that only days were there was one or more unexcused absences are included on the x-axis. This is a limitation of the WebIntelligence software.

A more complicated and informative version of this report compares the number of unexcused absences for all the companies in a battalion over a given period of time (Figure IV-9).

The remaining two reports measure the total number of absences, excused or not.

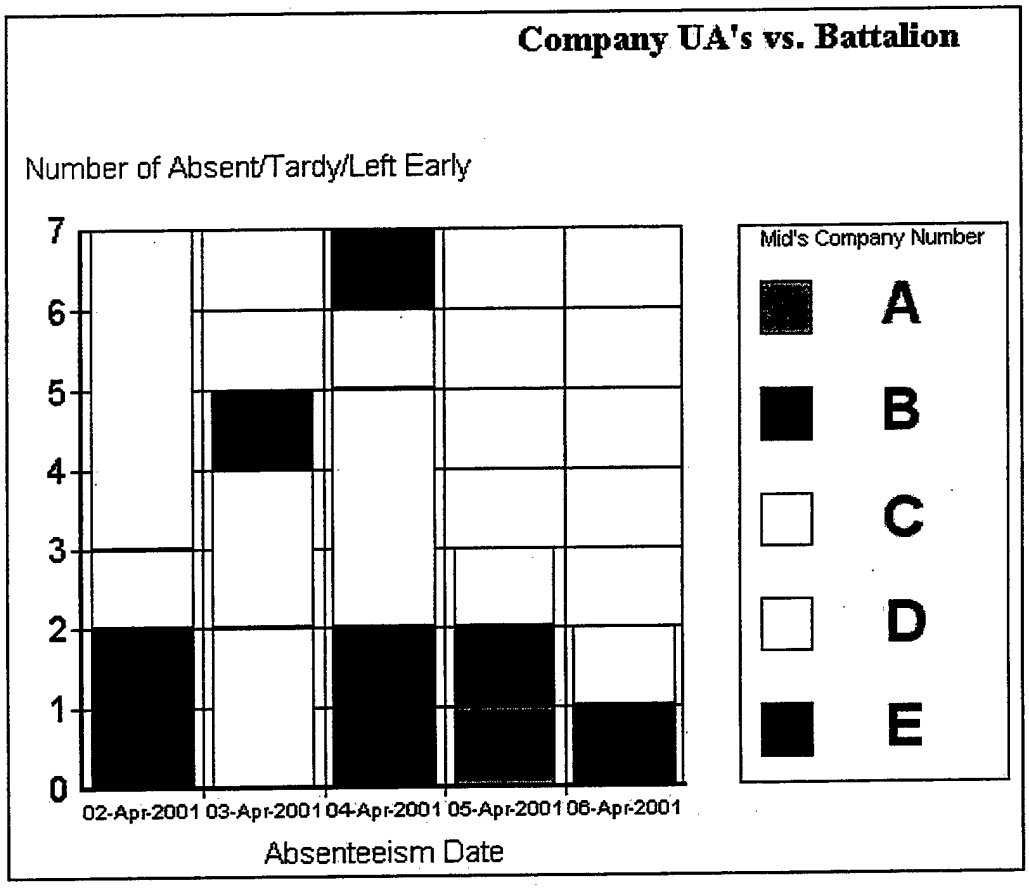

Figure IV-9: Company Unexcused Absences Within the Battalion

The first of these (Figure IV-10) shows all of the absences for the company, broken down by class year group. The other (Figure IV-11) shows all of the company's absences compared with the other companies in the battalion. One important use of this report is to determine if spikes in company absences are an isolated incident, or are related to

some battalion- or brigade-wide event (such as an academic conference or major athletic event). As with the two previous reports, these are both WebIntelligence bar charts that can cover any time span desired by the Company Officer.

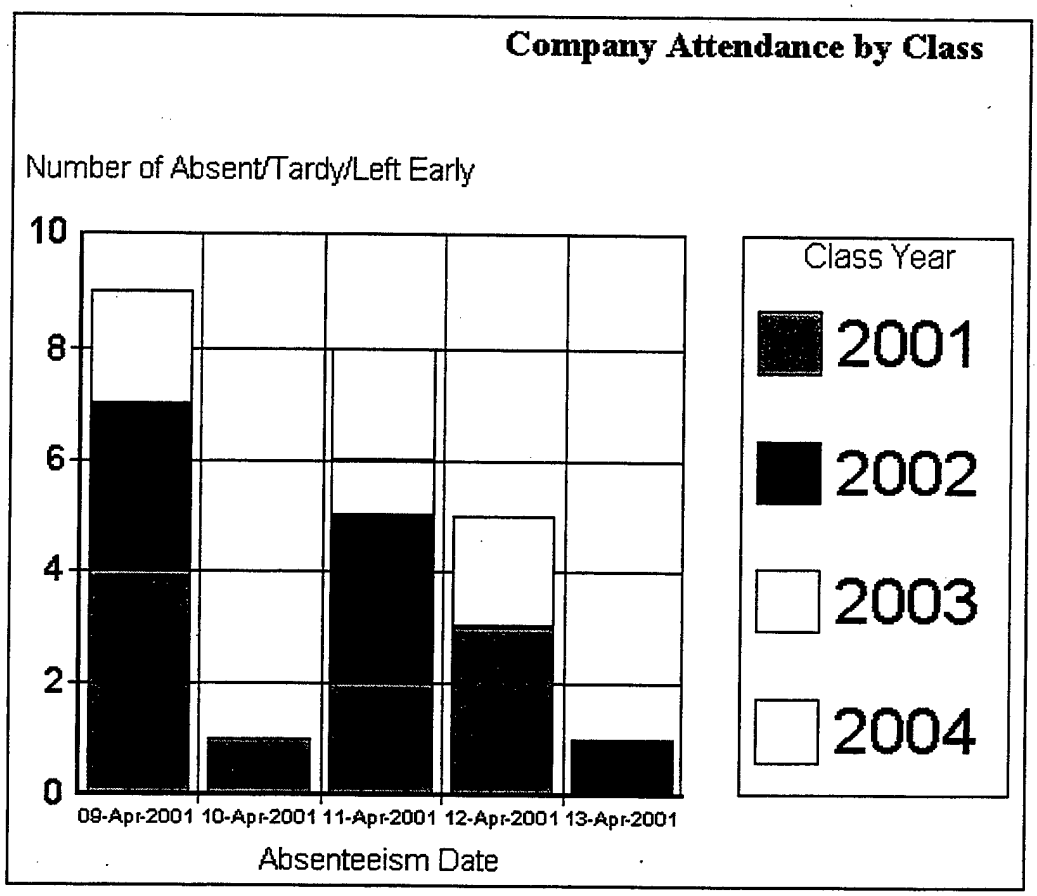

Figure IV-10: Company Absences by Class Year Group

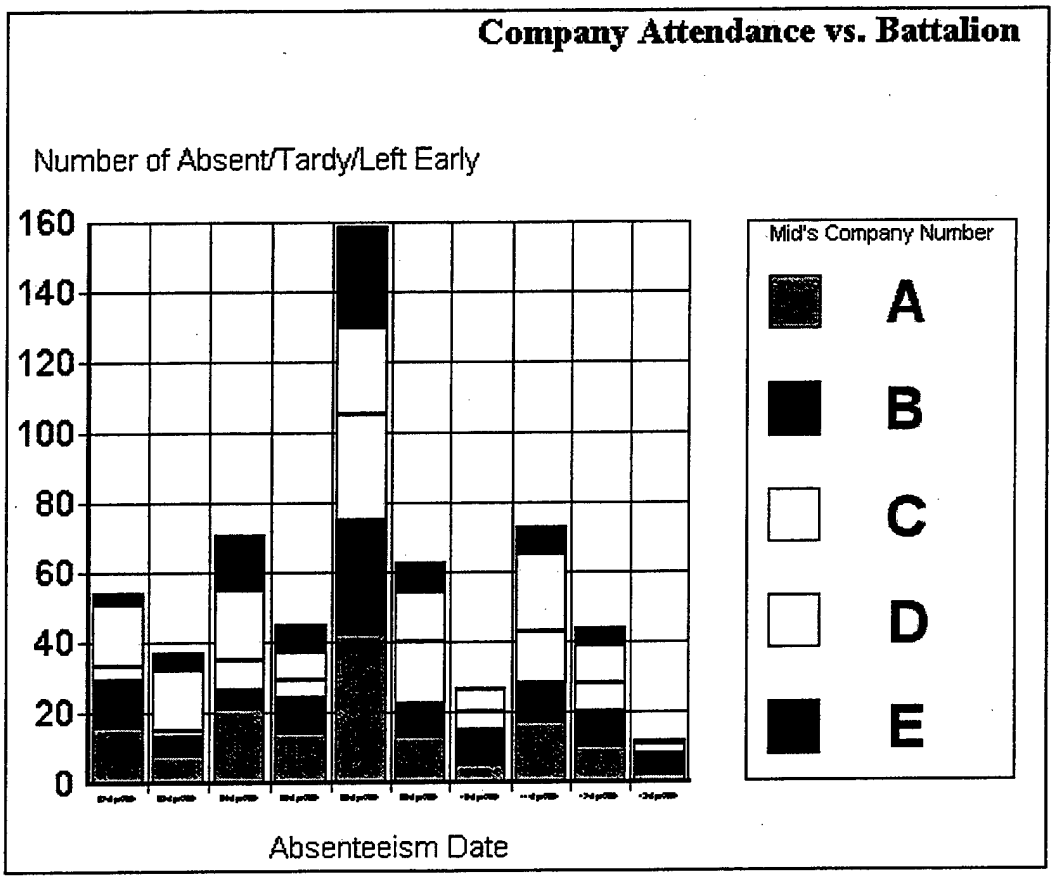

Figure IV-11: Company Absences Within the Battalion

4. Academic Probation and Academic Boards

In addition to the QPR information discussed above, some secondary metrics are available to the Company Officer in assessing the company's academic performance. According to the interview and survey results, the most closely watched of these secondary metrics is the number of midshipmen on academic probation at any given time. To assist the Company Officer in tracking this metric, two reports were employed. The first report was a list of those individuals in the company currently on academic probation. This list is part of the Company Officer - Summary Information MIDS module, and can be obtained by selecting the "Probation Status" checkbox when accessing the module (Figure IV-7). The second report, a WebIntelligence line graph, compares the number of midshipmen per semester on academic probation for the

companies in the battalion (Figure IV-12). Alternatively, this same report can be manipulated to just show statistics for a single company if the Company Officer so desires. (See Appendix B for details.)

A related metric is the number of midshipmen that are sent to academic review

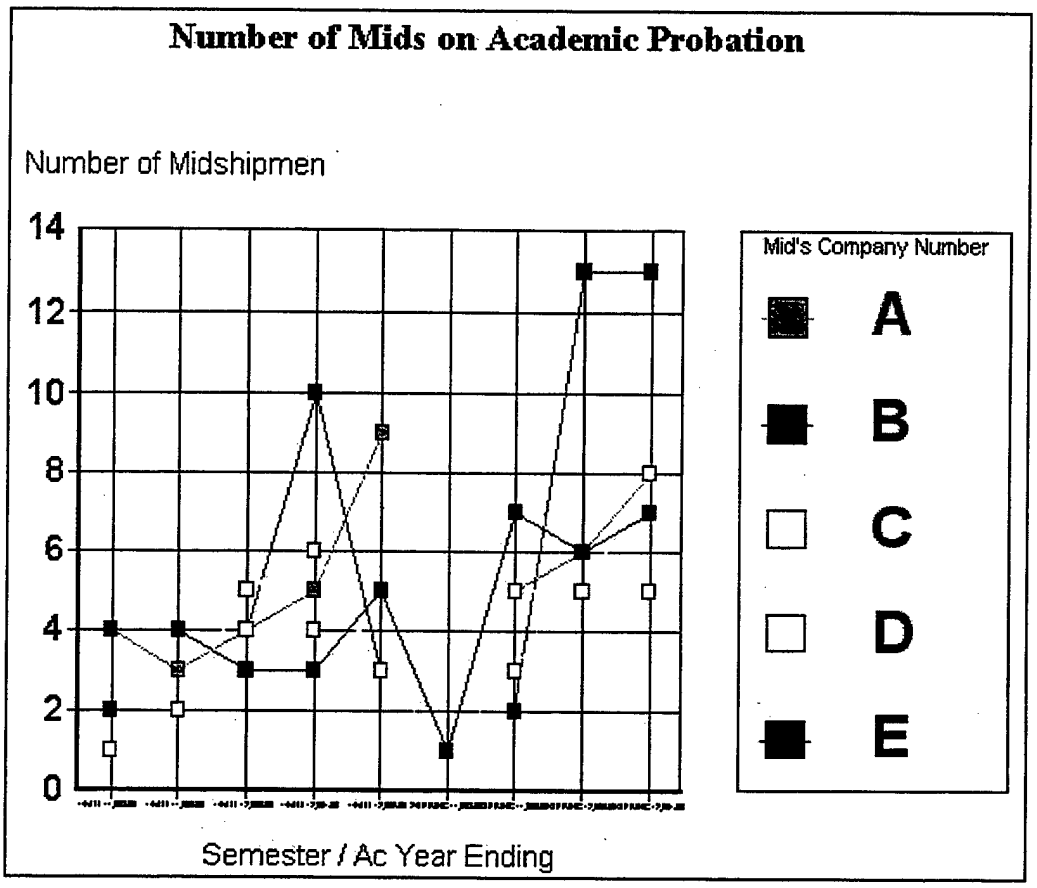

Figure IV-12: Midshipmen on Academic Probation for Each Company in the Battalion

boards each semester. This can be indicative of the company's academic performance as well as, when compared with the previous report, how well the company does at assisting those in academic trouble during the semester, preventing them from having to go to an academic board. The report used here is a WebIntelligence bar chart displaying the total number of academic board cases for each company in the battalion (Figure IV-13).

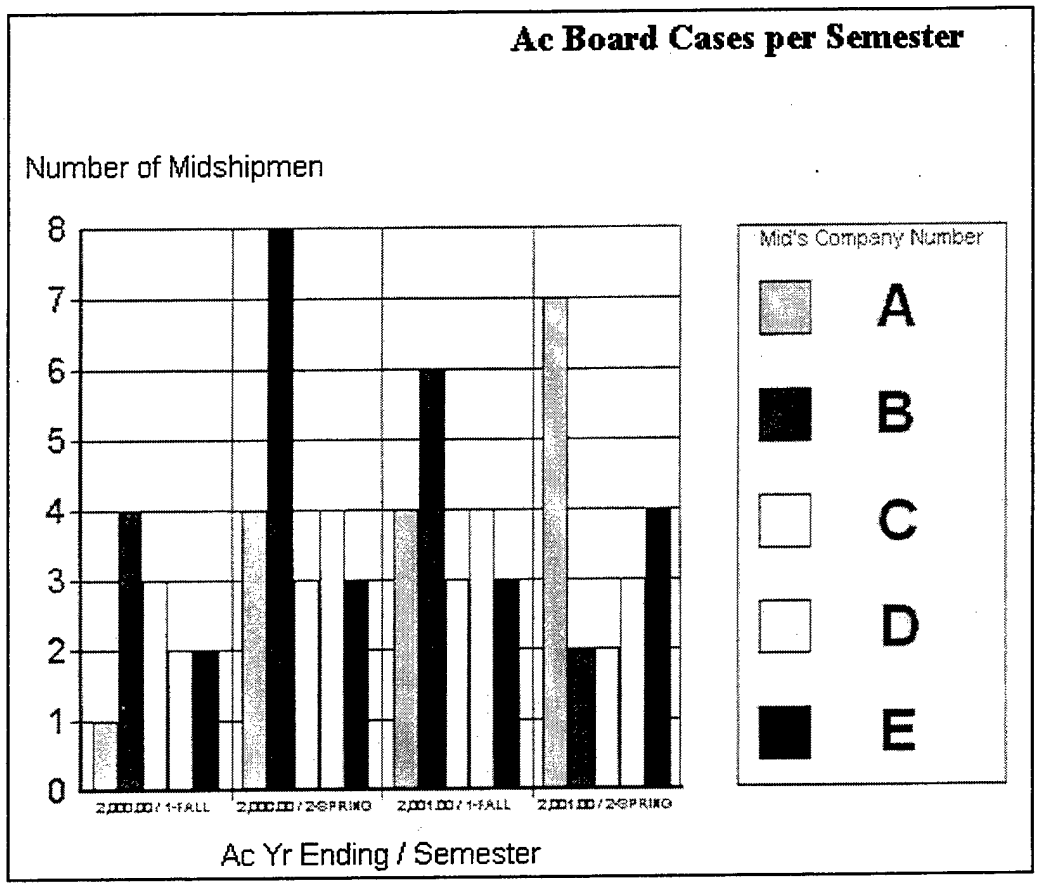

Figure IV-13: Number of Academic Board Cases Per Company in the Battalion

The previous three reports in this section focused on secondary metrics that identified midshipmen on the bottom end of the academic performance spectrum. It is also important for the Company Officer to identify and track the performance of those that are at the top end of this spectrum. The Company Officer – Summary Information MIDS module provides a method for easily identifying those individuals. Those midshipmen that excel in academics, as well as meeting different physical, professional, and conduct standards, are placed onto one of several merit lists and are awarded corresponding privileges. By selecting the "Merit List Status" checkbox, this module can be used to generate a list of midshipmen in the company that qualify for one or more of

the merit lists for the current semester. As with all reports generated by this module, however, there is no provision for tracking this information across multiple semesters.

5. Military Performance Deficiencies

The next metric to be analyzed was midshipmen with failing marks in military performance. Again, the Company Officer – Summary Information MIDS module can be used to generate a list of those midshipmen in a company on military performance probation. In this case, the appropriate checkbox is "Probation Status". In order to track military performance failures against the other companies in the battalion, a WebIntelligence bar chart was created that shows the number of midshipmen receiving a D or F grade in military performance for the semester in each company, for a semester specified by the user (Figure IV-14). An important characteristic of this report is that,

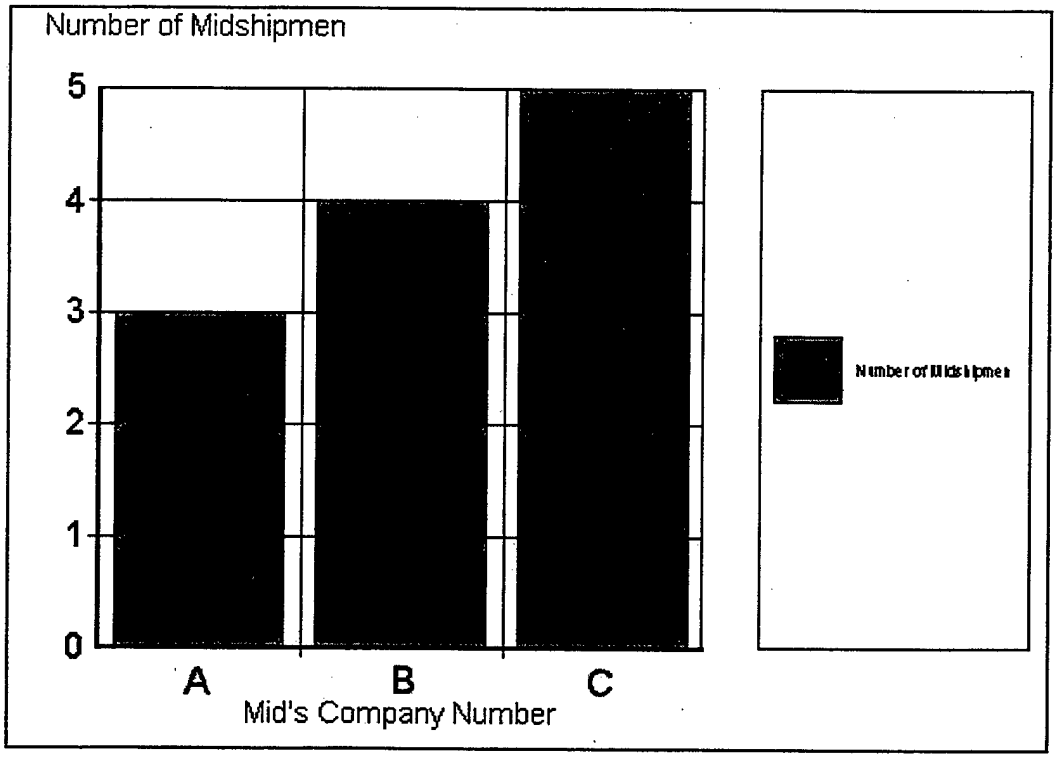

Figure IV-14: Midshipmen With Failing Military Performance Grades in Each Company Within the Battalion for a Given Semester

unlike most of the other WebIntelligence-generated graphs developed in this project, it only displays one semester. This is a limitation imposed by the architecture of the MIDS database that prevents more than one semester's worth of military performance grades from being accessed in the same query. Thus, to get an idea of trends for this metric, the user would need to run the query once for each semester in question, print or save each output, and visually compare the graphs.

6. Conduct Offences

The final metric considered in this research was the number and severity of conduct offences. Records for individuals are most easily accessed via the Company Officer System MIDS module, where a portion of each midshipmen's report details their

Conduct

Fall Total	Spring Total	Total Ac Year	Conduct Grade	Minor Offenses (35 Demerits or More) for Last 2 Semesters	Minor Offenses (35 Demerits or More) for Career	Major Offenses for Last 2 Semesters	Major Offenses for Career	Cumulative Demerits	Current Status
0	0	0		0	0	0	1	100	PROFICIENT

Record 1 of 1

Conduct Offenses

Case Number	Ac Yr Ending	Sem	Commit Date	Level	Demerits Award
001753	2000	FALL	24-OCT-1999	CLOSED CASE / FINAL DISPOSITION	75
002818	2000	SPRING	05-JAN-2000	CLOSED CASE / FINAL DISPOSITION	10
002939	2000	SPRING	15-JAN-2000	CLOSED CASE / FINAL DISPOSITION	
003239	2000	SPRING	10-JAN-2000	DISMISSED	
005664	2000	SPRING	17-MAY-2000	CLOSED CASE / FINAL DISPOSITION	10
011127	2001	FALL	03-OCT-2000	CLOSED CASE / FINAL DISPOSITION	
014490	2001	SPRING	26-FEB-2001	DISMISSED	
991309	1999	SPRING	02-APR-1999	CLOSED CASE / FINAL DISPOSITION	5

Records 1 to 8 of 8

Figure IV-15: Individual Conduct Records in MIDS

individual conduct history (Figure IV-15). As with academic and military performance probation, a list of midshipmen in the company on conduct probation can be generated by using the "Probation Status" checkbox in the Company Officer – Summary Information MIDS module.

The second report employed to track this metric is a measure of the number of midshipmen committing conduct offenses in the company per semester. This is broken down, using a WebIntelligence bar chart, by major and minor offenses, allowing the Company Officer to track the enforcement level of (relatively constantly occurring)

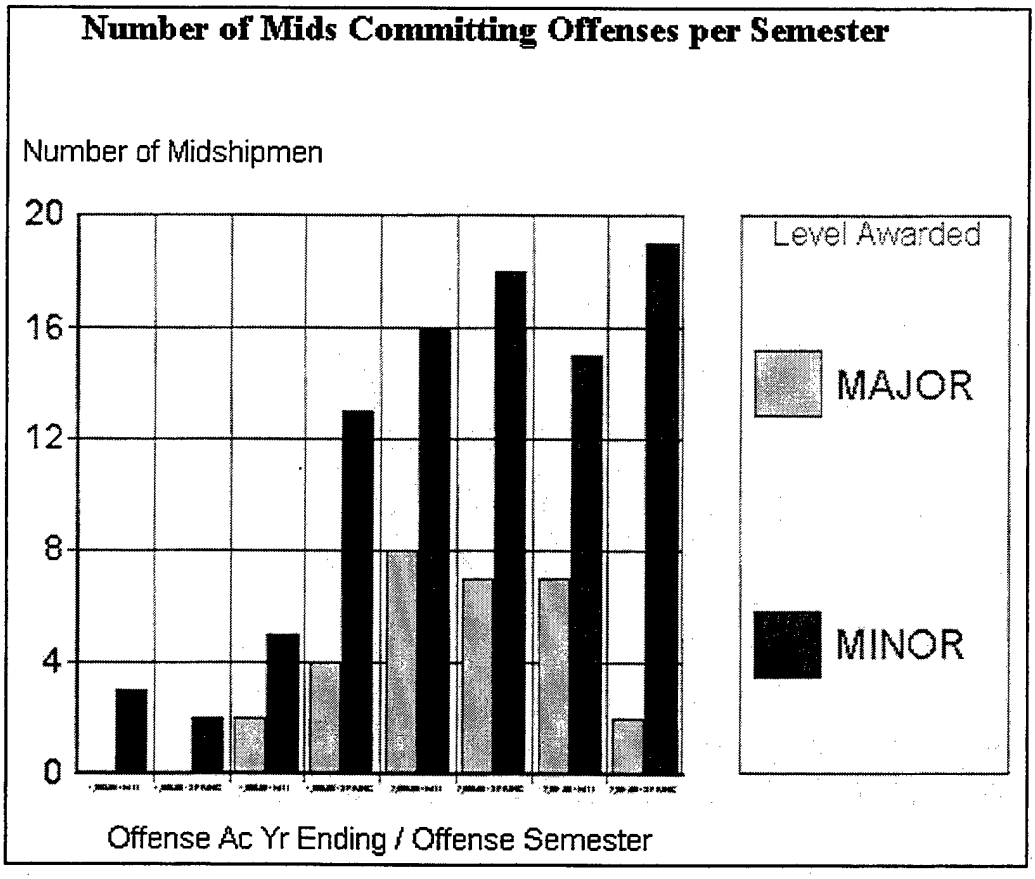

Figure IV-16: Midshipmen Committing Conduct Offenses Per Semester

ıinor infractions as well as the incident rate of major conduct offenses over the course of ɜveral semesters (Figure IV-16).

The final report in this section was created to compare the company's conduct ɜcord for major infractions with the rest of the battalion. To this end, a WebIntelligence ar chart was created that plots the total number of midshipmen in each company that ommitted a major conduct offense each semester (Figure IV-17). As is the case with ıost of these reports, the period covered by the report is selectable by the user.

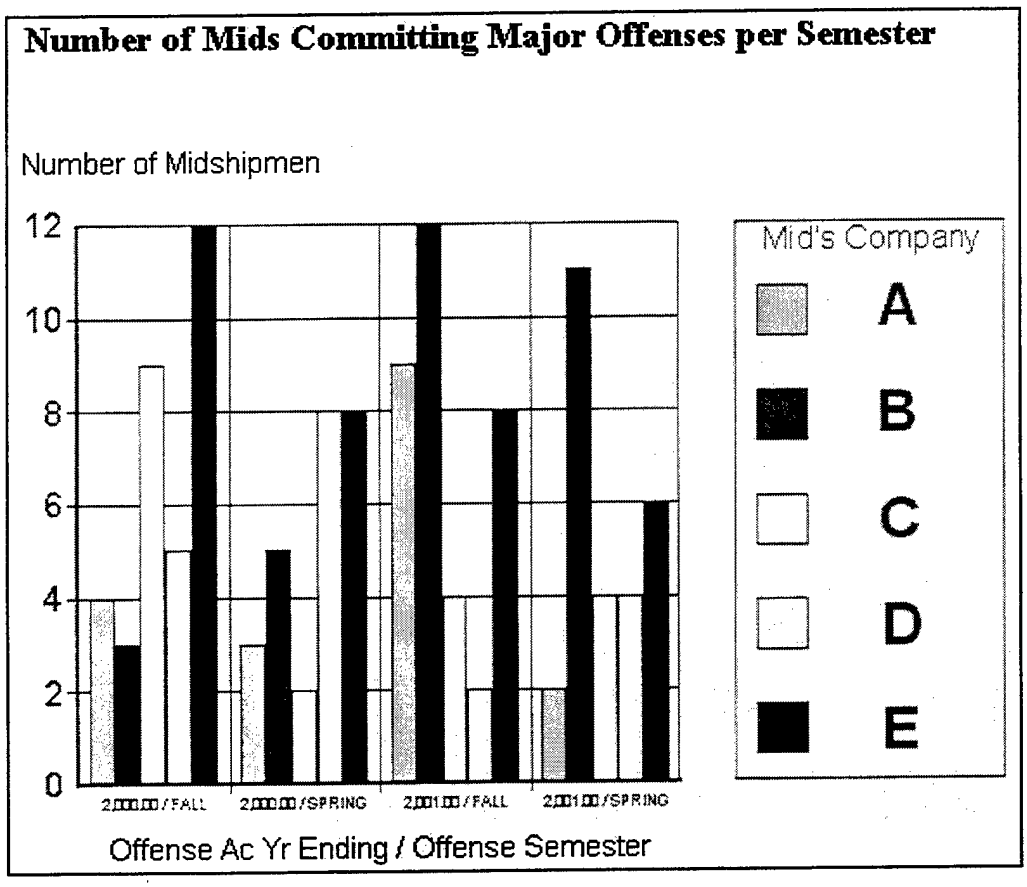

Figure IV-17: Midshipmen Per Company Committing Major Conduct Offenses Each Semester Within the Battalion

;. CHAPTER SUMMARY

MIDS has evolved into an extremely useful data storage and retrieval system for .se by personnel at the Academy. However, Company Officers can increase the system's

usefulness by using the system as a performance measurement tool in the development of midshipmen. For this to occur, Company Officers must play an integral part in the identification of metrics to be tracked and the designation of standards to be followed for each of them. This participation will ensure that all Company Officers and midshipmen understand current and future performance goals and that a fair and clearly understood environment exists in regards to performance grades and the Naval Academy. The survey was designed to capture the opinions Company Officers have about MIDS. This chapter discussed those opinions and subsequently used the responses to show techniques where MIDS could be used to measure the performance metrics important to the Company Officers. The data collected can now be used to give recommendations for future development of the MIDS system. The following chapter offers conclusions about the current use of MIDS by Company Officers and presents recommendation for future research.

V. CONCLUSION AND RECOMMENDATIONS

A. SUMMARY AND CONCLUSIONS

This research examined use of the currently deployed Midshipmen Information System (MIDS) as a performance measurement tool. MIDS is a data warehouse system designed to store performance-based information for use by the faculty, staff and midshipmen at the United States Naval Academy. MIDS came online in 1999 and is intended for use by Company Officers as a performance measurement tool in the development of midshipmen.

Research conducted for this thesis involved an in-depth review of current performance measurement theories that exist in both the public and private sector. Previous research in the area of performance measurement at the United States Naval Academy was also examined. To assess overall use of MIDS, group interviews of faculty, staff, and midshipmen were conducted by Leadership Education and Development (LEAD) students. To specifically gain Company Officer usage data, an online survey was given to each officer currently holding a Company Officer billet. Twenty-five Company Officers participated in the survey. These Company Officers provided valuable insight into their understanding of MIDS, performance measurement, and what metrics they personally feel are important to the development of midshipmen.

The interview responses showed several widely held opinions with respect to MIDS and performance measurement in general. First, very little training exists to assist end users in utilizing MIDS to its fullest capability. Secondly, the academy's mission "to develop midshipmen morally, mentally, and physically" (USNA, 2001a, p. 1) does not

set standards as to how this midshipmen development should be measured. Very little guidance is given to Company Officers on how to translate this mission into metrics and standards of performance that are appropriate for measuring the desired development.

Responses to the Company Officer online survey were diverse, though many trends could be seen in opinions about MIDS. First, Company Officers felt that very little training and documentation exists to assist them with their use of MIDS and that more training on the system would help them conduct their job more efficiently. Metrics used to assess the performance of their midshipmen varied widely, although a few metrics seemed important to most of the Company Officers. These metrics included number of midshipmen on academic probation ("UNSAT") in company, overall QPR, PRT results, and number and severity of conduct offenses. Very few Company Officers utilize visual aids such as graphs and charts to show trends to their company or their superiors regarding midshipmen's performance over time. In general, no consistent practices exist between Company Officers in relation to their use of MIDS as a performance measurement tool.

The final portion of the project consisted of a system capability analysis of MIDS and the WebIntelligence ad-hoc query software. Eight different performance metrics were selected for this analysis. These were chosen because they were considered important by a majority of the Company Officers surveyed and data relevant to them was present in the MIDS database. Four other metrics were considered important by the Company Officers, but since no data existed in MIDS to measure these, they were not included. Currently existing MIDS modules were investigated to determine their utility in tracking these metrics. If the existing modules were not adequate for tracking these

metrics, WebIntelligence was used to generate appropriate reports. In some cases, it was also necessary to employ external software (Microsoft Excel) to aid in displaying the information in a form useful to the Company Officer. Standardized procedures were created for Company Officers to access the various reports examined or created in this phase. These reports and procedures should be useful to Company Officers in tracking the performance of their midshipmen, and can serve as templates for the creation of further reports in the future.

Overall, MIDS is an excellent system for monitoring the performance of midshipmen. It contains a wealth of information on many performance-related issues and is fairly simple to use. WebIntelligence is a valuable supplement to MIDS. Its customizable data access and visualization capabilities are quite useful. On the other hand, several technical limitations to MIDS and WebIntelligence were discovered during the system capability analysis. Improving one or more of these areas would significantly increase the usefulness of MIDS to the Company Officer.

First, MIDS is very good at presenting individual data, but its capacity for displaying company-aggregate data is limited. Some portions of the Company Officer – Summary Information module provide company-wide reports, but more would be useful.

Another limitation of MIDS is that its capabilities for displaying information over time varies widely. In some cases, such as individual academics, conduct, and PRT grades, long-term information is readily available and easy to interpret. In other cases, such as absences, probations, and merit lists, no method exists for viewing any historical information.

Finally, MIDS is a text-only system, and displays most of its information in tables. While this is appropriate for getting exact values of a particular piece of data, graphical presentation (bar or line charts, for example) would be more effective for identification of trends. WebIntelligence has graphical capabilities, but the query construction interface is somewhat complicated, particularly for the casual user.

B. ACTION RECOMMENDATIONS

The Information Technology Systems Division (ITSD) at the United States Naval Academy is responsible for the MIDS system. However, its personnel cannot be responsible for all aspects of the system. Performance measurement is always changing, with new ideas being generated almost daily. Therefore, it is the responsibility of each user to search for areas to improve use of MIDS. This thesis provides four areas to be examined for improvement of MIDS, improvement of Company Officers' use of the system, and use of that system in the development of midshipmen.

1. Training for Company Officers

Develop a training curriculum that could be included in the LEAD program's Performance Measurement class. This training would assist with the indoctrination of Company Officers into their roles and get them competent with the use of MIDS before their move into Bancroft Hall. This training would also assist Company Officers by reducing the amount of time they must spend on the computer obtaining information. Working more efficiently would allow for more time to be spent in a mentor position with the midshipmen. Understanding the system better would allow the Company Officer to extract performance trends that they could show to individual midshipmen and their entire companies. This training would also result in the Company Officer having a

more thorough understanding of each midshipmen and their company's performance because of their ability to see trends.

2. Set Institutional Standards

In order to ensure that midshipmen receive fair and consistent treatment during their development into naval officers, standards must be set concerning the way their performance is measured. The institutional leadership should indicate what metrics are important to track, and each company officer should follow those guidelines to ensure consistent results. All stakeholders should be involved in the process of generating these guidelines so that all areas of midshipmen development are included and that performance measurement at the Academy is up to date with current performance measurement models.

3. Add Any Needed Data to MIDS

One limitation of the system capability analysis was that, for four of the twelve metrics considered important by the Company Officers, no relevant data was available in the MIDS database. Once a list of standard performance metrics are decided upon, this list needs to be checked against the data available in MIDS. If there are any metrics for which no data is available, new data tables and modules for inputting and viewing this new data need to be created.

4. Develop Standard Procedures for Tracking Metrics

Once the important metrics have been determined and data is available, the next step is to develop and implement standard procedures for tracking and reporting those metrics. Appendix B is one example of what these procedures might look like. Ideally, these procedures should provide the Company Officer with a systematic process to generate reports pertinent to each selected metric. This, combined with Brigade-wide

performance standards, would go a long way to reducing the variability in performance measurement between companies.

C. AREAS FOR FUTURE RESEARCH

Due to the ever-changing ideas in performance measurement and the needs and expectations of the United States Naval Academy and the fleet, a yearly assessment of performance measurement at the Academy is required. This assessment could be done by a LEAD student and would satisfy three key areas. The first would be fulfilling the thesis requirement of a LEAD program student. The second would be to reduce the workload placed upon the ITSD. The last would be to continually have an up to date performance measurement system available for the Academy that complies with the Government Performance and Results Act (GPRA).

A second possible follow-up would be to conduct a comparative study of performance measurement between USNA and other large federal institutions. Obvious choices for comparisons would be the Air Force Academy, Coast Guard Academy and Military Academy. Other portions of the military or civilian government agencies may also be instructive to study. This type of study could include the interplay between institutional strategy and performance measurement, metrics considered important, methods for setting standards, and how metrics are tracked and reported.

Another possible study would be an assessment of customer satisfaction with the Academy's product, its graduates. In this case, the Academy's customers are the commanding officers in the fleet. The goal of this type of study would be to determine the quality of graduates, as seen by these fleet commanding officers, and compare this

with the performance measurement standards and metrics at the Academy. In addition, this would provide a "reality check" on the performance goals of the Academy by comparing what attributes fleet commanding officers want to see in new officers with the attributes that the Academy is striving to develop.

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APPENDIX A: SURVEY AND RESULTS

1. Which of the following metrics do you use to track the performance of individual midshipmen or your company as a whole? (check all that apply)	Number of Responses	Response Ratio
PRT scores	22	88%
PE grades	7	28%
Overall QPR	24	96%
Changes in QPR	18	72%
Class absences	19	76%
Study hours	3	12%
EI hours	3	12%
Number of UNSAT's in company	20	80%
Number of D's/F's in Military Performance	18	72%
PRODEV grades	4	16%
Pro Quiz grades	16	64%
Appearance/personnel inspection results	17	68%
Room inspection results	14	56%
Number of academic board cases	15	60%
Number of honor cases	12	48%
Number/severity of conduct offenses	22	88%
Number of weight category 5/6 cases	10	40%
Attendance at company functions	9	36%
Community involvement	5	20%
SIR chits per midshipman	3	12%
Company intermural performance	11	44%
Company drill grades	14	56%
VIEW Other, Please Specify	5	20%

1 Which of the following metrics do you use to track the performance of individual midshipmen or your company as a whole? (check all that apply)	
#	Response
1	conduct history, conduct action pending, movement orders
2	Chain of Command input
3	Number of Mids on ment lists (Deans, Supts, Dants); Company QPR (Semester and Cum); Company QPR difference (Semester)
4	PE deficiencies (swimming, PE failures, etc.)
5	Time I spend talking with professors

2.	Do you track changes in performance *over time* for either individual mishipmen or your whole company?	Number of Responses	Response Ratio
Yes		24	96%
No		1	4%
	Total	25	100%

3.	Do you use any visual representations (graphs, etc.) of performance for your use, your company's, or your Battalion Officer's?	Number of Responses	Response Ratio
Yes		10	40%
No		15	60%
	Total	25	100%

4.	Which of the following most closely describes how often you use the MIDS system?	Number of Responses	Response Ratio
Once a week or less		0	0%
Three times a week		0	0%
Once a day		2	8%
Twice a day		9	36%
Four or more times a day		14	56%
	Total	25	100%

5.	What do you use MIDS for? (Please rank in order of importance.)					
Percentage indicates total respondent ratio and parenthesis indicate actual number.	1 Most frequent	2	3	4	5 Least frequent	N/A
1. Track the performance of individual midshipmen	48% (12)	28% (7)	16% (4)	0% (0)	4% (1)	4% (1)
2. Track the performance of your company as a whole	0% (0)	20% (5)	32% (8)	28% (7)	12% (3)	8% (2)
3. Produce required reports for your Battalion Officer	8% (2)	8% (2)	12% (3)	36% (9)	32% (8)	4% (1)
4. Gather information for conduct/honor/ academic/performance boards	24% (6)	44% (11)	8% (2)	24% (6)	0% (0)	0% (0)
5. Enter midshipmen performance grades	0% (0)	4% (1)	28% (7)	24% (6)	40% (10)	0% (0)
6. Other (please state below)	16% (4)	8% (2)	0% (0)	0% (0)	4% (1)	8% (2)

6	Other:
#	Response
1	Find personal information (e.g. major, home of record, sports activities, contact phone numbers for leave periods
2	Mostly checking individual records when they submit chits, checking absences and cross referencing them with MO's, etc.
3	approving excusals/movement orders, finding out free periods so i can talk to one of my mids...
4	Initiate, Review, and Approve Movement Orders and Excusals
5	MO/Excusal approval; Misc INFO re: MIDN
6	Gather information for things other than conduct/academic/etc. boards
7	Counseling, spot checking and MOs

7. Which module of MIDS do you use the most?	Number of Responses	Response Ratio
Company Officer Page	22	88%
Company Officer – Summary Information	1	4%
Matrices – Query Current Midshipmen	0	0%
Weekend Eligibility	0	0%
Absences	0	0%
VIEW Other, Please Specify	2	8%
Total	25	100%

8. Do you use the ad-hoc query system (WebIntelligence)?	Number of Responses	Response Ratio
Yes	23	96%
No	1	4%
Total	24	100%

9. If so, how many times per week?	Number of Responses	Response Ratio
Once	9	39%
Three times	12	52%
Five times	1	4%
Seven times	0	0%
Nine or more times	1	4%
Total	23	100%

10. How well does MIDS functionality meet your needs?	Number of Responses	Response Ratio
Not at all 1	0	0%
A little 2	0	0%
Somewhat 3	3	12%
Mostly 4	21	84%
Completely 5	1	4%
Total	25	100%

11	What new functions or data would you like to see from MIDS?
#	Response
1	Platoon Cdr's notebook
2	Ad Hoc queries are not always accurate depending on when and where the data is drawn. This often leads to confusion. I would like to see more functions that enable me to look at my company, as a whole, over time. Company Officer, Summary Information is only marginally useful.
3	Ad hoc query and other functions don't print well. Approve/deny all for Movement Orders is useless (need an approve/deny eligible)
4	Graphs for trends company and individual level.
5	Muster results, inspection results
6	More items tailored for the company vice the academic departments.
7	I would like to see an automatic cross reference between absences and MO's. If a mid comes up absent, you have to go into a completely different module to see if he was really on an MO or excusal. SIR chits, same thing. There is no MIDS module for SIR chits. I would like to get rid of the paper for SIR chits.
8	Picture added for each midshipmen.
9	Easier ability to query by personally designated variables; Company statistics listing change in peformance (academics, athletics, military areas, etc.)
10	I'd like an email sent to MIDN who are deliquent in PE. Within a week, they need to respond to a POA to fix their problem. The MAPR's portion is very cumbersome and can be done via email. I'd like one page that says here are all of your issues...PE failures/deficiences/conduct and/or honor probation/UNSAT/medical chits/etc. Plus we need a tickler to see all of the awards or programs neededing our attention...NAPS detail, plebe summer detail, OPINFO, Kaufman Award, Sen Marg Smith Award, USA today Academic All-American....etc...
11	It's great that we pull everyhting from a real-time database, but I would like to see MIDS work from a cached copy on my computer. The vast majority of the data never changes. We should use a locally cached copy as the default and update it on user request. This would work well, since I almost always look at the records of the same 137 Mids (the ones in my company). Also, the ad hoc queries should be simpler and more intuitive to construct. Very few people know how build a good one. The laundry list of corporate documents is a soup sandwich. That mess should be significantly streamlined.
12	absence data more clearly shown
13	It would be nice to be able to keep a running commentary on midshipmen (i.e. results/problems discussed in counseling, performance notes, etc).
14	More of the often required queries only accessible in AdHoc System being standardized for MIDS (i.e 6-week grade summaries, etc.)
15	How Many Weekends have been used. Tours completed
16	A few things would be nice that I can access from AdHoc Queries (but not MIDS), but the inconvenience is really negligible.
17	None
18	I would like to see the MO system updated to be more user friendly. Mids often come to see me because they don't know why they were disapproved for a given MO.

12.	How well does the current MIDS documentation (Pocket Guide, online help, etc.) meet your needs?	Number of Responses	Response Ratio
Not at all 1.		8	32%
A little 2.		6	24%
Somewhat 3.		6	24%
Mostly 4.		4	16%
Completely 5.		1	4%
	Total	25	100%

13.	How well does current MIDS training support your needs?	Number of Responses	Response Ratio
Not at all 1.		14	58%
A little 2.		4	17%
Somewhat 3.		3	13%
Mostly 4.		2	8%
Completely 5.		1	4%
	Total	24	100%

14	What improvements can be made in these areas (training and documentation)?
#	Response
1	Provide an adhoc function that will graphically display bar graphs, pie graphs, etc of individual and company wide information IOT indicate/monitor trends in academic, physical, athletic performance.
2	Personally, I don't need training or documentation to effectively use the MIDS program. The program is not difficult to figure out on your own. If I run into difficulty, which is rare, I contact Mr. Hawkins (Performance) or Ms. Rishell (MIS Officer).
3	There is no training, just a pocket guide
4	More training. Most of my training has been OJT.
5	At least some training.
6	#12/#13: Had little or no training on MIDS. Need to add "n/a" to your answers, or "don't remember."
7	I have never had any training in MIDS. I have seen one pamphlet in 2 years on MIDS. That was 2 months ago. It didn't tell me anything that I didn't already know.
8	I think a basic training session specifying the capabilities of the system would be useful. MIDS is very easy to operate but the AD HOC QUERY function needs much more training to make it useful - particular how do you alter or make new queries to meet to your company's needs.
9	MIDS training? what are you talking about? we don't have it, and frankly, we shouldn't...if a LT in the Navy can't get on a computer and figure it out, then we're sending the wrong LT's here...this isn't rocket science, it's already a user friendly computer system.
10	I've never used either
11	Have formal training on its functionality. I learned by messing around with certain modules until I found out which ones were most useful for me. I did not receive formal training on its functionality and all of the different modules.
12	I'm not sure what you mean...I don't use the pocket guide (never seen it) nor have I ever really received formal trng on MIDS.
13	I received almost no formal MIDS training. I taught myself, so really anything would be an improvement. The pocket guide is pretty good, and most of the on-line help functions work pretty well.
14	adhoc query info in MIDS or training on how to make an adhoc query ourselves
15	MIDS is fairly intuitive. What a new Company Officer/Senior Enlisted needs is someone to walk through the system to demonstrate what data is available.
16	I have don't recall any training on the MIDS system. But it is something that requires hands on participation. No trng is actually required.
17	I never really received any training. Most was OJT. I think it could be more user friendly, but overall is a good system.

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APPENDIX B: PERFORMANCE MEASUREMENT PROCEDURES

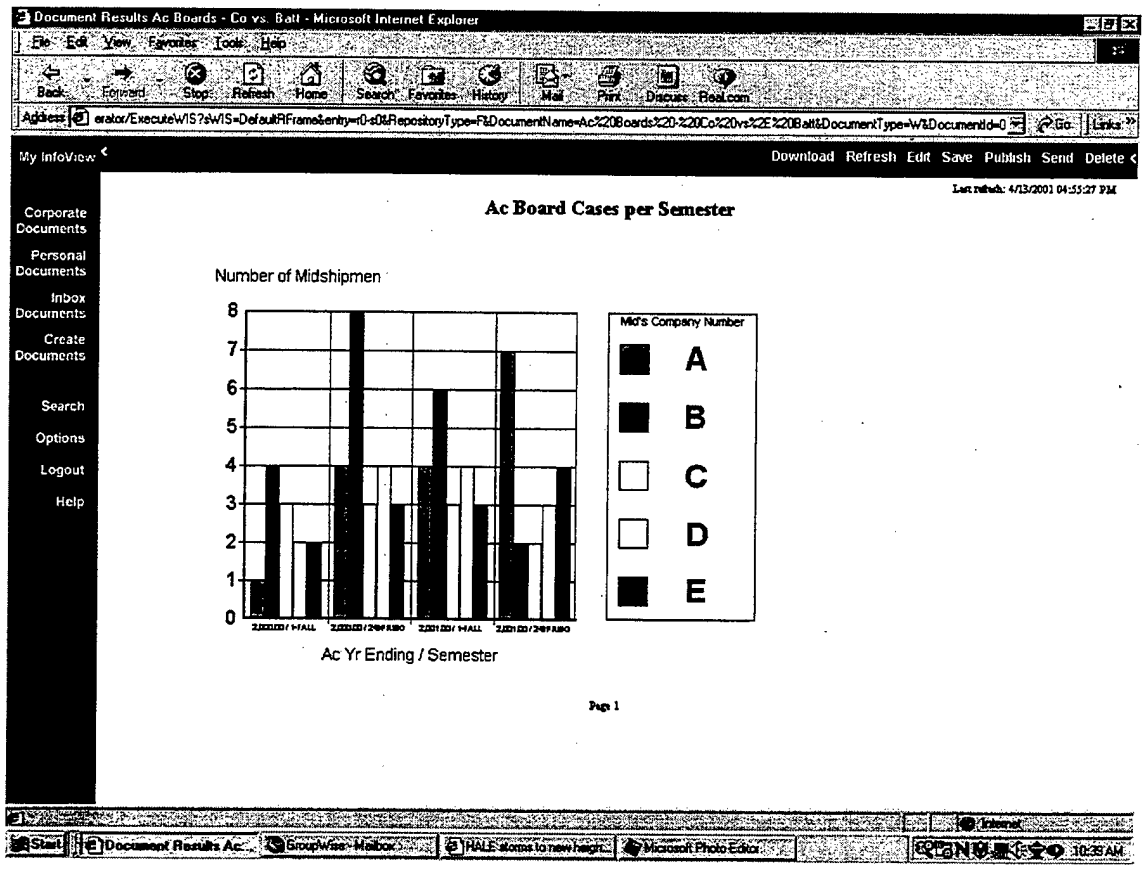
This appendix outlines standardized procedures for Company Officers to use in measuring the performance of their midshipmen. The purpose of this document is to provide the Company Officer with a collection of pre-formatted, standardized reports that track important performance metrics. These reports can be quickly and easily generated as needed by the individual Company Officer. Some of the procedures are applicable to individual midshipmen, while some are useful for tracking the performance of the company as a whole. The procedures are grouped into five categories—academics, attendance, conduct, military performance, and physical readiness.

These procedures assume that the user has Company Officer-level access to MIDS and WebIntelligence, has copies of the WebIntelligence query documents referenced herein, and has a basic working knowledge of MIDS, WebIntelligence, Microsoft Excel, and Windows.

Each procedure page consists of a step-by-step description of how to generate the report. This description is accompanied by a sample screenshot of what the report should look like. In some cases, intermediary screenshots are also included where it helps to clarify the procedural steps.

OF AC BOARD CASES PER SEMESTER, COMPARED TO REST OF THE BATTALION:

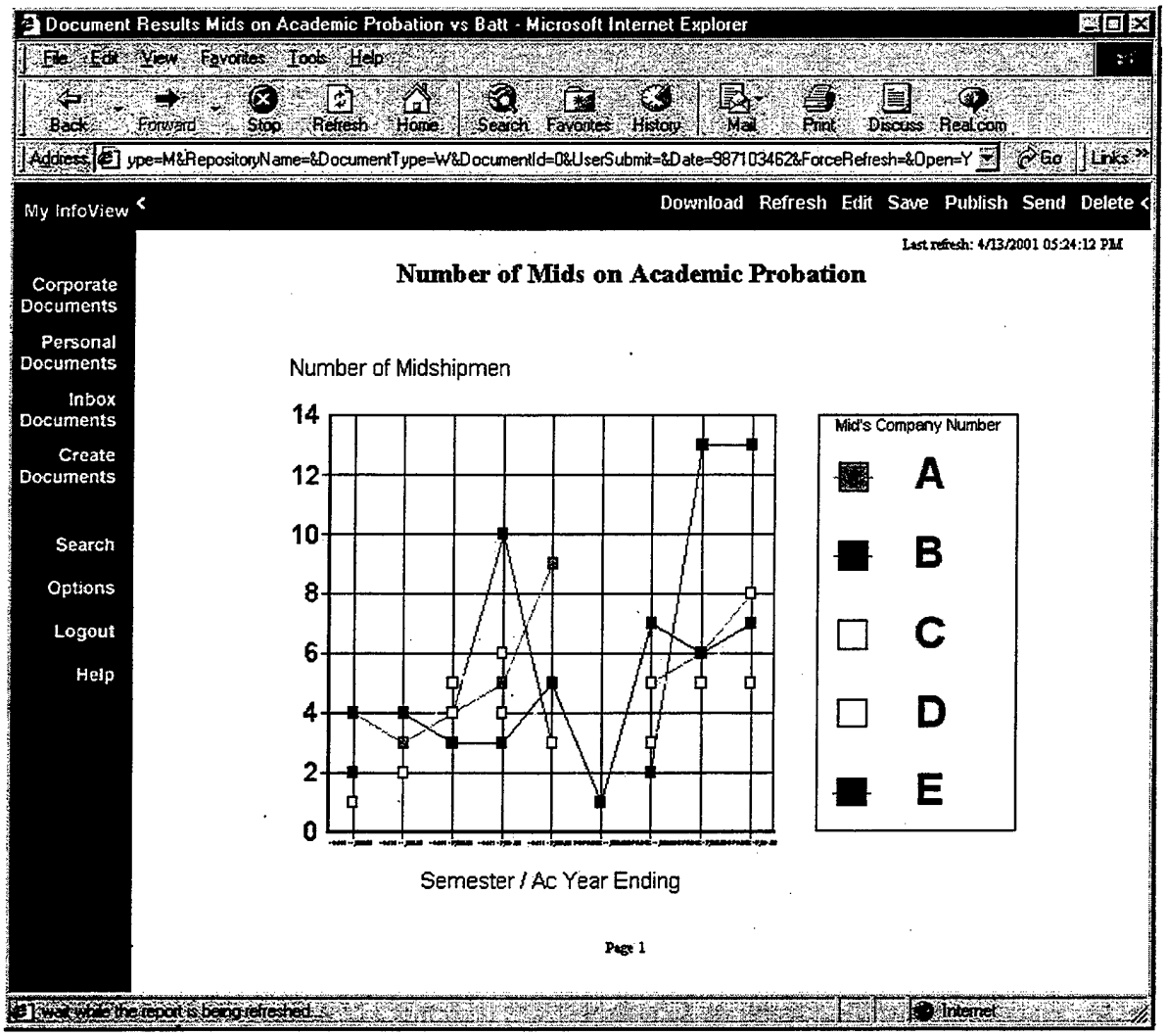
1. Open WebIntelligence documents "Ac Boards - Co vs Batt". When prompted, enter the battalion and the beginning ac year of the report.
2. View/print documents as desired



Academics

OF MIDS ON ACADEMIC PROBATION PER SEMESTER, COMPARED TO REST OF THE BATTALION:

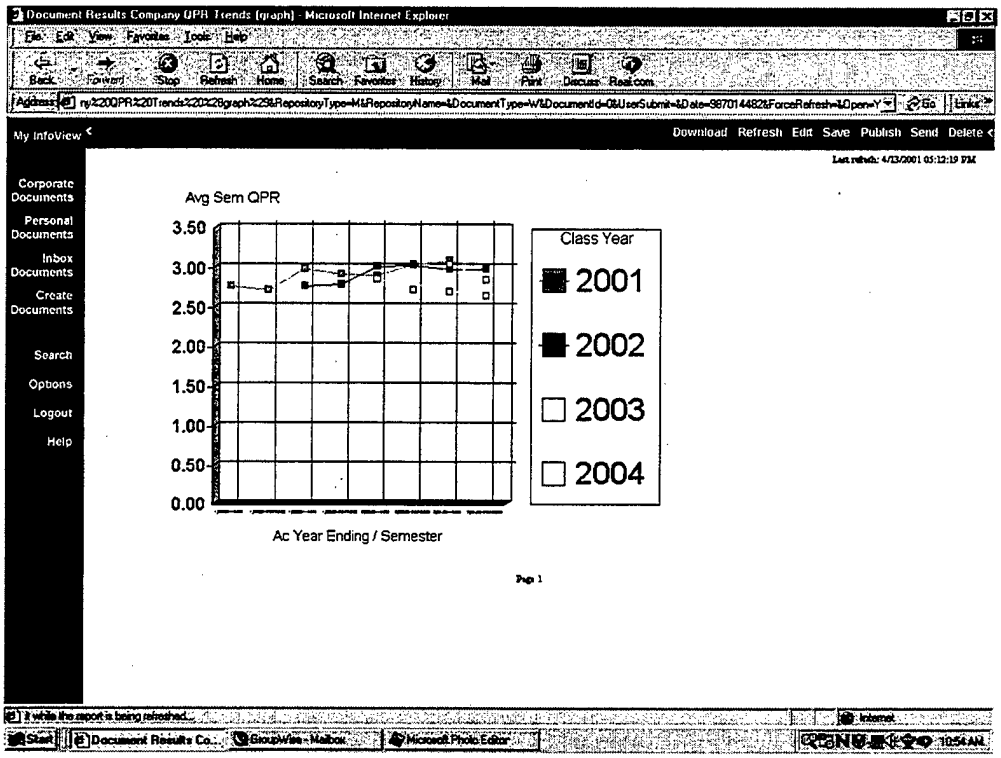
1. Open WebIntelligence documents "Mids on Academic Probation vs Batt". When prompted, enter the company information requested. (If desired, the trends for just one company can be viewed by entering the same company number at both prompts.)
2. View/print documents as desired.

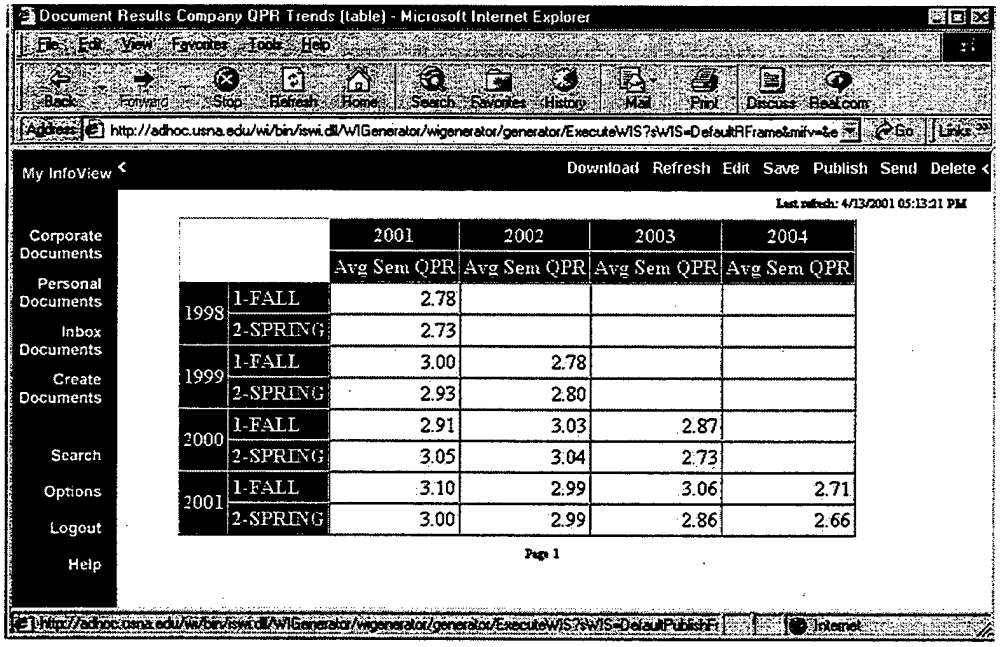


Academics

QPR, WITHIN COMPANY, BY CLASS:

1. Open WebIntelligence documents "Company QPR Trends (graph)" and/or "Company QPR Trends (table)".
2. View/print documents as desired



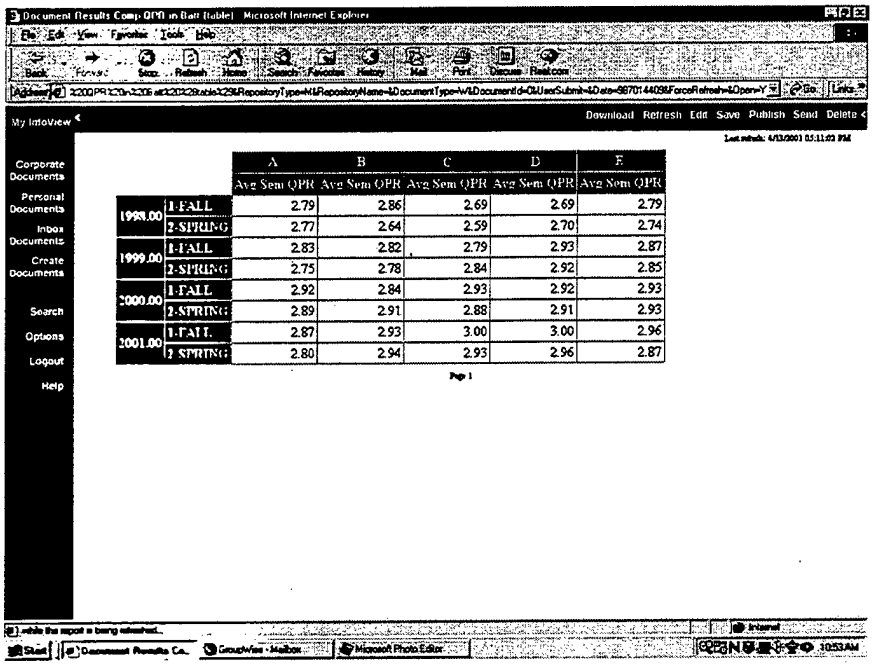


		2001	2002	2003	2004
		Avg Sem QPR	Avg Sem QPR	Avg Sem QPR	Avg Sem QPR
1998	1-FALL	2.78			
	2-SPRING	2.73			
1999	1-FALL	3.00	2.78		
	2-SPRING	2.93	2.80		
2000	1-FALL	2.91	3.03	2.87	
	2-SPRING	3.05	3.04	2.73	
2001	1-FALL	3.10	2.99	3.06	2.71
	2-SPRING	3.00	2.99	2.86	2.66

Academics

QPR, COMPANY COMPARED TO THE REST OF THE BATTALION:

1. Open WebIntelligence document "Comp QPR in Batt (table)". When prompted, enter the company information required and the first academic year to be included in the report.

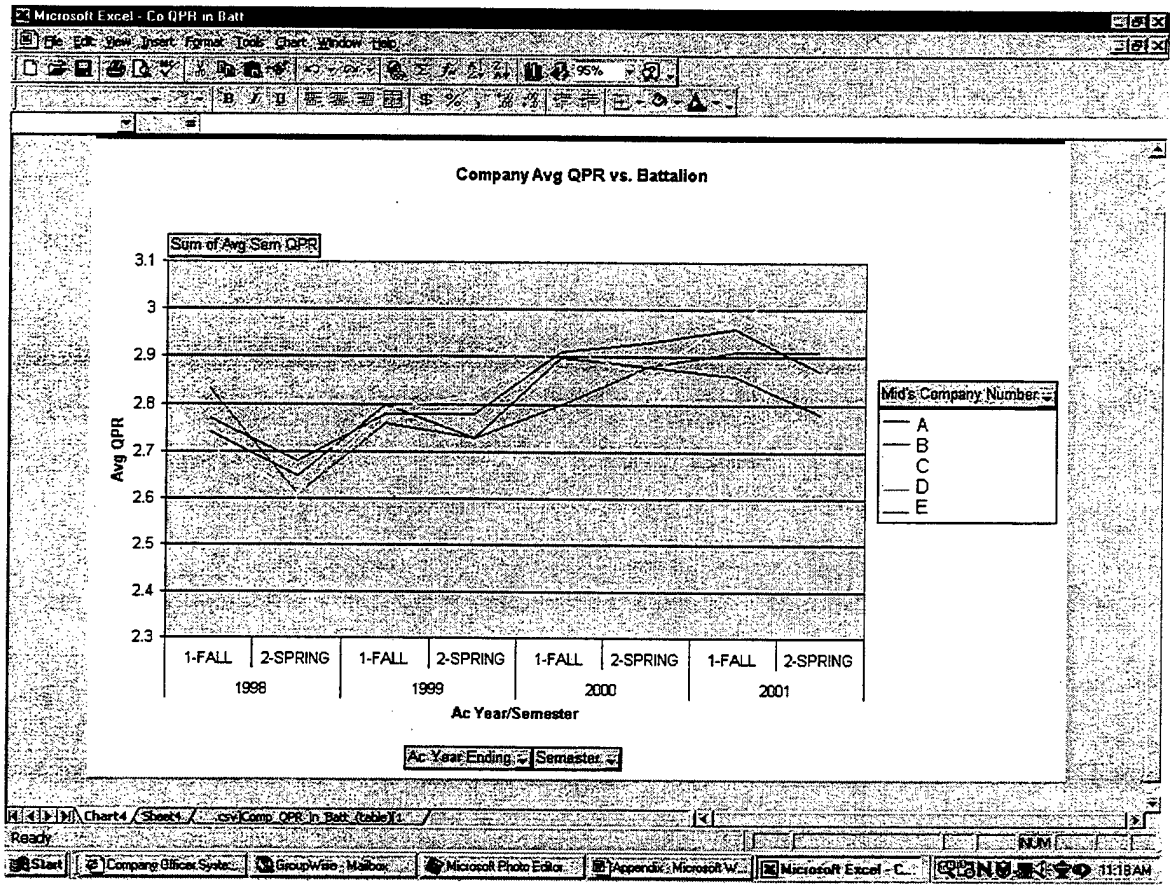


		A	B	C	D	E
		Avg Sem QPR	Avg Sem QPR	Avg Sem QPR	Avg Sem QPR	Avg Sem QPR
1998.00	1-FALL	2.79	2.86	2.69	2.69	2.79
	2-SPRING	2.77	2.64	2.59	2.70	2.74
1999.00	1-FALL	2.83	2.82	2.79	2.93	2.87
	2-SPRING	2.75	2.78	2.84	2.92	2.85
2000.00	1-FALL	2.92	2.84	2.93	2.92	2.93
	2-SPRING	2.89	2.91	2.88	2.91	2.93
2001.00	1-FALL	2.87	2.93	3.00	3.00	2.96
	2-SPRING	2.80	2.94	2.93	2.96	2.87

2. Select "Download" and save file your local reports folder on hard drive, naming it "Co QPR in Batt". File will be saved as a comma-separated values (.csv) file.
3. Open the downloaded file with Microsoft Excel. Save the modified document as an Excel file (*File - Save As*, then select "Microsoft Excel Workbook" from the "Save as type" drop down list.)
4. Select *Pivot Table and Pivot Chart Report* from the *Data* menu.
5. The PivotTable Wizard will open. In the first dialog box, select "Microsoft Excel List or Database" and "PivotChart (with PivotTable)", then click the *Next* button
6. In the second dialog box, click the *Next* button
7. In the third dialog box, ensure "New worksheet" is selected, then click on the *Layout* button.
8. When the layout window opens, drag each button on the right to the respective area on the left as listed below:
   - "Ac Year Ending" → "ROW"
   - "Semester" → "ROW"
   - "Avg Sem QPR" → "DATA"
   - "Mid's Company Number" → "COLUMN"

   Now click the *Ok* button to close the layout window, followed by the *Finish* button to complete the PivotTable Wizard.
9. When the chart appears, click on the *Chart Wizard* button in the floating *PivotTable* toolbar.

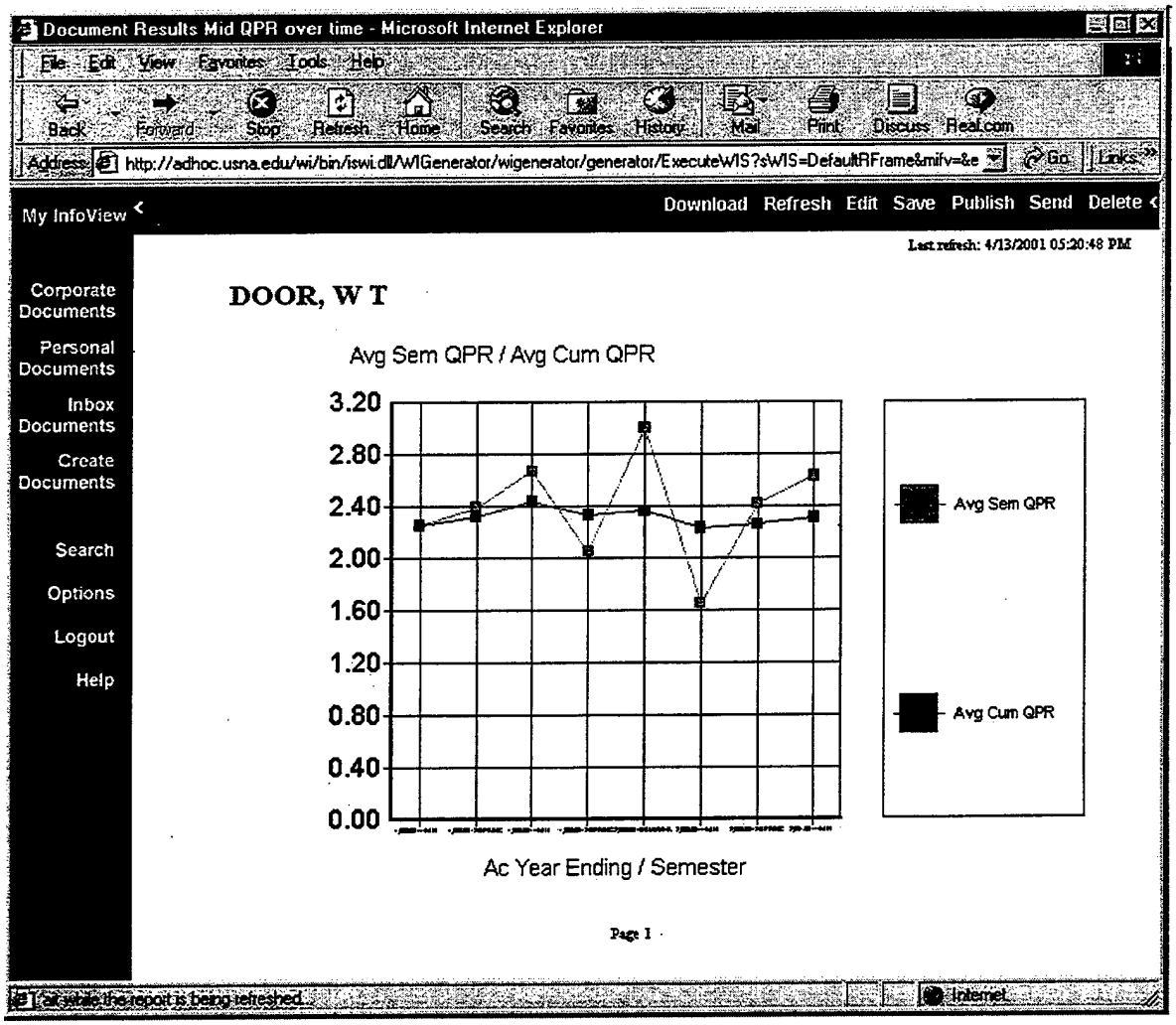
10. The Chart Wizard will open. In the left pane (Chart Type), select "Line". Then, in the right pane (Chart Sub-Type) select the top-left type. Now, click the *Finish* button to close the Chart Wizard.
11. Format the chart as desired, adding labels as appropriate. Save your work.



Academics

INDIVIDUAL QPR OVER TIME:

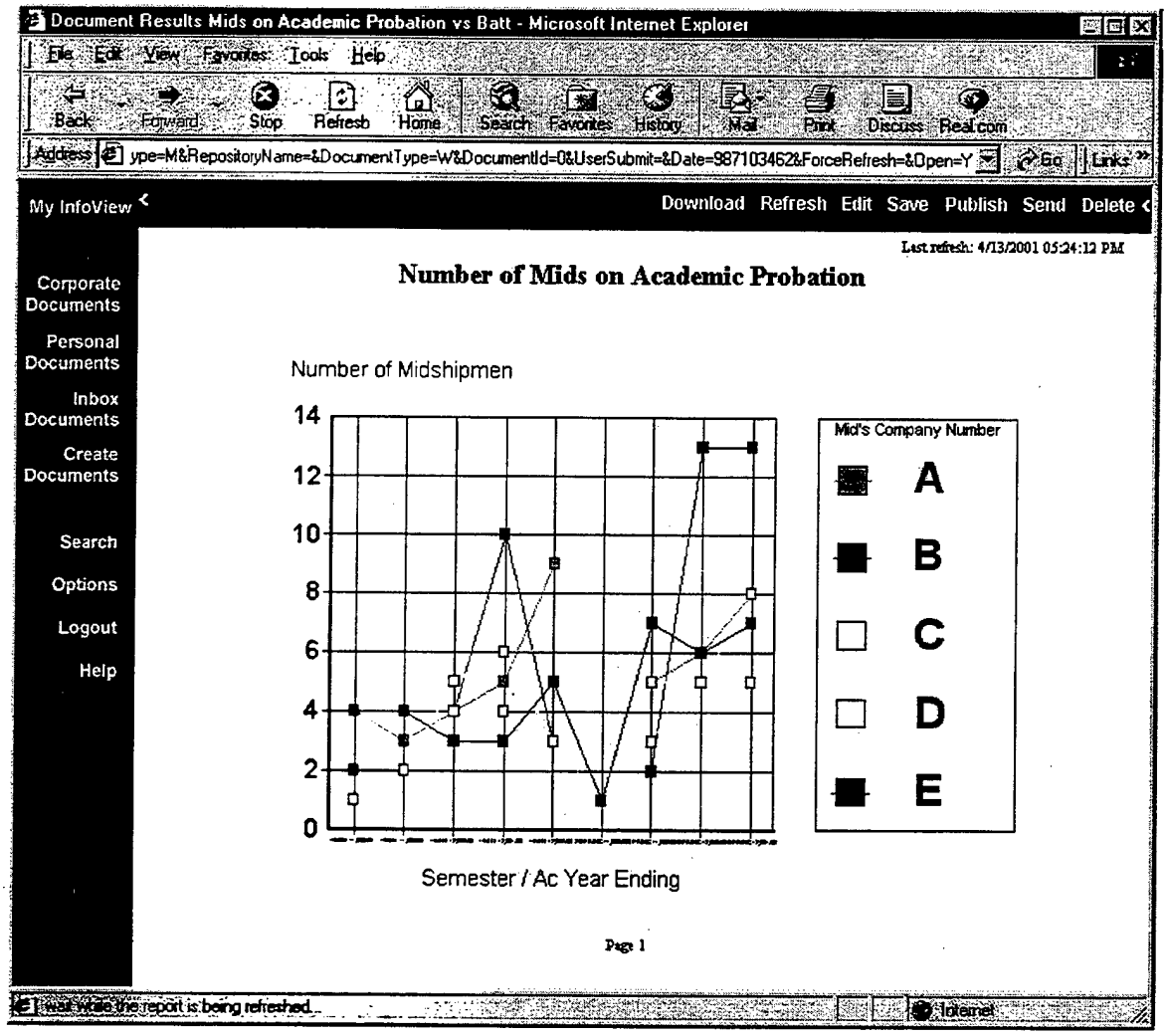
1. Open WebIntelligence document "Mid QPR over time" for the desired midshipmen (alpha code used for input). View/print graph as desired.



Academics

LIST OF MIDS IN COMPANY ON ACADEMIC PROBATION:

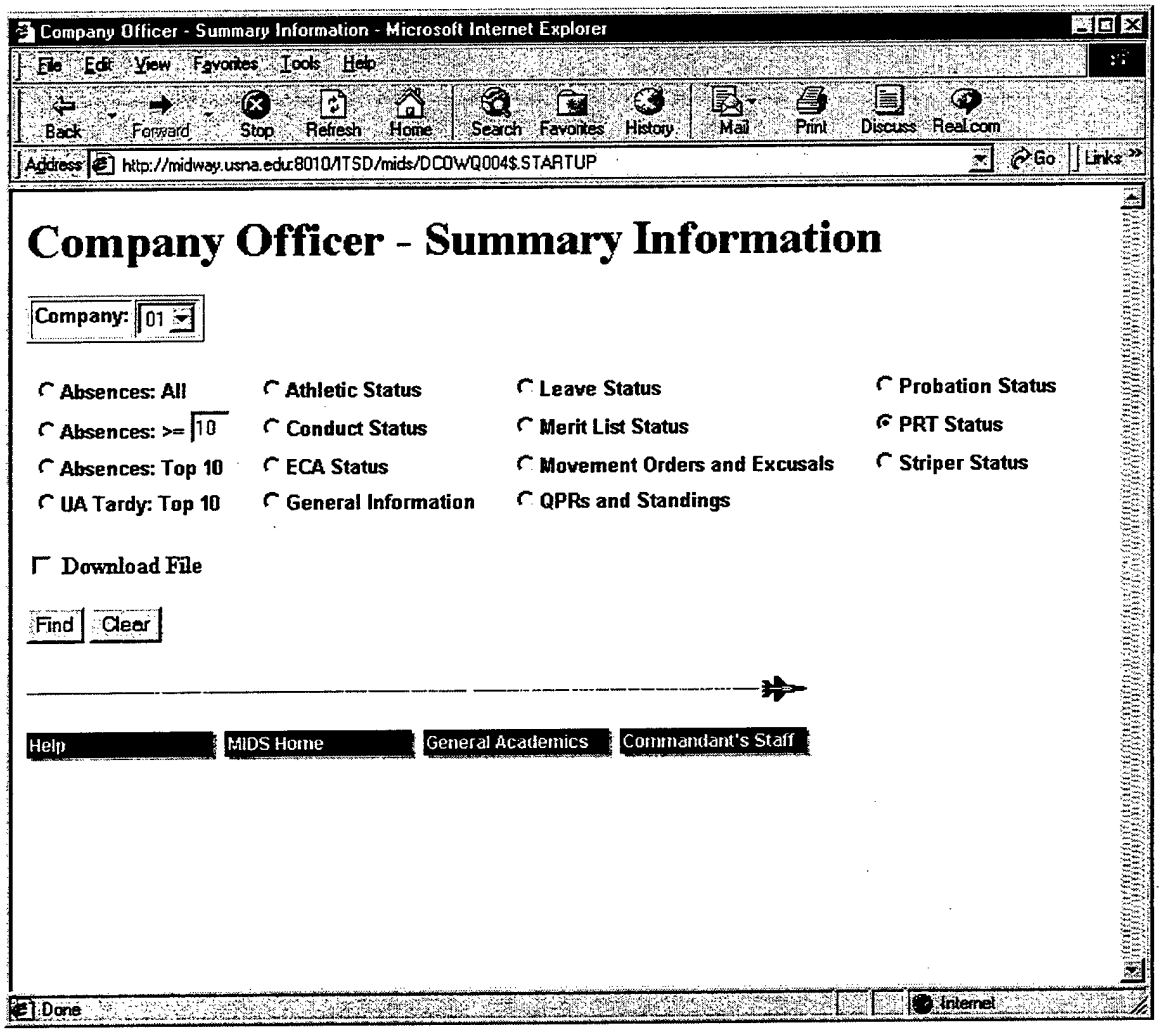
1. From the "Company Officer – Summary Information" page in MIDS, select the desired company, then check the "Probation Status" checkbox.
2. Press *Find* to generate report.
3. View/print as desired.



Academics

LIST OF MIDS IN COMPANY ON DEAN'S/DANT'S/SUP'S LIST:

1. From the "Company Officer – Summary Information" page in MIDS, select the desired company, then check the "Merit List Status" checkbox.
2. Press *Find* to generate report.
3. View/print as desired.



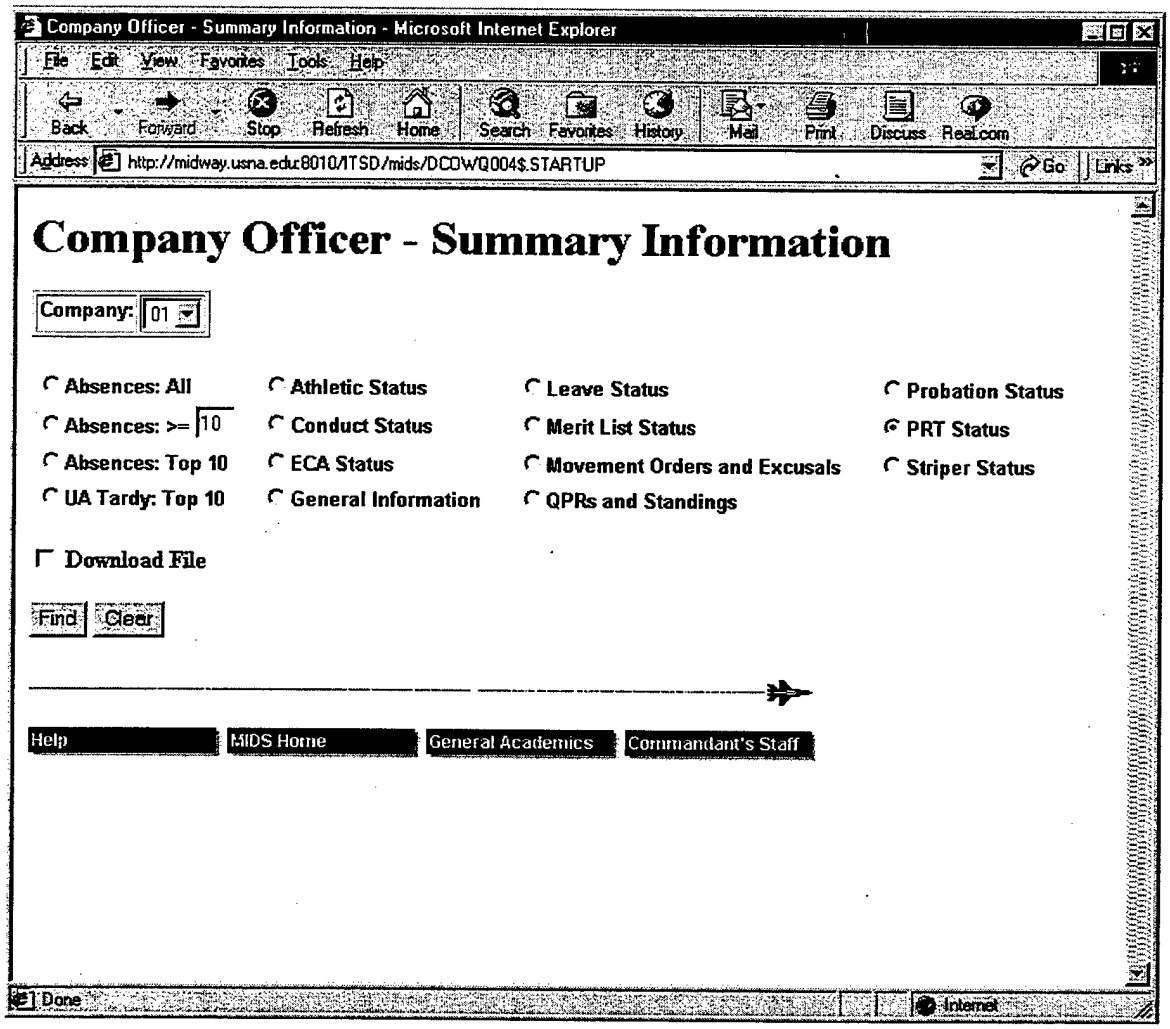
Attendance

LIST ALL ABSENCES FOR THE SEMESTER, BY MIDSHIPMAN:

1. From the "Company Officer – Summary Information" page in MIDS, select the desired company, then check the "Absences: All" checkbox.
2. Press *Find* to generate report.
3. View/print as desired.

LIST OF TOP TEN MIDSHIPMEN WITH THE MOST ABSENCES:

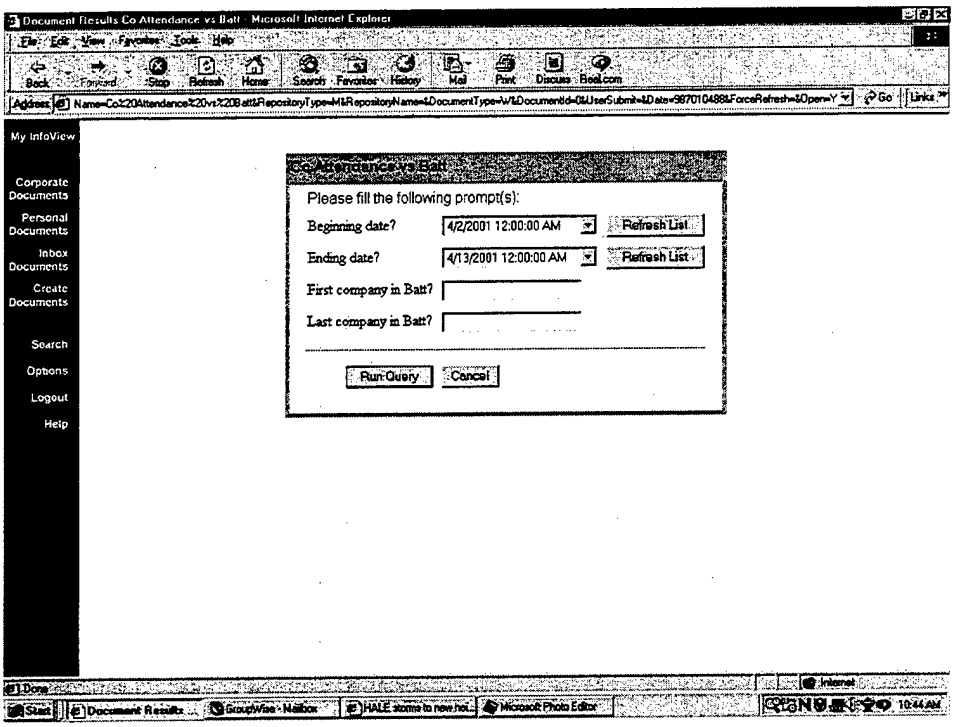
1. From the "Company Officer – Summary Information" page in MIDS, select the desired company, then check the "Absences: Top 10" checkbox.
2. Press *Find* to generate report.
3. View/print as desired.

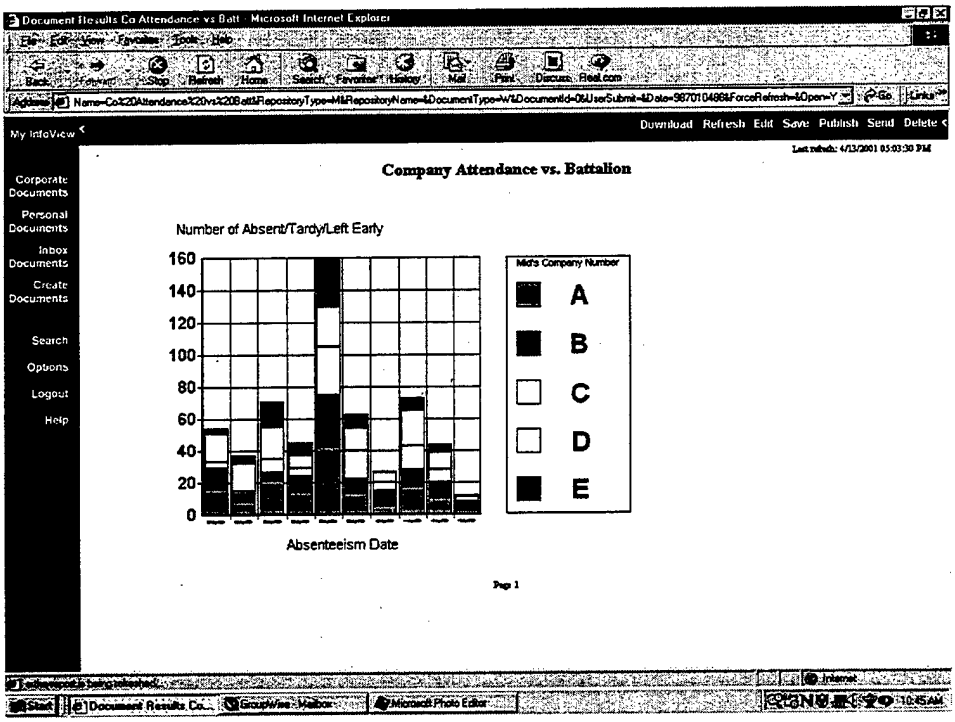


Attendance

COMPANY VS. REST OF BATTALION (ALL ABSENCES/TARDIES):

1. Open WebIntelligence document "Company Attendance vs Batt". When prompted, input the company information required and the period for which you want to generate the report.
2. View/print graph as desired.

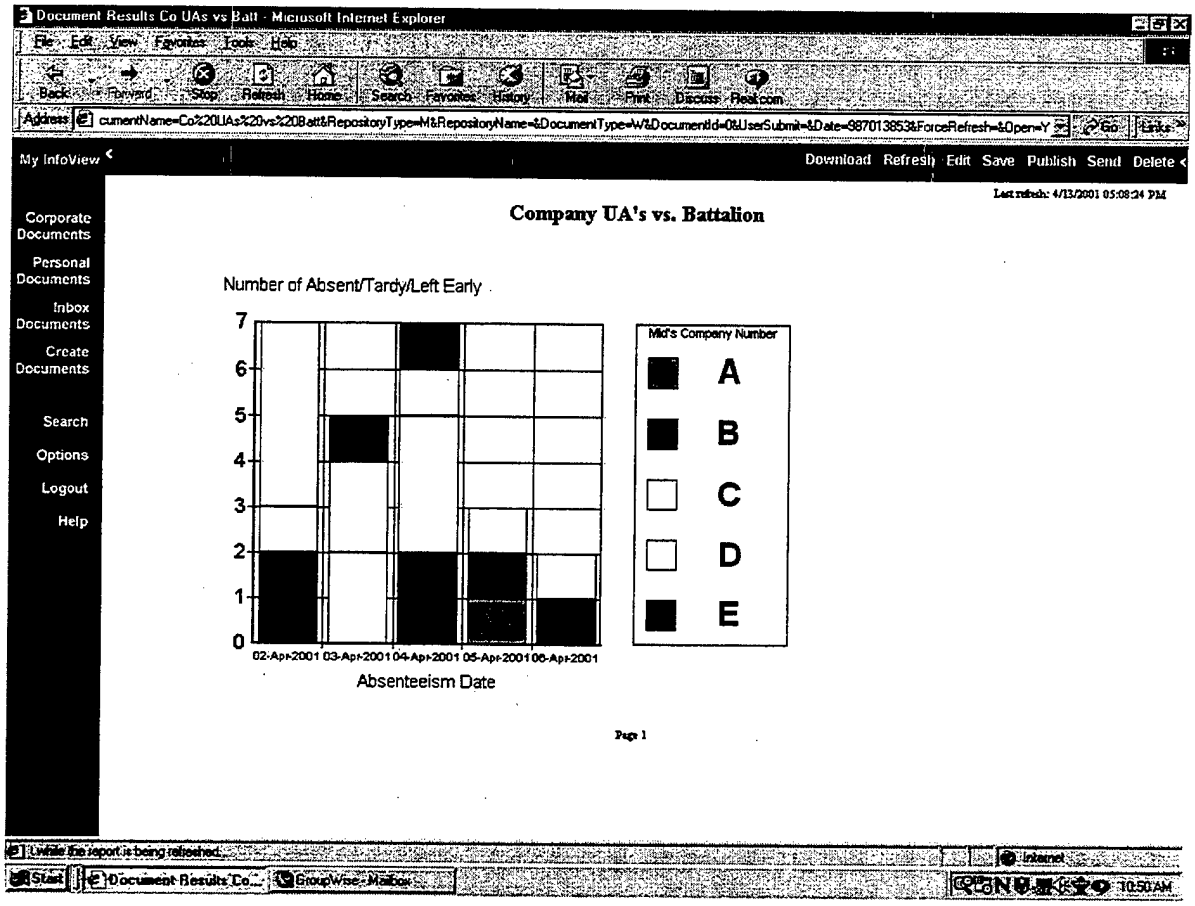




Attendance

COMPANY UA'S VS. REST OF BATTALION:

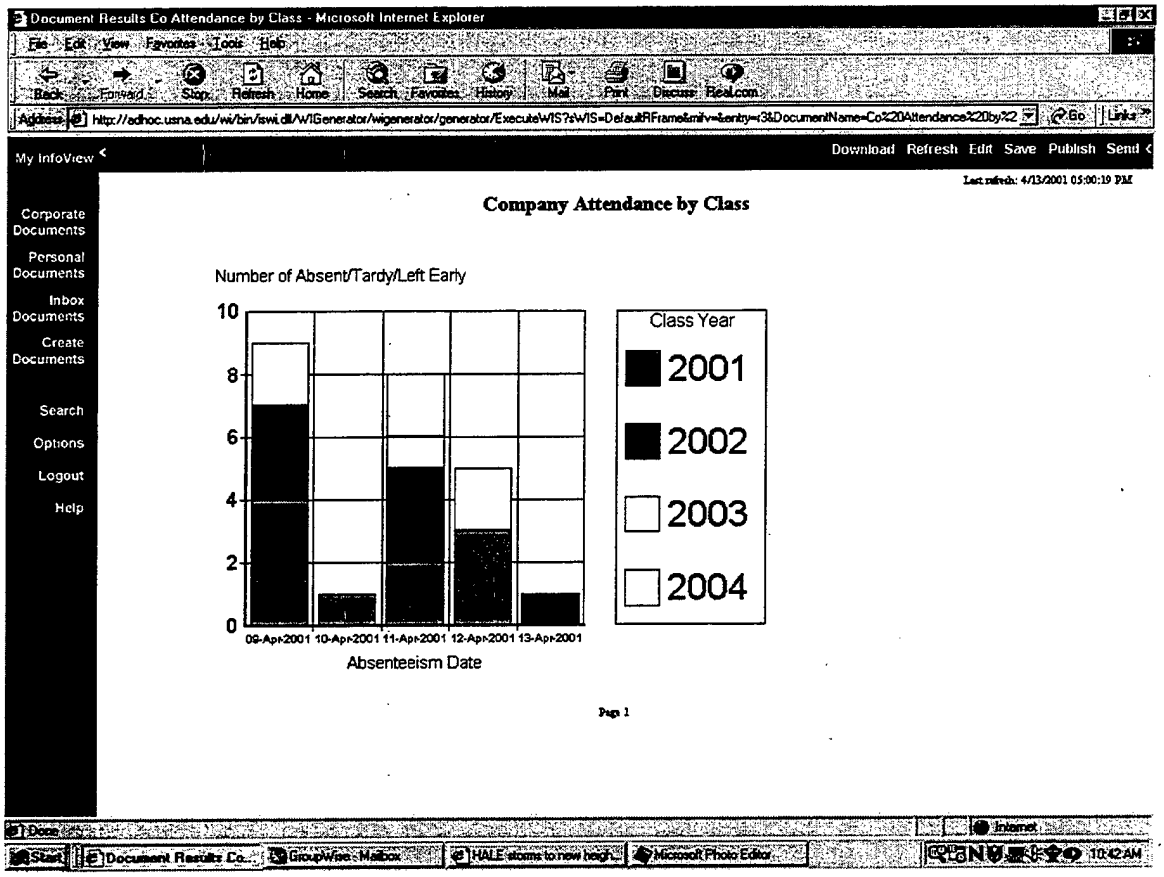
1. Open WebIntelligence document "Company UAs vs Batt". When prompted, input the company information required and the period for which you want to generate the report.
2. View/print graph as desired.



Attendance

COMPANY, BY CLASS YEAR (ALL ABSENCES/TARDIES):

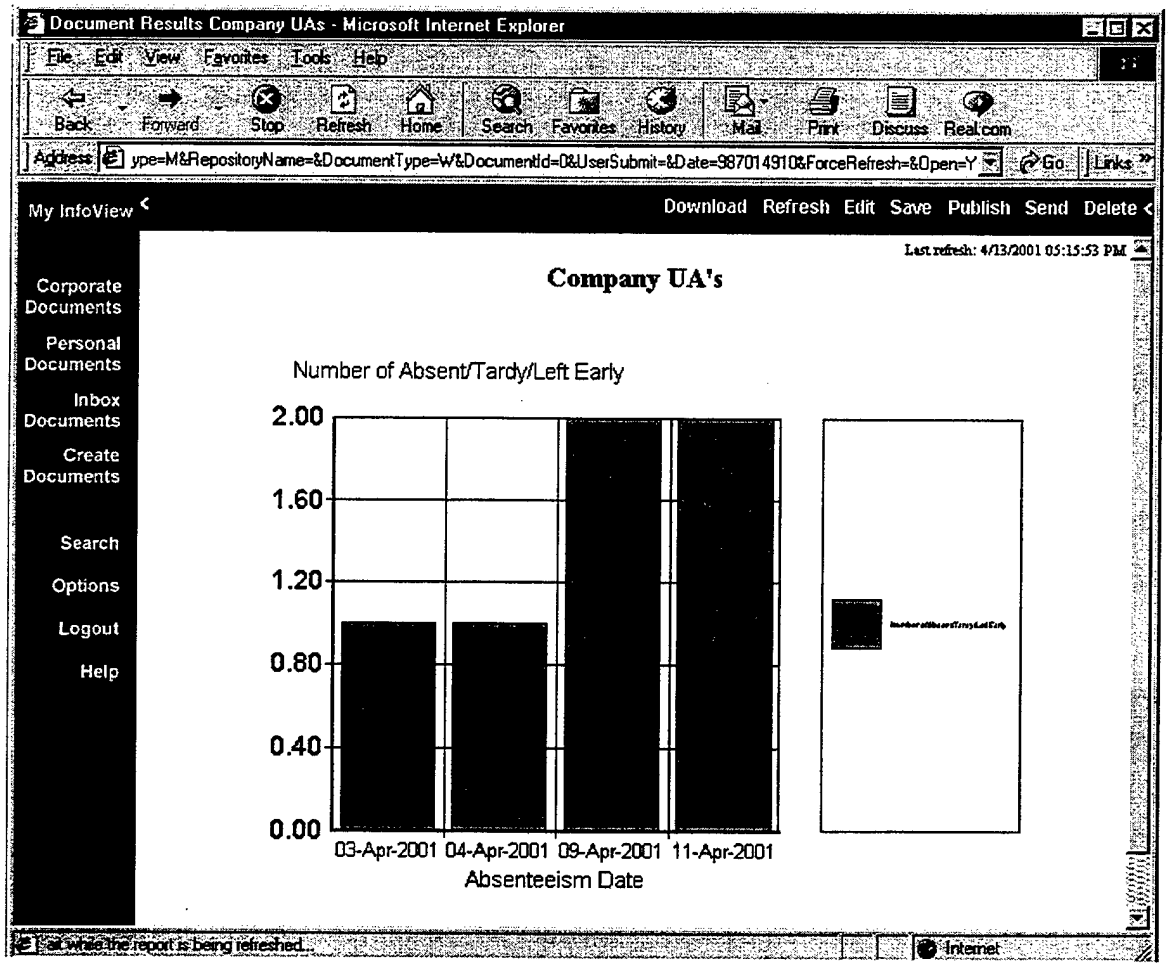
1. Open WebIntelligence document "Company Attendance by Class". When prompted, input the company information required and the period for which you want to generate the report.
2. View/print graph as desired.



Attendance

COMPANY UA'S:

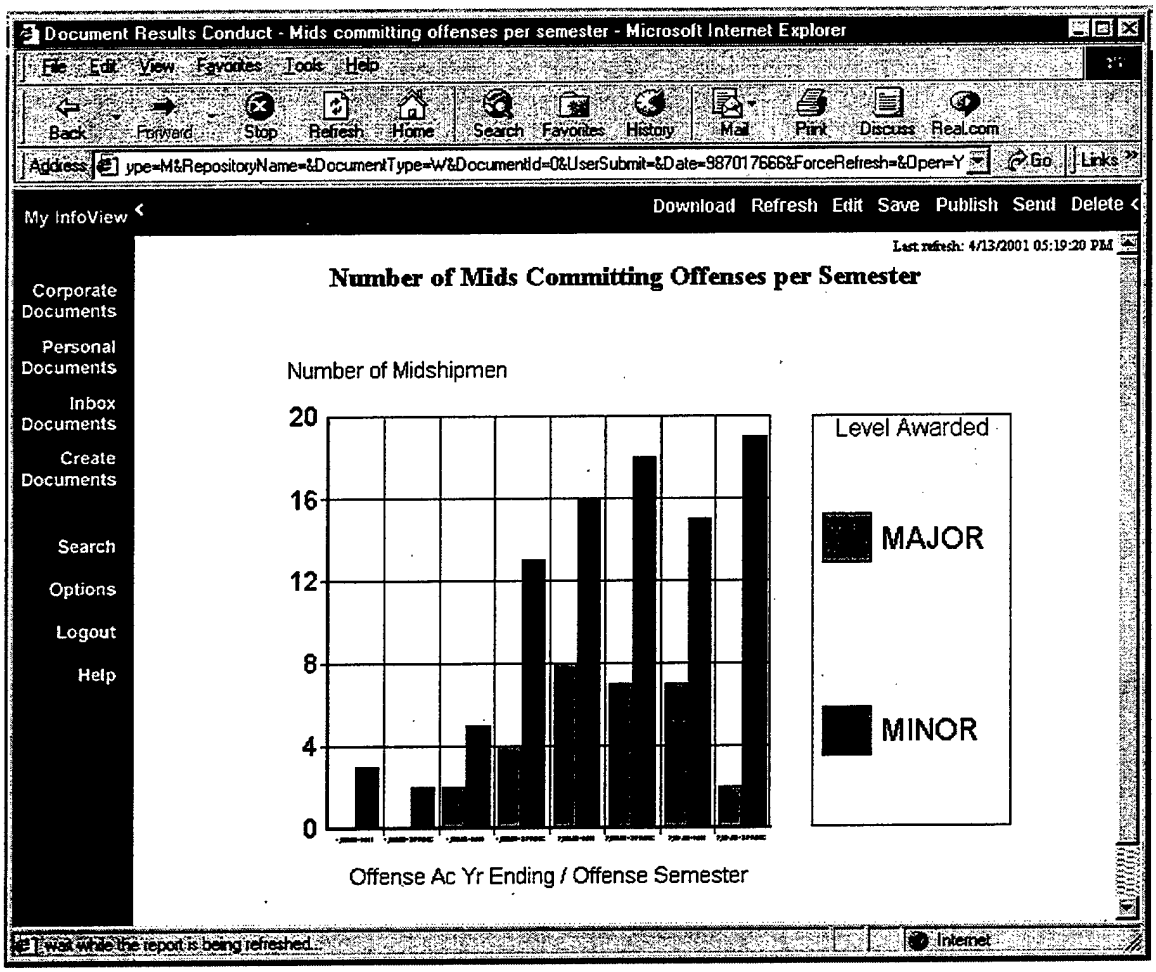
1. Open WebIntelligence document "Company UAs". When prompted, input the company information required and the period for which you want to generate the report.
2. View/print graph as desired.



Conduct

OF MIDS IN COMPANY COMMITTING OFFENSES PER SEMESTER, BY SEVERITY:

1. Open WebIntelligence document "Conduct - Mids committing offenses per semester". When prompted, input the company information required.
2. View/print graph as desired.



Conduct

individual conduct records:

1. Bring up the midshipman's information using the Company Officer System module of MIDS. (Search by name, alpha code, etc.)
2. Individual PRT results are in the sections of the report titled "Conduct" and "Conduct Offenses".
3. Details for a particular offense can be accessed by clicking on the case number.

Conduct

Fall Total	Spring Total	Total Ac Year	Conduct Grade	Minor Offenses (35 Demerits or More) for Last 2 Semesters	Minor Offenses (35 Demerits or More) for Career	Major Offenses for Last 2 Semesters	Major Offenses for Career	Cumulative Demerits	Current Status
0	0	0		0	0	0	1	100	PROFICIENT

Record 1 of 1

Conduct Offenses

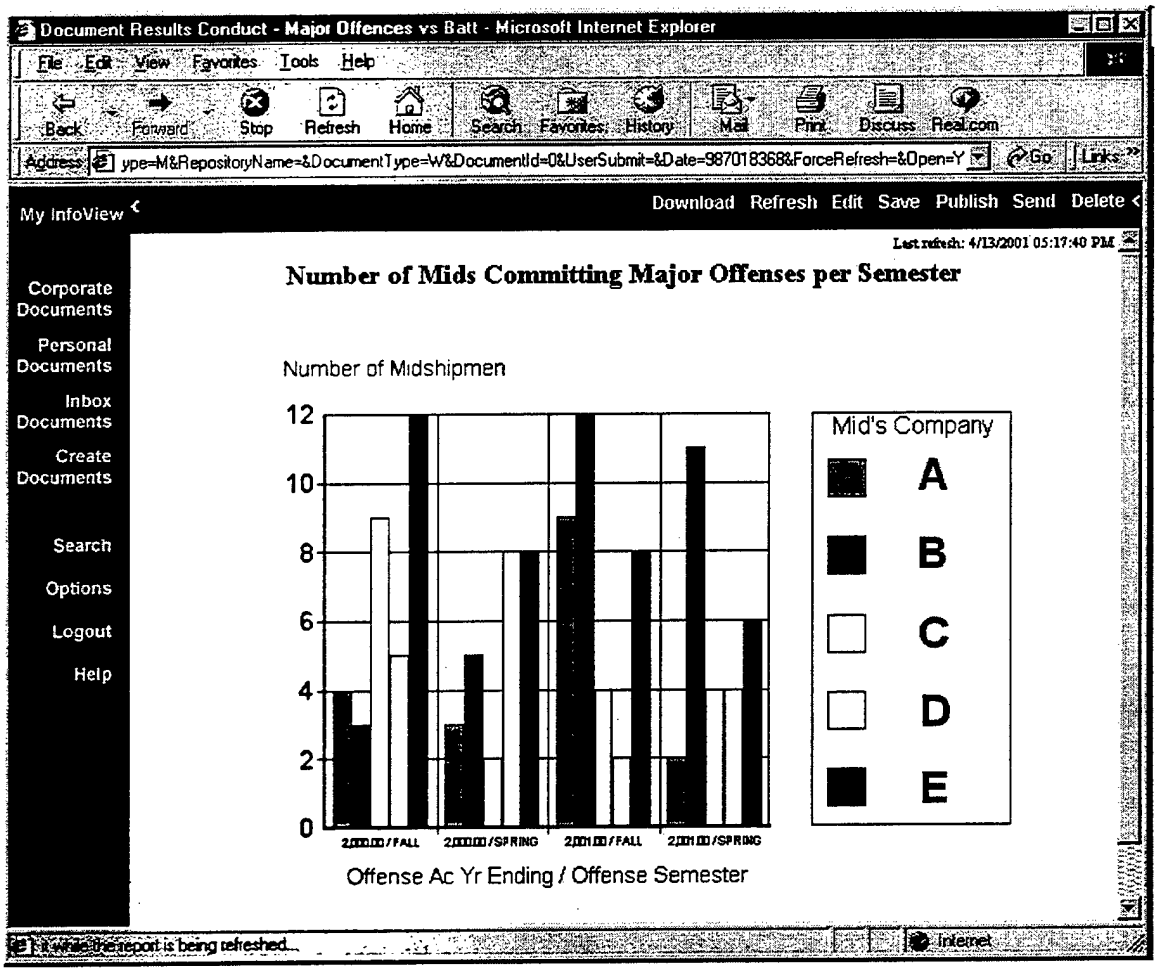
Case Number	Ac Yr Ending	Sem	Commit Date	Level	Demerits Award
001753	2000	FALL	24-OCT-1999	CLOSED CASE / FINAL DISPOSITION	75
002818	2000	SPRING	05-JAN-2000	CLOSED CASE / FINAL DISPOSITION	10
002939	2000	SPRING	15-JAN-2000	CLOSED CASE / FINAL DISPOSITION	
003239	2000	SPRING	10-JAN-2000	DISMISSED	
005664	2000	SPRING	17-MAY-2000	CLOSED CASE / FINAL DISPOSITION	10
011127	2001	FALL	03-OCT-2000	CLOSED CASE / FINAL DISPOSITION	
014490	2001	SPRING	26-FEB-2001	DISMISSED	
991309	1999	SPRING	02-APR-1999	CLOSED CASE / FINAL DISPOSITION	5

Records 1 to 8 of 8

Conduct

OF MIDS IN COMPANY COMMITTING OFFENSES PER SEMESTER COMPARED WITH REST OF BATTALION:

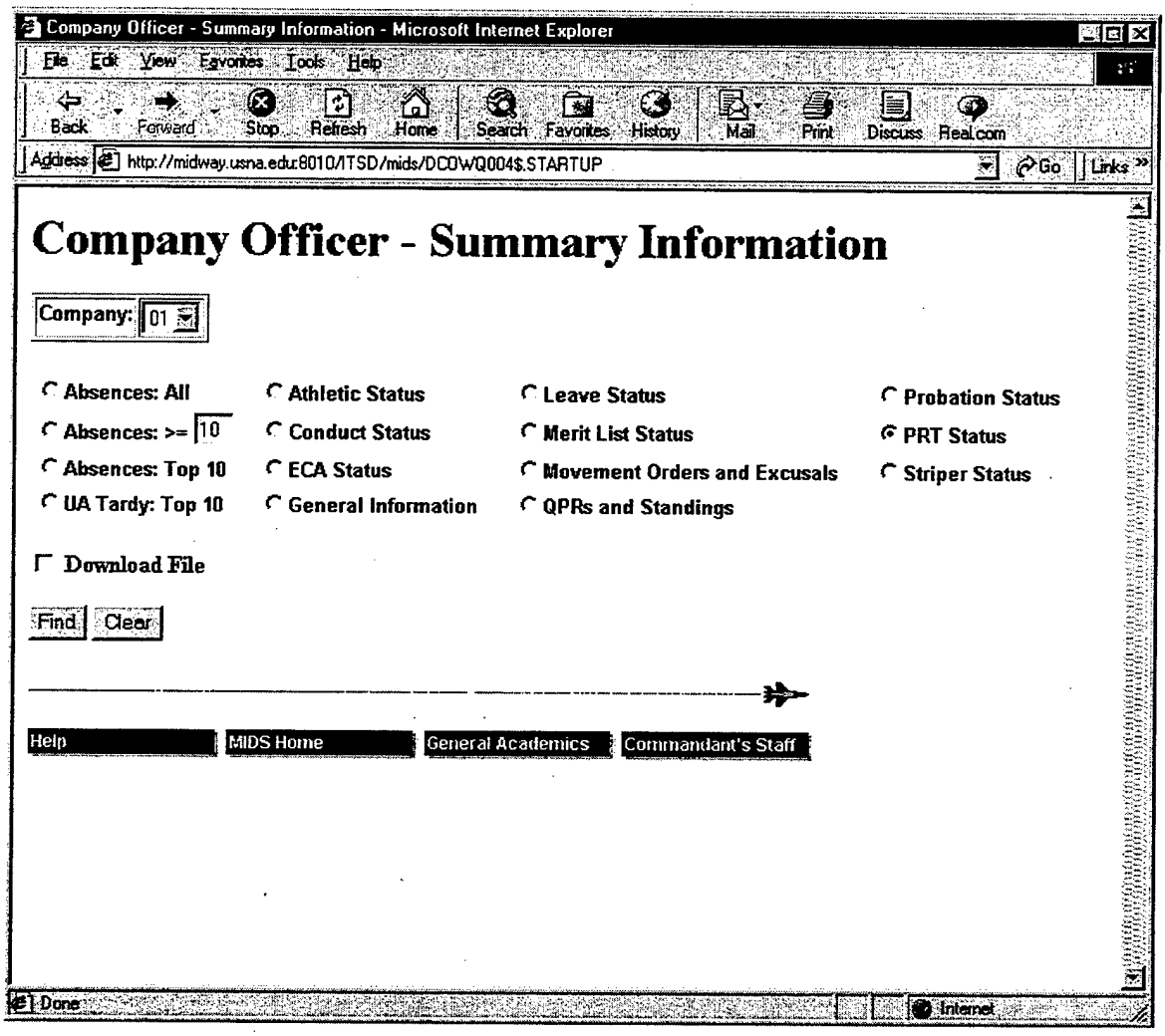
1. Open WebIntelligence document "Conduct - Major Offences vs Batt". When prompted, input the company information required and the first ac year of the report.
2. View/print graph as desired.



Conduct

LIST OF MIDS IN COMPANY ON CONDUCT PROBATION:

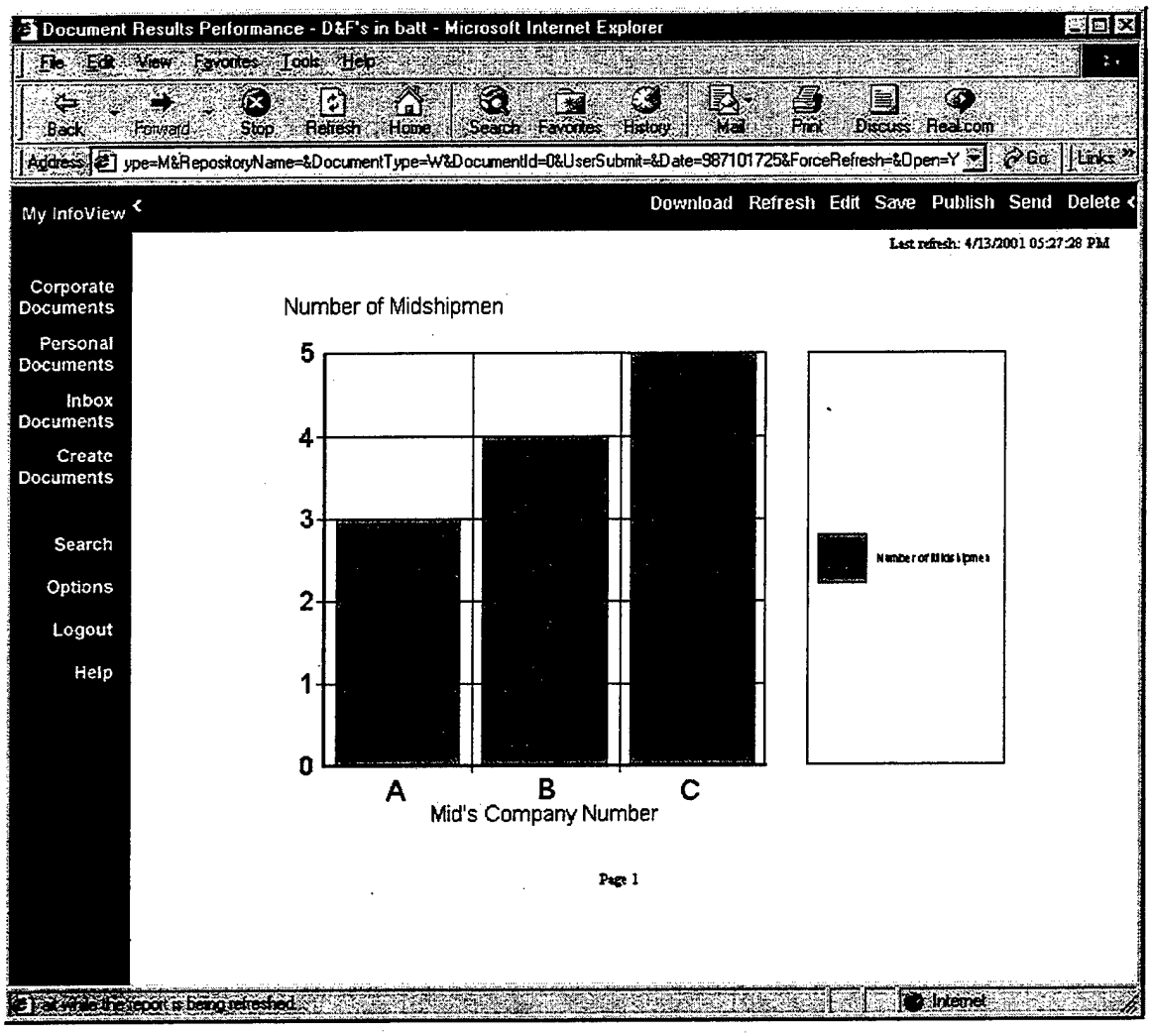
1. From the "Company Officer – Summary Information" page in MIDS, select the desired company, then check the "Probation Status" checkbox.
2. Press *Find* to generate report.
3. View/print as desired.



Military Performance

OF D'S/F'S IN MILITARY PERFORMANCE COMPARED WITH THE BATTALION:

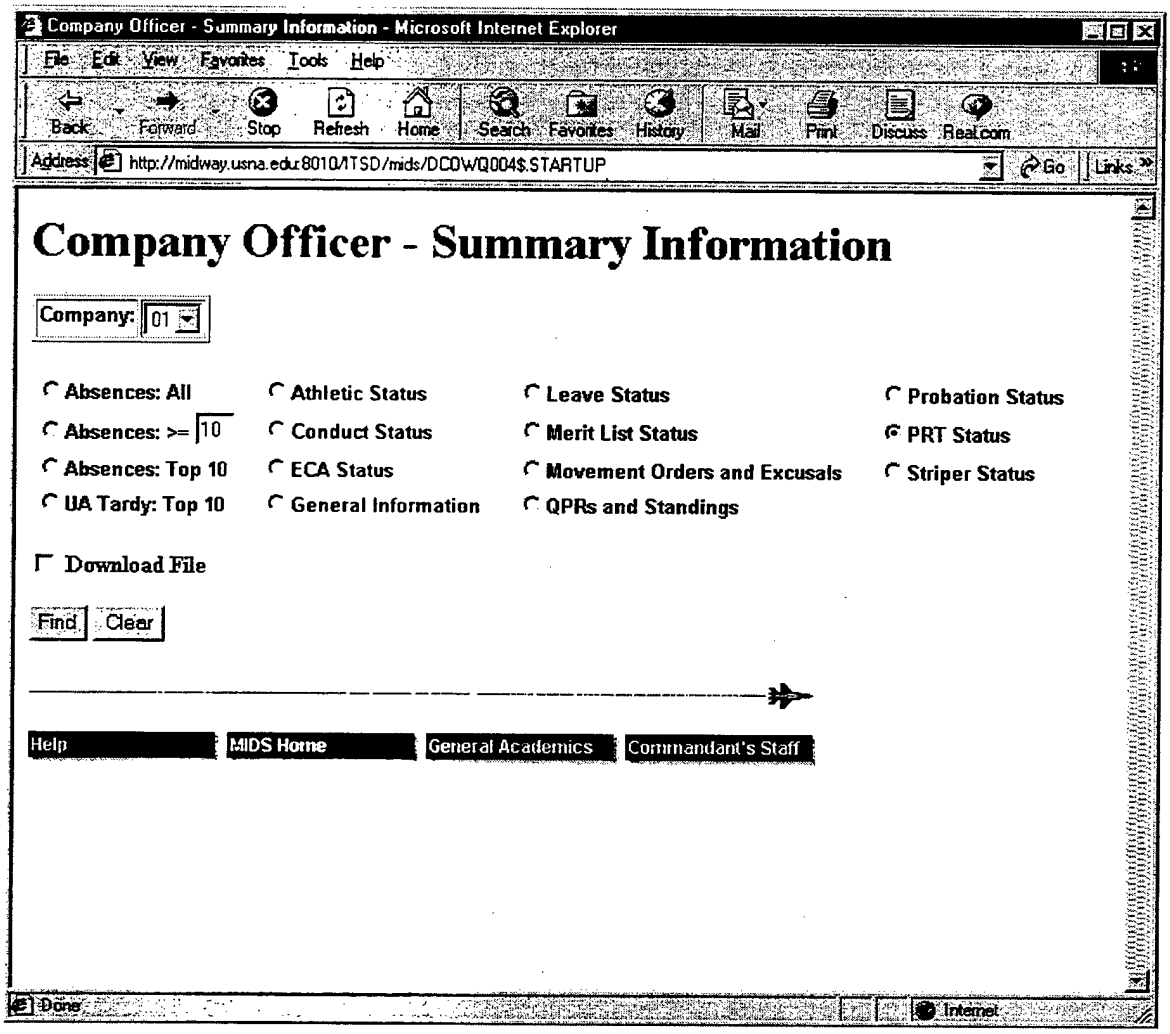
1. Open WebIntelligence document "Performance – D&F's in batt". When prompted, input the company information required and the period for which you want to generate the report.
2. View/print graph as desired.



Military Performance

LIST OF MIDS IN COMPANY ON PERFORMANCE PROBATION:

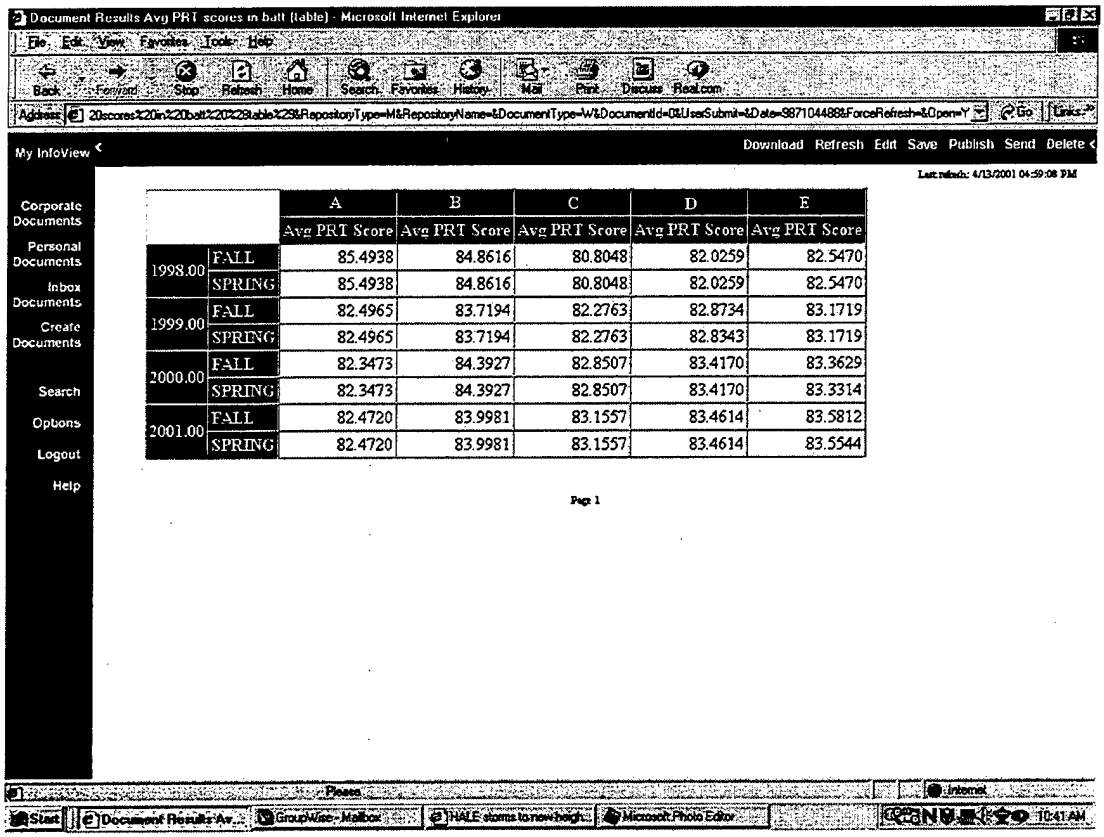
1. From the "Company Officer – Summary Information" page in MIDS, select the desired company, then check the "Probation Status" checkbox.
2. Press *Find* to generate report.
3. View/print as desired.



Physical Development

COMPANY AVERAGE PRT SCORES, COMPARED TO THE REST OF THE BATTALION:

1. Open WebIntelligence document "Avg PRT scores in Batt (table)". When prompted, enter the battalion number and the first academic year to be included in the report.



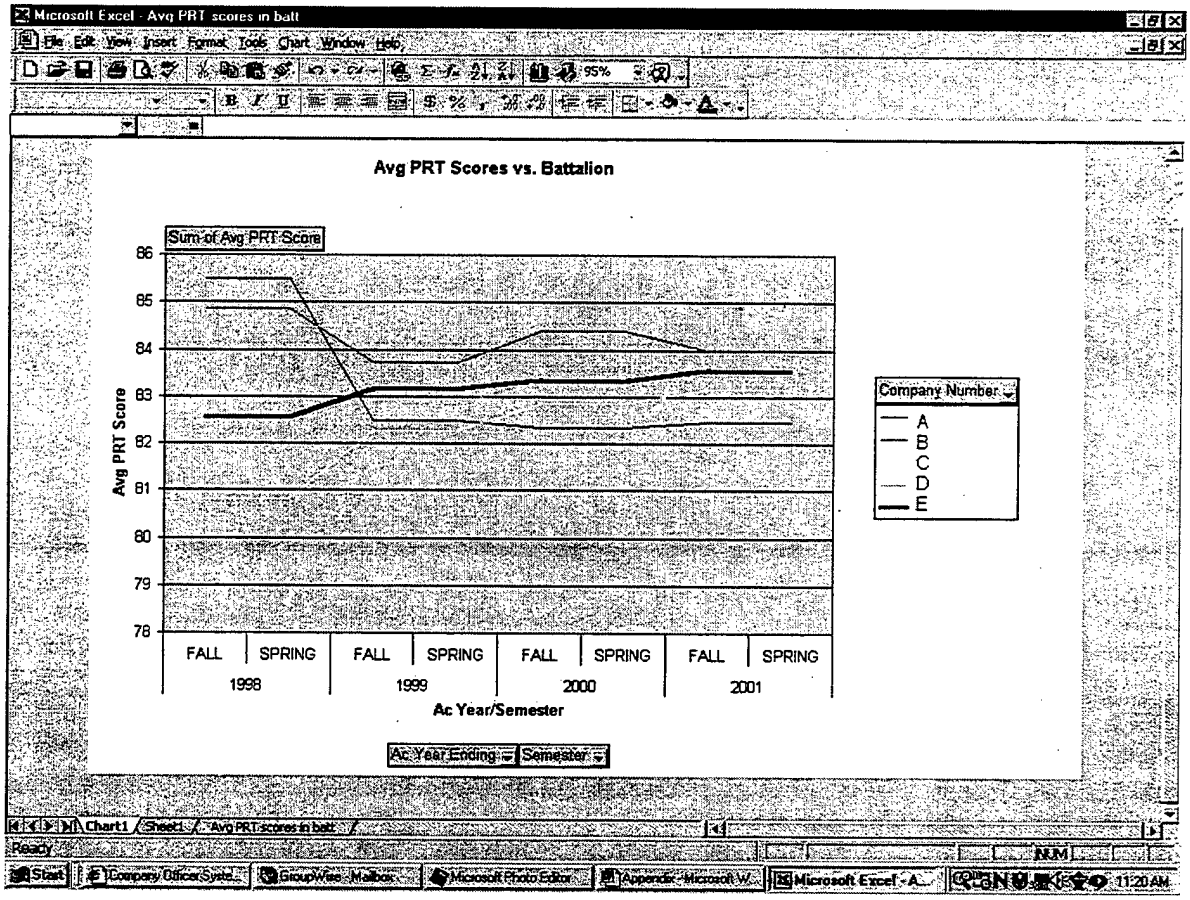
		A	B	C	D	E
		Avg PRT Score	Avg PRT Score	Avg PRT Score	Avg PRT Score	Avg PRT Score
1998.00	FALL	85.4938	84.8616	80.8048	82.0259	82.5470
	SPRING	85.4938	84.8616	80.8048	82.0259	82.5470
1999.00	FALL	82.4965	83.7194	82.2763	82.8734	83.1719
	SPRING	82.4965	83.7194	82.2763	82.8343	83.1719
2000.00	FALL	82.3473	84.3927	82.8507	83.4170	83.3629
	SPRING	82.3473	84.3927	82.8507	83.4170	83.3314
2001.00	FALL	82.4720	83.9981	83.1557	83.4614	83.5812
	SPRING	82.4720	83.9981	83.1557	83.4614	83.5544

2. Select "Download" and save file your local reports folder on hard drive, naming it "Avg PRT scores in Batt". File will be saved as a comma-separated values (.csv) file.
3. Open the downloaded file with Microsoft Excel. Save the modified document as an Excel file (*File - Save As*, then select "Microsoft Excel Workbook" from the "Save as type" drop down list.)
4. Select *Pivot Table and Pivot Chart Report* from the *Data* menu.
5. The PivotTable Wizard will open. In the first dialog box, select "Microsoft Excel List or Database" and "PivotChart (with PivotTable)", then click the *Next* button
6. In the second dialog box, click the *Next* button
7. In the third dialog box, ensure "New worksheet" is selected, then click on the *Layout* button.
8. When the layout window opens, drag each button on the right to the respective area on the left as listed below:
    - "Ac Year Ending" → "ROW"
    - "Semester" → "ROW"

- "Avg PRT score" → "DATA"
- "Company" → "COLUMN"

Now click the *Ok* button to close the layout window, followed by the *Finish* button to complete the PivotTable Wizard.

9. When the chart appears, click on the *Chart Wizard* button in the floating *PivotTable* toolbar.
10. The Chart Wizard will open. In the left pane (Chart Type), select "Line". Then, in the right pane (Chart Sub-Type) select the top-left type. Now, click the *Finish* button to close the Chart Wizard.
11. Format the chart as desired, adding labels as appropriate. Save your work.



Physical Development

INDIVIDUAL PRT RESULTS:

1. Bring up the midshipman's information using the Company Officer System module of MIDS. (Search by name, alpha code, etc.)
2. Individual PRT results are in the section #7 of the report, "PRT Grades".

PRT Results

Ac Yr Ending	Sem	Exam Date	Curl Ups	Push Ups	Sit & Reach	Run	Optional Bike	Optional Swim	Score	Validated	Passed
2000	FALL	07-OCT-1999	74	72	PASSED	10:02			72.6	NO	YES
1999	SPRING	07-JAN-1999	86	65	PASSED	10:02			75.4	NO	YES
2000	SPRING	01-MAR-2000	71	84	PASSED	10:15			73.1	NO	YES
2001	FALL	11-OCT-2000	90	98	PASSED	09:45			86	NO	YES
2001	SPRING	09-MAR-2001	83	80	PASSED	10:00			78.1	NO	YES

Records 1 to 5 of 5

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