NAVAL POSTGRADUATE SCHOOL

MONTEREY, CALIFORNIA

THESIS

ANALYSIS AND TESTING OF A DIGITIZED APPLICATION FOR U.S. NAVY OFFICER RECRUITING

by

Rajashaker G. Reddy

March 2005

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REPORT DOCUMENTATION PAGE			*Form Approved OMB No. 0704-0188*
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instruction, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188) Washington DC 20503.			
1. AGENCY USE ONLY *(Leave blank)*	2. REPORT DATE March 2005	3. REPORT TYPE AND DATES COVERED Master's Thesis	
4. TITLE AND SUBTITLE: Analysis and Testing of a Digitized Application for U.S. Navy Officer Recruiting			5. FUNDING NUMBERS
6. AUTHOR(S) Rajashaker G. Reddy			
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Naval Postgraduate School Monterey, CA 93943-5000			8. PERFORMING ORGANIZATION REPORT NUMBER
9. SPONSORING /MONITORING AGENCY NAME(S) AND ADDRESS(ES) N/A			10. SPONSORING/MONITORING AGENCY REPORT NUMBER
11. SUPPLEMENTARY NOTES The views expressed in this thesis are those of the author and do not reflect the official policy or position of the Department of Defense or the U.S. Government.			
12a. DISTRIBUTION / AVAILABILITY STATEMENT Approved for public release; distribution is unlimited.			12b. DISTRIBUTION CODE

13. ABSTRACT (maximum 200 words)

This thesis describes the analysis, development, and testing of a new, digitized format for the Naval Nuclear Officer application. The methodology consisted of creating a beta officer application CD that was tested in the eight Naval Recruiting Districts (NRDs) within Region West. Online surveys were conducted with Navy recruiters at the NRD level to gauge satisfaction with the current application process and solicit feedback. The effectiveness of the application CD was analyzed using the responses of the surveys. The results indicate that most officer recruiters in Region West think the CD is an overall improvement over the current application format. The application CD format merits further exploration and development based on the positive results of the surveys and beta-testing. In the short term, Commander, Navy Recruiting Command (CNRC) should provide online support, including a Web site to aid officer application processing. Further, CNRC should seek to simplify and streamline the officer application forms.

14. SUBJECT TERMS Recruiting Application, Digital Application Format, Digitized Application, Web-based Application, CD-ROM Format, U.S. Navy Officer Recruiting, Recruiter Application Satisfaction, Web-based surveys, Human Factors Principles			15. NUMBER OF PAGES 97 16. PRICE CODE
17. SECURITY CLASSIFICATION OF REPORT Unclassified	18. SECURITY CLASSIFICATION OF THIS PAGE Unclassified	19. SECURITY CLASSIFICATION OF ABSTRACT Unclassified	20. LIMITATION OF ABSTRACT UL

NSN 7540-01-280-5500

Standard Form 298 (Rev. 2-89)
Prescribed by ANSI Std. 239-18

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Submitted in partial fulfillment of the
requirements for the degree of

MASTER OF BUSINESS ADMINISTRATION

from the

NAVAL POSTGRADUATE SCHOOL
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ABSTRACT

This thesis describes the analysis, development, and testing of a new, digitized format for the Naval Nuclear Officer application. The methodology consisted of creating a beta officer application CD that was tested in the eight Naval Recruiting Districts (NRDs) within Region West. Online surveys were conducted with Navy recruiters at the NRD level to gauge satisfaction with the current application process and solicit feedback. The effectiveness of the application CD was analyzed using the responses of the surveys. The results indicate that most officer recruiters in Region West think the CD is an overall improvement over the current application format. The application CD format merits further exploration and development based on the positive results of the surveys and beta-testing. In the short term, Commander, Navy Recruiting Command (CNRC) should provide online support, including a Web site to aid officer application processing. Further, CNRC should seek to simplify and streamline the officer application forms.

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ACKNOWLEDGMENTS

A number of people contributed to the development and completion of this thesis. The author is grateful to all of them. First and foremost the author thanks his wonderful wife for her immeasurable editing contributions and her undying support. He is also enormously grateful to his two daughters for unselfishly sharing their father on "shore duty." The author must acknowledge CAPT C.J. Herron for believing in and supporting this thesis idea, when no one else would. Without her initial support, this thesis would not have been possible. He also thanks the men and women of Navy Recruiting Region West for taking precious time out of their hectic schedules to provide their honest feedback. The author also expresses sincere appreciation and gratitude to Dr. Mark Eitelberg for his mentorship, guidance, meticulous attention to detail, and countless hours spent reviewing and editing this document. Finally, the author acknowledges Joseph Knolmayer for his phenomenal Web and graphic design contributions in very early versions of this CD idea.

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I. INTRODUCTION

A. INTRODUCTION

The Navy's current application process is outdated and inefficient; it must be changed to keep up with current times. Navy commercials project an image of a cutting-edge, high-tech organization capable of "accelerating the lives" of those who join. However, their application process is confusing, slow, and anything but cutting edge. The lengthy paper application and the outdated VHS tapes that are standard materials for recruiters present an unnecessary challenge to recruiting, which is already viewed as arduous duty. To combat these issues, a new application format needs to be forged for future success.

B. PURPOSE

The Navy's current application format must be changed to meet the current demand of technologically savvy applicants. This has become especially important as the Navy's primary recruiting market is also the largest generation of young people since the '60s to come of age. Sometimes known as "Generation Y," born between 1982 and 1995, they are often called "echo boomers," since they are the demographic echo of their parents, the "baby boomers." [1]

> Echo boomers are a reflection of the sweeping changes in American life over the past 20 years. They are the first to grow up with computers at home, in a 500-channel TV universe. They are multi-taskers with cell phones, music downloads, and Instant Messaging on the Internet. They are totally plugged-in citizens of a worldwide community.[2]

It is only logical that the Navy have a "plugged-in" officer application format to appeal to echo boomers. This would require that the Navy update its officer application format to meet the needs and preferences of echo boomers, particularly if it intends to stay competitive in its primary market.

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[1] Kroft, Steve. "The Echo Boomers." CBS News, 60 Minutes. CBS Worldwide Inc. http://www.cbsnews.com/stories/2004/10/01/60minutes/main646890.shtml Accessed: 02/01/2005

[2] Ibid.

Two major problems are found in the current application format: the majority of the application is still on paper and most of the videos are in VHS format. Not only are both of these formats archaic and inefficient, they are also not very cost-effective. In a world of digital communication and digital entertainment, it is inconceivable that the application is in a format consistent with 1970s technology. Furthermore, it is quite embarrassing to hand a paper application and a VHS tape to an applicant who has seen the commercials and been briefed on the prospect of working in a high-tech environment. This embarrassment may not just cost the Navy an applicant, but future applicant referrals, with the potential for adverse public relations.

This thesis explores the prospect of digitizing the entire application package in a user-friendly CD-ROM format. However, since the Navy has so many different officer programs with various requirements, the thesis focuses solely on the digitization of the Naval Nuclear Officer Application, based on recruiting priorities as set forth by Commander, Navy Recruiting Command (CNRC). Additionally, analysis is conducted to determine the effectiveness and practicality of this format. The work completed on digitizing the Naval Nuclear Officer Application can serve as a prototype for digitizing the applications for other officer programs. This digital application would be a single, powerful resource that would be consistent with the Navy's projected image as well as help to reduce the time needed to process an application.

C. BACKGROUND

The CD format has numerous benefits. First of all, its small size requires very little storage space. Its diminutive dimensions and weight also make it economical to mail. It is relatively inexpensive to reproduce, compared with print or broadcast media; one CD can hold thousands of pages of text and hours of video. Further, the CD is an extremely reliable format; unlike Web pages that reside online, CDs do not suffer from server failures, bandwidth limitations, or internet access speed limitations. Additionally, using a CD to promote a product or service has many advantages over traditional advertising methods. Because a presentation can literally "come alive" when it is offered in the compelling, interactive, multi-media CD format, it has the ability to instantly capture and hold a prospective customer's attention. The CD format allows the viewer

total control to ensure continued interest. Moreover, it eliminates search engine competition; users can be taken directly to the Navy's Web site with a single click. One of the most salient features of the CD format is that it is self-running and self-contained; that is, the viewer can simply put the disc into the appropriate computer drive and the presentation begins, without any special installation.

Many companies have harnessed some of the unique capabilities of the CD format. For instance, Royal Appliance, a leading manufacturer of vacuum cleaners under the Royal and Dirt Devil brand names was challenged by the usability and cost of their parts catalog. In the past, the company's authorized repair centers and dealers were issued a printed catalog with each model's schematics, wiring diagrams, and parts and price listings. Royal wanted to replace this thick, bulky document with an interactive CD-ROM catalog that would offer more to dealers while costing a lot less to duplicate and mail. They had an "Interactive Service Manual" produced to replace their massive printed catalog. The new CD catalog allowed dealers to search for parts by model or part number, view schematics and click on individual parts, and generate lists of products and prices. This innovative application also featured an e-commerce-enabled shopping cart to allow dealers to order multiple parts directly from the CD. These orders were sent via the Internet directly to Royal's headquarters for immediate fulfillment. The CD was found to be "an invaluable asset" for their repair centers, facilitating digital catalog searches and parts ordering.[3] Additionally, using the CD led to reduced costs for Royal in the areas of printing and shipping. Other companies were able to yield similar cost savings in other areas, such as reproduction, training, testing, and advertising.

Recruiting is an assignment for most enlisted personnel and most officers that is vastly different than their primary job specialty. Because of this, most officer recruiters lack professional graphic design skills. Still, each recruiter is taught in the Navy Recruiting Leadership Academy (NRLA) "Officer Recruiter" course that producing flyers, mailers, and brochures in-house is a proven "best practice" for better market penetration and getting the information out on officer programs. NRLA teaches that these materials are a recruiter's number-one prospecting source, since it is suspected that the personalized information on locally produced material would be better received by

[3] Veasey, Barb. "Client Testimonials - Royal Appliance, Inc." BloodHound CD-Rom Services. http://www.bloodhoundcd.com/client-testimonials-royal-appliance.php Accessed: 09/29/2003

potential applicants and result in more qualified leads than the professionally produced, but generic, material supplied nationally by the Navy's current advertising agency, the Campbell-Ewald Group. The cost of this type of local "advertising" often gets funded under the general budget category of Other Officer Recruiting Program.

U.S. Naval Officer applicants are often required to watch a video or two as part of their application process. As previously mentioned, these videos are often still in VHS format. While a recruiter can try to control and maximize the use of the limited copies of the videos, it is sometimes necessary to duplicate the videos so that they can be mailed to an applicant or used as replacements for the original. The costs of reproducing these videos are often funded under the general budget category of Other Officer Recruiting Program, which is an ever-shrinking source of funding.

The Navy has reduced its annual recruitment goals in recent years. A Navy that needs fewer recruits is a Navy that needs fewer recruiters. As a result, the Navy has eliminated about 700 recruiting billets and millions of dollars of funding from its national recruitment budget. "I've lost recruiters. I've lost cars. I've lost telephones. We're still expected to do the same job," says Master Chief Daymond Howell, Chief Recruiter for the Seattle District, who oversees enlisted recruiting for 46 Navy Recruiting Stations (NRSs) in Washington State, northern Idaho, Montana, and Alaska.[4] These resource losses are yet another impetus to implement an efficient application tool that could serve as a force multiplier.

In summary, six main potential benefits can result from using the CD format in the officer application process. First, it would create a modern, "user-friendly" interface. Second, it could reduce video and application reproduction, mailing, and storage costs. Third, the implementation of this new format would dampen the learning curve for new officer recruiters and processors. Fourth, it could serve as an excellent media resource for use at job fairs. Fifth, the increased usability gained by the new format could help to speed up application processing. Finally, it has the potential to be a powerful force

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[4] Gillespie, Elizabeth M. "Navy recruiters' success costs some their jobs." Associated Press. *The Honolulu Advertiser*. http://the.honoluluadvertiser.com/article/2003/Sep/22/mn/mn03a.html Accessed: 09/22/2003

multiplier and lead-generating tool. With this application CD format in place, the Naval Nuclear Officer application would stand poised to meet the Navy's officer manning needs of the future.

The next chapter describes the background, development, and testing of the CD. Chapter III presents screenshots and descriptions of the main pages of the CD. Chapter IV presents the results of the surveys that were administered to Navy recruiters. The final chapter presents a summary of the study and conclusions, followed by recommendations for possible improvements and further research.

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II. BACKGROUND, DEVELOPMENT, AND TESTING

A. BACKGROUND

This section discusses the basic eligibility, general requirements, and application guidelines necessary for assisting potential Nuclear Officer applicants. These guidelines are the most commonly used from COMNAVCRUITCOMINST 1131.2B (Navy Recruiting Manual - Officer) and other current instructions and notices. This provides a basic introductory understanding of Nuclear Officer recruiting; however, to understand the entire Nuclear Officer application requirements, the entire list of Commander, Navy Recruiting Command (CNRC) instructions should be reviewed.[5]

First, to be eligible to be commissioned as a Nuclear Officer in the U.S. Navy, an applicant must be a citizen of the United States. Also, some basic physical and medical standards must be met, including the Navy's height and weight requirements. Additionally, each applicant must pass a full military medical examination and physical fitness test. Medical issues such as asthma, diabetes, or any other conditions requiring periodic medical attention are considered disqualifying. Although Nuclear Officer positions are open to men and women, only men may be assigned to submarines. Each applicant must be at least 19 years old and less than the program-specific age cutoff at the time of commissioning. However, waivers may be considered on a case-by-case basis. Each applicant must have a baccalaureate degree (or be within 18 months of graduation), with a minimum of one year of calculus and one year of calculus-based physics. Candidates pursuing a degree in math, physics, chemistry, or an engineering curriculum, with a "B" or better (waivers are available) in all technical/science courses may apply following their fall/winter term of their sophomore year. Further, applicants who have completed a baccalaureate degree and are enrolled in a Master's degree program must be within one year of completing their Master's degree.

Applications to become a Nuclear Power Officer are generally submitted in two stages: Advance Documents (ADDOCs) and Final Documents (FINDOCs). ADDOCs contain the minimum required information needed to recommend an applicant to the

[5] The instructions are on the CNRC Web site, Recruiters' Quarterdeck: https://rq.cnrc.navy.mil. This site requires a user name and password that can be obtained from CNRC's system administrator.

selection board. FINDOCs are the remaining documents required to complete a formal application. Final approval of an application to become a Nuclear Power Officer depends on how well the applicant interviews with the director of the Naval Nuclear Propulsion program. If accepted, the individual will receive an active duty commission in the Naval Reserve.

B. DEVELOPMENT

Once the basic eligibility, general requirements, and application guidelines are established, the challenge is to create a usable medium for the CD application. The program chosen would have to be easy to use, compatible with the average applicant's computer, relatively inexpensive (since this was an out-of-pocket effort), and professional enough to test on actual applicants. A Web format using Hyper Text Markup Language (HTML) would theoretically be ideal, making use of Microsoft's Internet Explorer and possibly Netscape®. However, the "gold standard" for most self-loading, professional applications is currently Macromedia® software. Both programs would be relatively easy to use and fully compatible with just about any average computer, though Macromedia® software has an edge over Web pages when it comes to professionalism. It is designed to be self-contained and runs automatically after a disc is inserted into the computer. Web-editing programs, on the other hand, are significantly cheaper (if not free) and can be coded more easily. Therefore, a Web interface was utilized instead of Macromedia® software.

Most of the application forms provided by CNRC are in Adobe® Portable Document Format (PDF). This is done for document security reasons. This severely limits usability, since the format does not allow applicants to save their completed forms. When changes were needed, they would have to start completely over and fill out the forms from scratch. After numerous requests from officer recruiters and Officer Program Officers (OPOs), CNRC now provides two of the dozen forms needed to complete a Nuclear Officer application in Microsoft Word® format. So, it was necessary to convert the remaining forms into a more usable format than PDF. Macromedia® could have been used to create a Turbo-Tax-type application to maximize ease of use. But to stay within

the budget and time constraints, Word was used, along with macros to eliminate redundancy and duplication of data entry by the applicant.

The two main problems were printing errors and version changes. When applicants had large entries of information, the forms would expand and not conform to the original number of pages of the document. Since each form clearly states "Alterations of this form are not authorized," this would likely present a problem when forwarding a completed application package. Also, since CNRC routinely makes changes to some of the application forms, it seemed unwise to invest the time in writing macros for forms that were likely to be obsolete before they were converted.

This led to the ultimate dilemma of document ownership. The documents had to be digitized while allowing the applicant to have access to the most current forms. The applicant was therefore linked directly to CNRC's Web site for the most current versions of the two forms supported by CNRC. By linking the CD directly to CNRC's Web site, the applicant is ensured of getting the most current, official version of the forms, which would also eliminate both the printing and version problems. Additionally, this allows the CD to be a dynamic resource that can still allow CNRC the necessary autonomy and control over the forms.

The layout of the CD was considered after an interface was selected. The two most important functions of the resources on the CD were allowing the applicant to learn about the program of most interest and then pursuing the application process. The CD needed to appeal to the entire spectrum of potential applicants at job fairs, including those who have had limited interaction with a recruiter as well as applicants who have had significant interaction with a recruiter and just need a resource to facilitate the application process. This meant that the CD would need to contain enough information to aid the learning process, but be brief enough to not hinder the application process. In addition, a polished, high-speed design was needed to be consistent with the Navy's current slogan, "Accelerate Your Life."

Most of the application documents were converted to Word format. Additionally, both of the videos were converted to digital video format. The MPEG (named for the Motion Pictures Experts Group) format was chosen because it is currently one of the

most universal formats for digital video in the U.S. and is fully supported by Windows Media Player® (the most common multimedia player, bundled with Windows on many new computers).

C. BETA-TESTING

Several months later, a working prototype was beta-tested on a small sample of students. One of the biggest criticisms during beta-testing related to content. Users felt that they had to sift through too much text to obtain useful information. The second biggest criticism was overall usability and, specifically, navigation. Many users thought the navigation buttons were too subtle and not intuitive enough. Others felt that once they began navigating through the CD, they quickly found themselves lost without the ability to return to the place they started. The third biggest criticism was that the categories of "Learn" and "Apply" were too broad. Some felt that topics such as job descriptions, pay and benefits, training, and frequently asked questions should be broken out into separate buttons. The focus shifted to maximizing these three aspects of the CD, and what emerged was a completely different prototype.

The new prototype shared a common criticism with the old one: it was not intuitive to use. With all of the new buttons, more than half of the users could not figure out the purpose of the CD and were confused as to the intended sequence of navigation. They felt it was geared more to the learning aspect rather than the actual application. Combined with this, many thought that the new design was bland and not representative of the Navy's advertising slogan. A new prototype was explored, based on the Human Factors Principles in Web design.

D. HUMAN FACTORS PRINCIPLES IN WEB DESIGN

Jakob Nielsen, widely regarded as "the Web's usability czar" and author of *Designing Web Usability*, suggests that the most significant action Web designers can take to enhance their site's usability is "discover the…main reasons users come to your site and make these things extremely fast and obvious to do."[6] Most applicants to the

[6] Clark, Scott. "Jakob Nielsen Interview" http://www.webreference.com/new/nielsen.html Accessed: 08/09/2004

Navy would use the CD to learn about a program, apply for that program, or some combination of both. One possible consideration would be to place bulletized versions of some of the learning elements in with the application elements to provide more exposure to the information. But, Nielsen strongly recommends that every effort should be taken in eliminating redundancy to improve usability. The rare instance where it might be good to have some redundancy is with navigational paths. For this reason, effective and efficient use of hyperlinks to complement navigational buttons was emphasized. Nielsen also advises, "Simplicity may be the single most important usability guideline."[7] The CD could be initially simple, while offering more advanced options as the applicant progresses through each menu. That way, the CD could appeal to the entire spectrum of applicants.

Human Factors International's top four principles are: motivate, user taskflow, architecture, and affordance.[8] The motivate principle is very similar to Nielsen's advice about defining a site's purpose and then letting that drive the site's usability. User task flow was embodied in the simple layout of the CD, initially separating users who wanted to learn from those who wanted to apply. Setting up an efficient navigational architecture was also crucial to ensuring that users can find the information they want using a minimal number of clicks. Last, but most important, the principle of affordance was utilized when the navigational architecture was overhauled to make it more obvious where a specific button or text would lead the applicant. Some of these changes include adding more visual contrast to the main buttons, rollover images, and rollover text.

E. FIELD TESTING

Improved usability and a more cohesive interface were created by applying Human Factors Principles to the design of the CD. To test this final prototype, five copies of the CD application were distributed to each of the eight Navy Recruiting Districts in Region West. Also, a letter delineating the purpose and scope of the field test

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7 Nielsen, Jakob. "Reduce Redundancy: Decrease Duplicated Design Decisions" http://www.useit.com/alertbox/20020609.html Accessed: 08/09/2004

8 Human Factors International (HFI). "10 Usability Principles to Guide you through the Web Design Maze" http://www.humanfactors.com/downloads/10tips.asp Accessed: 08/09/2004

accompanied each set of the CDs. In this letter, each Officer Programs Officer (OPO) was tasked with coordinating the testing, by ensuring the use of the CD and by using a district System Administrator for reproduction and technical support. The Region West Nuclear Training Officer was brought onboard to ensure full support among Nuclear Officer recruiters within Region West.

Three electronic surveys were administered to gauge satisfaction levels with the application process before and after introduction of the CD. These surveys were created using a noncomparative scaling technique. More specifically, a Likert scale was applied to these surveys, providing a full range of satisfaction responses. In typical fashion, each scaled question has five response groups, varying from "Very Satisfied" to "Very Dissatisfied." Though this scale takes longer to complete than other itemized rating scales (because respondents have to read each accompanying question), the Likert scale was chosen for its ease of construction, administration, and use. The survey instrument and protocol are presented in Appendix A.

The surveys were designed to gauge satisfaction primarily in the following areas: overall application format, application forms format, video format, video accessibility, application time, and application rework. The first survey was the initial "recruiter survey" and was intended to gauge satisfaction levels with the application before using the CD. The second survey was the "applicant survey" and was meant to measure overall satisfaction levels with the application format using the CD. The third survey was the "follow-up recruiter survey" and was aimed at measuring satisfaction levels with the application after using the CD.

The CD's overall success measurement was primarily based on the results of the feedback surveys solicited from the recruiters and the applicants. If the CD were considered to be an overall improvement on the Nuclear Officer application within Region West, it could then be implemented at the national level through CNRC, using the national OPO to coordinate the effort. Furthermore, this concept of digitization and compilation of resources could also be expanded to other recruiting programs.

III. THE NUCLEAR OFFICER APPLICATION CD

A. INTRODUCTION

Because of the limitations of discussing an electronic resource in a paper format, this chapter is devoted to describing the Web pages, links, and other various components that make up the Nuclear Officer Application CD. The core pages of the CD are comprised of the Intro, Home, Learn, and Apply pages. For further clarity, Figures 1 through 3 provide an overview of the page layout of the CD. In these figures, all 31 of the CD's pages are mapped out, clearly displaying the two main branches: Learn and Apply. Additionally, the pages visually demonstrate the depth and breadth of the resources included on the CD, as well as its features and overall design, without having to navigate through the CD on a computer.

As previously discussed, a close study of human factors greatly affected the overall design of this CD. A strong emphasis was placed on facilitating usability by incorporating a robust, yet straightforward, navigational architecture. This allows the CD to serve both purposes of learning and applying.

B. THE INTRO PAGE

The Nuclear Officer Application automatically launches the computer's default Internet browsing program and opens the Intro page shortly after the CD is inserted in a computer. The Intro page contains a self-loading Flash version of an official commercial produced by Campbell-Ewald, the U.S. Navy's advertising agency. During the beta-testing of earlier versions of the CD, one user complained that the application did not actively engage, entice, or excite the user into further pursuing any of the initial links. It is primarily for this reason that the commercial was included.

The commercial draws upon the popularity of the 20th Century Fox film, "Men of Honor," and ends with an emphasis on the tag line – "When was the last time someone made a movie about what you do?" The commercial also promotes the U.S Navy's recruiting Web site, www.navy.com. At this point the user has the option of watching the

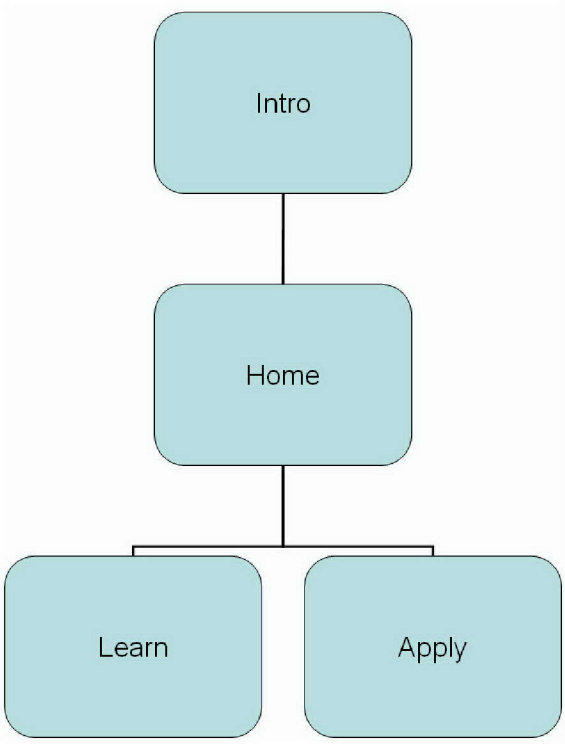

Figure 1. Map of Nuclear Officer CD Layout

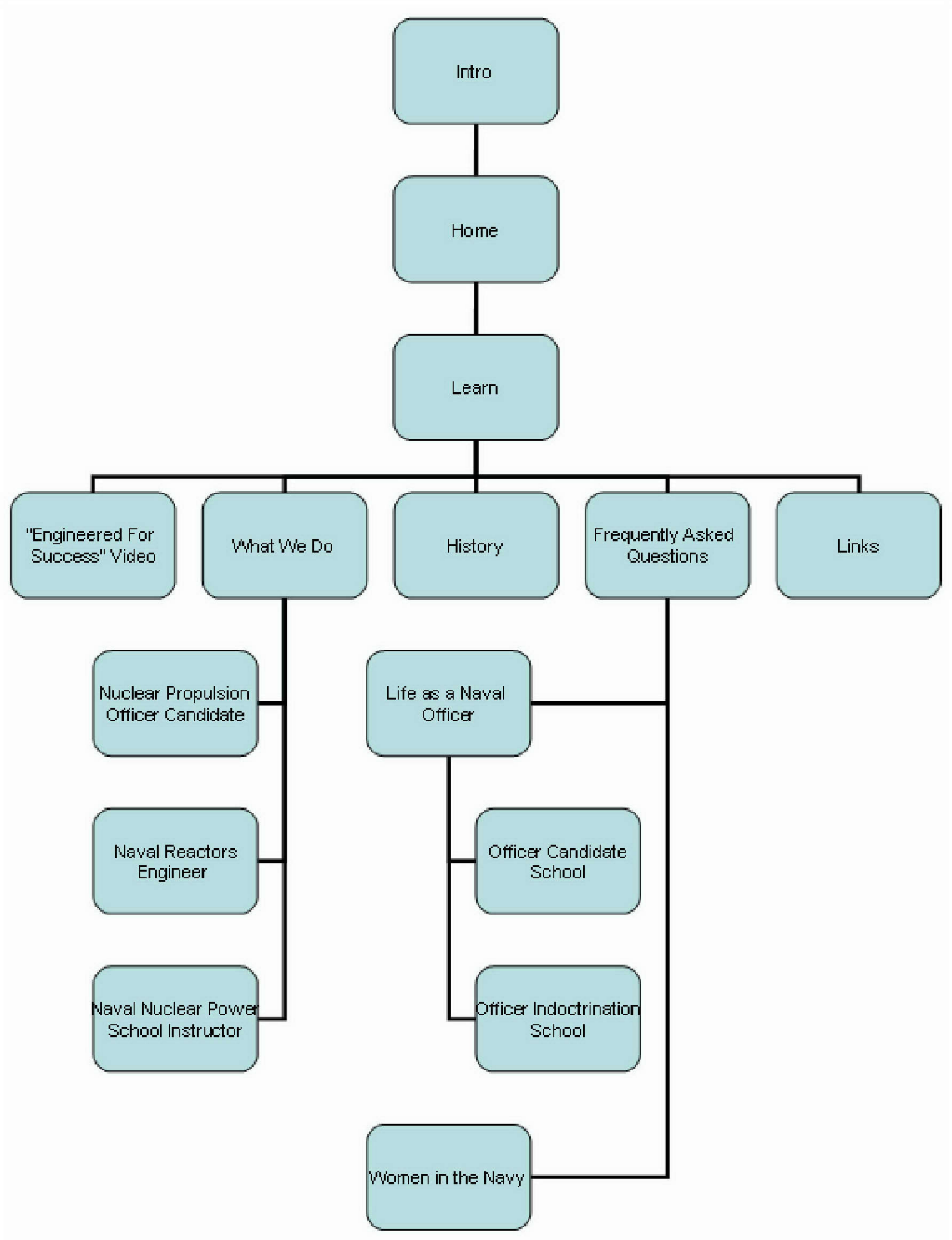

Figure 2. Map of Nuclear Officer CD Learn Path

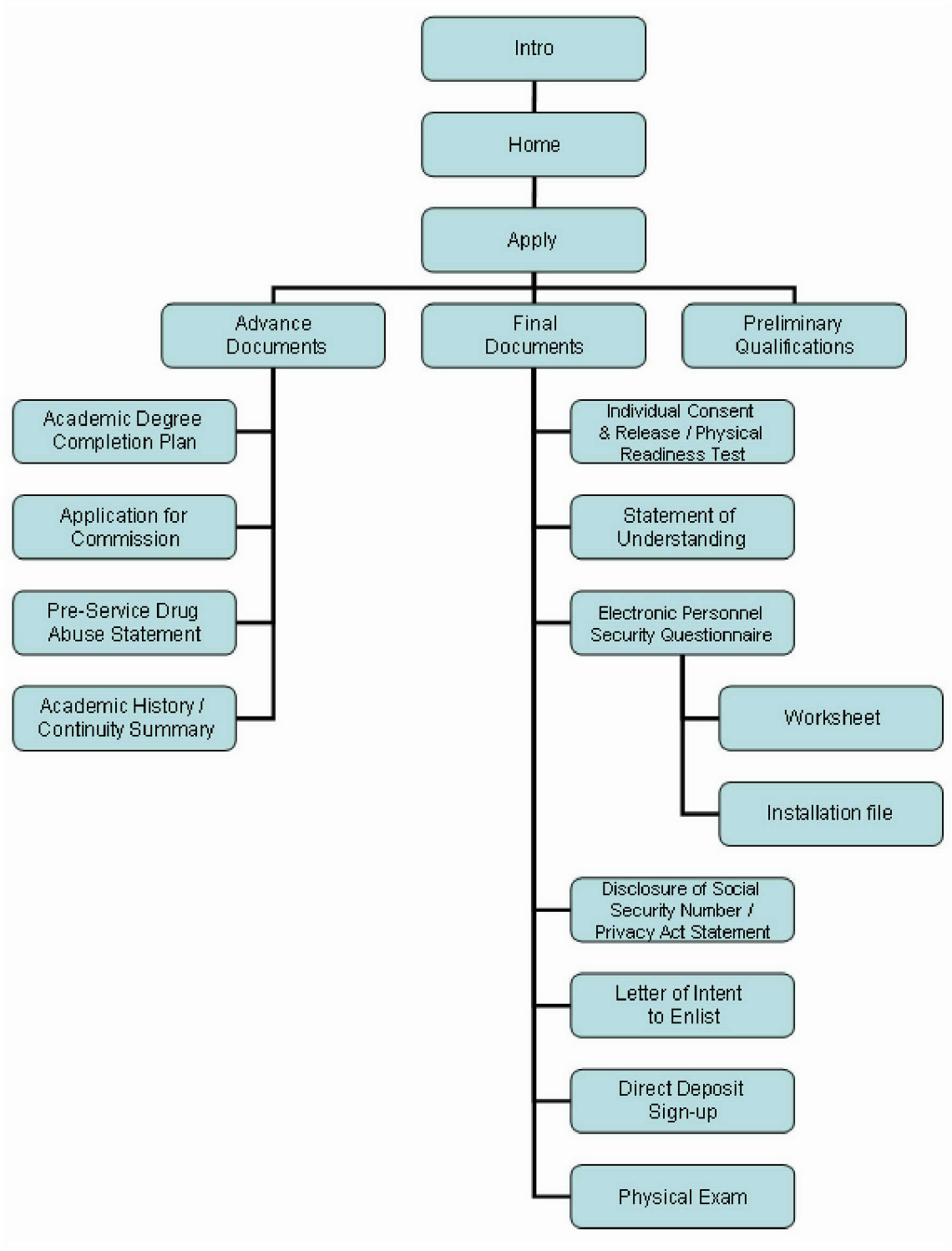

Figure 3. Map of Nuclear Officer CD Apply Path

short video or skipping directly to the home page. After the video plays, the browser is automatically directed to the home page. To minimize the Navy's liability for the content of any unofficial sites visited using this application CD, a disclaimer is subtly located at the bottom of this and every following page on the CD.

C. THE HOME PAGE

The Home page provides a greeting and a brief introduction to the purposes of the CD (Figure 4). Also, the Home page provides links to two paths: Learn and Apply. While this may seem to add an additional click to the process of getting to the necessary information, value is added by its simple design, internal consistency, and easy-to-use navigational architecture. Furthermore, it also serves as a familiar starting point to which the user can return if his or her interests change.

D. THE LEARN PAGE

1. The Learn page starts out by giving a quick preface to the Navy's Nuclear Power Program (Figure 5). The Learn link is highlighted on this and all of the other linked pages to remind the user of his or her chosen path. The Apply link remains active to allow the user to change paths at any time during the journey down the Learn path. While the main body of text resides in the center of the page, the major Learn links are provided menu-bar-style on the left margin of the page. Regardless of the link chosen, these links remain in the left margin to enable the user to switch between links and facilitate overall navigation.

2. The first link leads to a Navy-produced video, "Engineered for Success," which runs for approximately eleven minutes. The video serves as a rich medium to communicate numerous aspects of the Nuclear Power Program as well as Navy life in general. The video is provided in MPEG (Motion Pictures Experts Group) format and is fully supported by Windows Media Player®.

The user can learn specifics about the following three programs: Nuclear Propulsion Officer Candidate (NUPOC), Naval Reactors (NR) Engineer, and Naval Nuclear Power School (NNPS) Instructor with the second link. Each of the follow-on links clarifies the

job description, training, eligibility, and obligation involved with each program. Much like before, regardless of the link chosen, the other two links remain in the upper-right-hand corner to facilitate navigation.

Figure 4. Screen Capture of Home Page

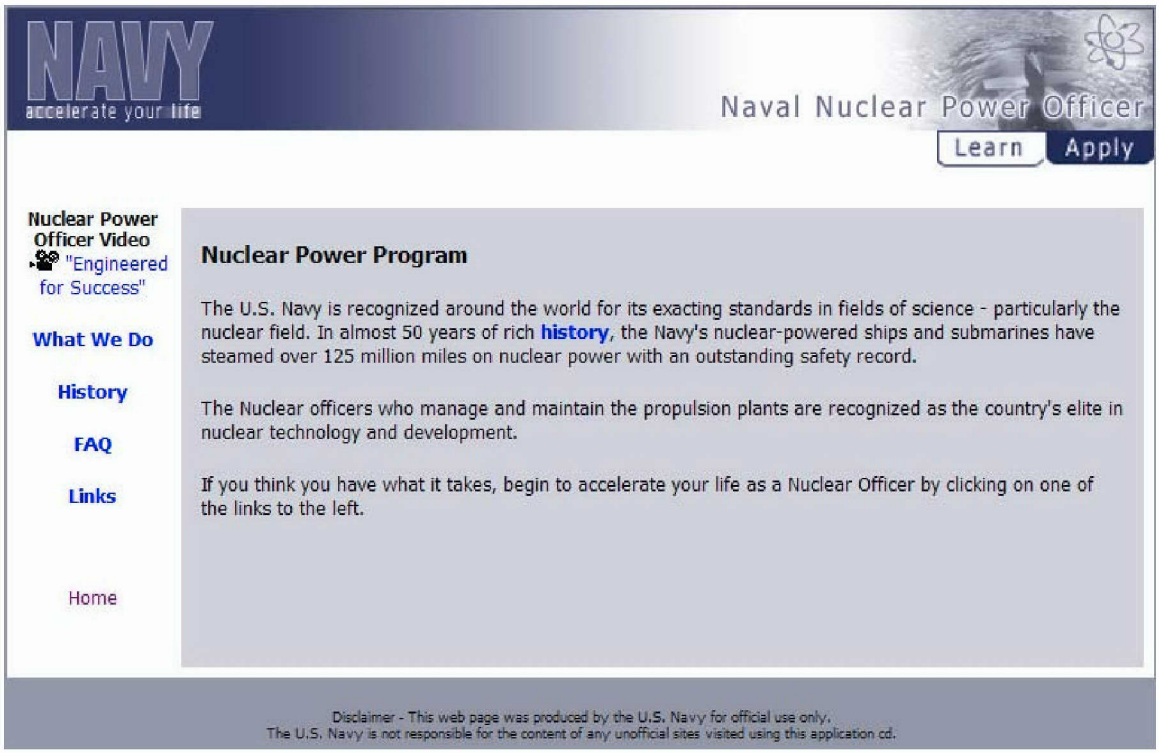

Figure 5. Screen Capture of Learn Page

3. The "History" link presents the user with a concise history of the applications and accomplishments of nuclear power within the U.S. Navy. It also briefly describes the foundation and achievements of Naval Reactors.

4. A FAQ link is included to answer Frequently Asked Questions in two main categories: Life as a Naval Officer and Women in the Navy. The first category covers questions relating to eligibility, commitment, training, pay, and job skills. Embedded internal links provide greater detail on the requirements for Officer Candidate School (OCS) and Officer Indoctrination School (OIS). The second category covers questions specific to women regarding training and job eligibility.

5. The "Links" page includes external links to official pages for OCS and OIS. The user can also link to career-planning tools, allowing one to calculate retirement and compensation benefits. Ultimately, this link was intended to serve as an exhaustive catch-all for further questions about the Navy's Nuclear Power programs, as many of these links have links to other resources for further research and exploration. For ease of navigation, the links are set up so that a new window is opened for each link explored.

That way, the user can view the numerous links without fear of getting lost or having to perform numerous clicks on the Back button to return to the beginning.

E. THE APPLY PAGE

1. The major difference that any user should notice right away is that this time the Apply link is contrasted for emphasis (Figure 6). The Learn link is still active in case more questions about the program arise throughout the application.

Again, the style and layout used for the Learn pages are mirrored throughout the Apply pages. The major Apply links have been aligned to the left margin with the major content resident in the middle of the page.

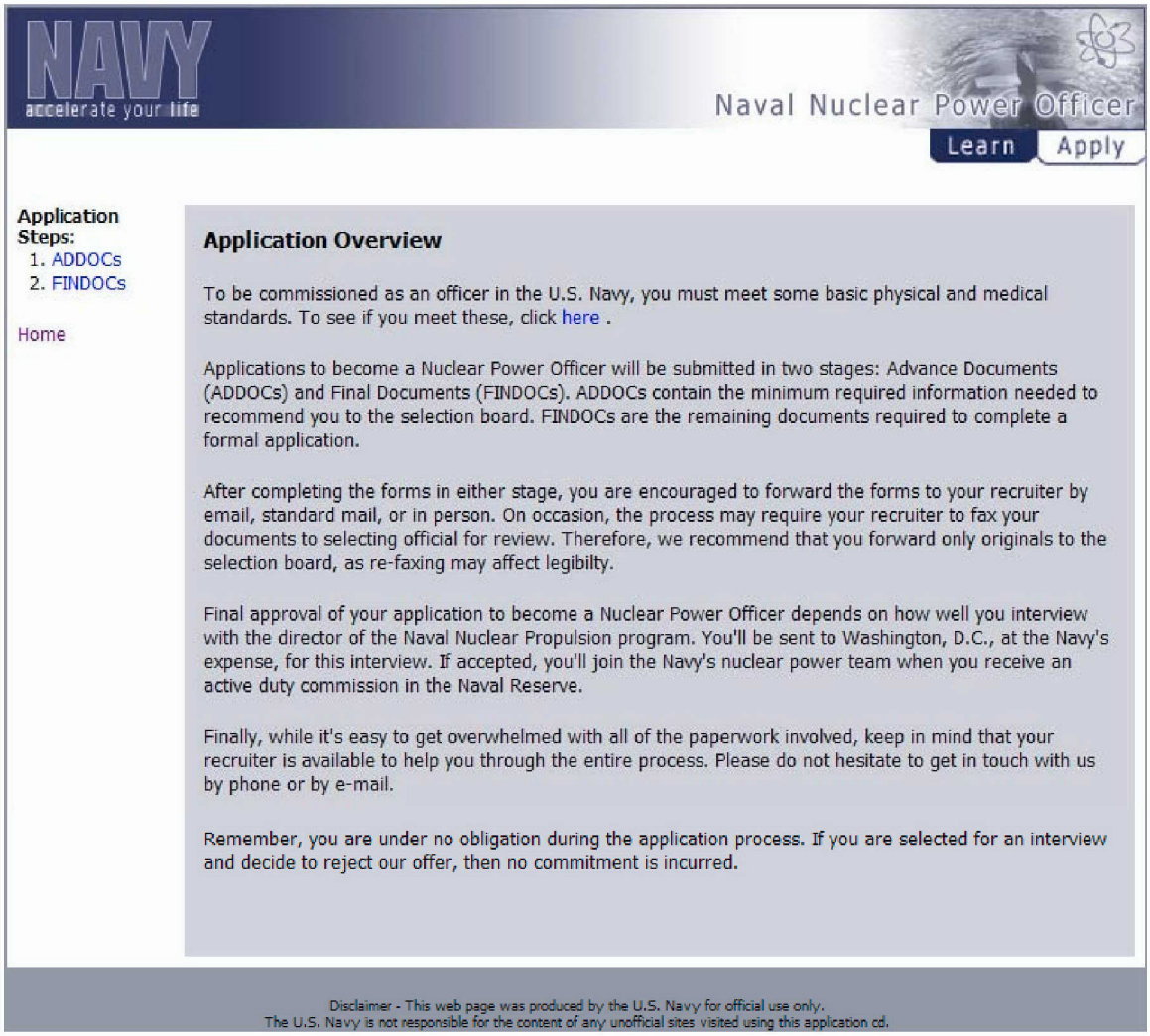

Figure 6. Screen Capture of Apply Page

2. The Apply page begins with a cursory application overview. Right away it contains a link embedded in the first few lines of text, giving the potential applicant the ability to see if he or she is initially medically qualified. The rest of the text takes the user through the application steps and a few insightful processing tips.

This page might appear fairly simple, since it contains only two main links. While this page only contains two main links, however, it sets up the two key phases of the application process as directed by Commander, Navy Recruiting Command (CNRC): the Advance Documents (ADDOCs) phase and the Final Documents (FINDOCS) phase. Still, it is ultimately up to the user and recruiter as to whether or not the application is filled out sequentially in phases or all at once. Since the CD is set up so that, regardless of the link chosen, the remaining link remains in the upper-right-hand corner, it is flexible enough to accommodate either of these preferences.

3. Upon following the first link to the ADDOCs, the user is presented with four links to each of the necessary ADDOCs forms. These links are set up so that a new window is opened for each link explored to simplify navigation and completion. Since three of these forms are currently supported on a CNRC Web site, the option to download the most current version of the form directly from the site is offered in each case. Ideally, none of the forms would reside on the CD, but on CNRC's Web site, ensuring that the user would always be linked to the most current, official forms available from CNRC.

Amplifying instructions are also provided. Though the ADDOCs forms are self-explanatory and the user may be able to fill them out without assistance, supplementary guidance is provided in areas that have frequently caused confusion. Additionally, it is important to remind the applicant of additional required documentation not covered by the ADDOCs.

4. Following the second primary link leads the user to the FINDOCs portion of the application. Much like the ADDOCs page, this page links the user to all of the required forms for FINDOCs. Unfortunately, none of these forms is currently supported on a CNRC Web site. Furthermore, great effort was made to convert each of the FINDOCs forms from Adobe Acrobat® to Microsoft Word® format. The Direct Deposit Sign-up (SF 1199A) and the Request for Conditional Release (DD 368) forms were left

in Portable Document Format (PDF) format because of their complex nature. Moreover, the DD Form 368 is not typically used or applicable for most of Nuclear Officer applicants.

5. Because the Electronic Personnel Security Questionnaire (EPSQ) is no longer a form but a program that must be installed, the user is not directly linked to the executable file. Instead, a separate page was created, solely devoted to detailed instructions on installing, running, and filling out the forms in the program. Then, the process to validate and transmit the completed forms is discussed. Since the EPSQ is generally one of the toughest forms to complete, a link is included to an EPSQ worksheet for further assistance.

6. One of the last links contained on the FINDOCs page is to a page that describes the physical exam. However, the prescreening forms required for the physical exam are not included on the CD. Since the prescreening forms vary by location, it was not feasible to include each variation used by each Military Entrance Processing Station (MEPS). The page was mainly designed for the purpose of preparing applicants for the rigorous schedule of the MEPS exam as well as the MEPS house rules.

7. Though every attempt has been made to make the CD congruent with and appealing to human factors, much room for improvement remains. The navigational architecture may be more streamlined and, at the same time, made more robust with drop-down menus. The entire design could also be renovated through the use of Macromedia® or any other professional-grade software.

8. Refer to Appendix B for more information on the actual visual design of all of the pages. Screen captures of every page contained in the Nuclear Officer Application CD are available in this section.

IV. DATA COLLECTION AND ANALYSIS

A. INTRODUCTION

Three Web-based surveys were developed and administered using Zoomerang™, an Internet survey tool. These surveys were intended to estimate satisfaction levels with the Naval Officer application format before and after introduction of the CD. An increase in satisfaction after using the CD could indicate an improvement of the application format.

Respondents were asked on the survey to gauge their satisfaction in the following areas: overall application format, application forms format, video format, video accessibility, application time, and application rework. As shown in Table 1, the target populations for the surveys were fairly small and decreased in size as the focus of the CDs was narrowed to Nuclear Officer Programs. However, the response rates to both of the recruiter surveys were consistent and relatively high.

Table 1. Surveys, Number of Responses, and Response Rates

Survey	Target Population (Number) [a]	Responses (Number)	Response Rate (Percent)
Initial Survey of NRD Officer Recruiters	43	32	74.4
Survey of Nuclear Officer Program Applicants	16	0[b]	0.0
Follow-up Survey of NRD Officer Recruiters	12	9	75.0

[a] Estimates based on Region West average quarterly officer manning and production.
[b] Three applicants visited the survey Web site but did not complete the survey.

The CD's overall success is based primarily on the results of the feedback surveys solicited from recruiters and applicants. The results of these surveys are discussed below.

B. INITIAL SURVEY FROM NRDS

The initial recruiter survey was designed to measure the satisfaction level of officer recruiters with the current format of the Naval Officer application. The survey consisted of seven questions and was launched online in early June of 2004. It was accessed by both active and reserve officer recruiters in Region West. Out of the eight districts in this region, seven completed the survey, and 32 completed survey responses were received. The recruiters at NRD Phoenix did not provide any feedback.

As seen in Table 2, it appears that the vast majority of recruiters responding were satisfied with the Navy's recruiting image. Based on the results shown in Table 4, a slim majority of recruiters were neutral with respect to the VHS format of Navy recruiting videos. Table 5 shows that most recruiters were satisfied with Navy recruiting interactive CDs. A slim majority of recruiters responded neutrally regarding Navy recruiting video accessibility, as seen in Table 6, but recruiters were almost equally divided on this issue. Table 7 shows that most recruiters were satisfied with the format of Naval Officer application forms. Overall, recruiters' satisfaction seems split down the middle, as evidenced by Table 8. However, it should be noted that four survey participants elected not to respond to this question.

Most significant are the responses regarding satisfaction with the current application format. Initially, as seen in Table 3, it seemed that 55 percent of all respondents were satisfied with the current application format. After reading the specific comments provided, it became obvious that the majority of the responses were not relevant to the question asked. Additionally, the percentage of "satisfied" responses did not match many of the comments. Many of the responses referred to problems with the Military Entrance Processing Station (MEPS), Commander, Navy Recruiting Command (CNRC), or other factors external to the Officer Application format.

A few comments specified that the current application format is "very easy to follow" and asks "the right questions." The majority of the comments point out major shortcomings with the current format. One specific comment says "the current system is antiquated and redundant." Another states that the current format is "way [too] tedious;

should be streamlined electronically." The preponderance of this type of feedback confirms that the current application format is ripe for revision and could possibly be improved through digitization.

Table 2. First Recruiter Survey: Satisfaction with Navy Recruiting Image

	Naval Recruiting Districts (NRDs)							
	Denver	Los Angeles	San Antonio	San Diego	San Francisco	Seattle	Naval Reserve, Area Pacific	All
Response	Percent							
Very Satisfied	0.0	28.6	50.0	40.0	37.5	100.0	25.0	37.0
Somewhat Satisfied	50.0	71.4	25.0	40.0	25.0	0.0	25.0	38.0
Neutral	0.0	0.0	0.0	0.0	12.5	0.0	25.0	6.0
Somewhat Dissatisfied	50.0	0.0	0.0	0.0	25.0	0.0	25.0	13.0
Very Dissatisfied	0.0	0.0	25.0	20.0	0.0	0.0	0.0	6.0
Total								
Percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number	2	7	4	5	8	2	4	32

Question: "Please rate your SATISFACTION with…Navy Recruiting image."

Table 3. First Recruiter Survey: Satisfaction with Naval Officer Application Format

	Naval Recruiting Districts (NRDs)							
	Denver	Los Angeles	San Antonio	San Diego	San Francisco	Seattle	Naval Reserve, Area Pacific	All
Response	Percent							
Very Satisfied	0.0	14.3	25.0	0.0	25.0	50.0	0.0	16.0
Somewhat Satisfied	50.0	71.4	25.0	40.0	12.5	50.0	25.0	39.0
Neutral	0.0	0.0	0.0	20.0	25.0	0.0	25.0	13.0
Somewhat Dissatisfied	50.0	14.3	25.0	40.0	0.0	0.0	25.0	19.0
Very Dissatisfied	0.0	0.0	0.0	0.0	37.5	0.0	25.0	13.0
Total								
Percent	100.0	100.0	75.0*	100.0	100.0	100.0	100.0	100.0
Number	2	7	3	5	8	2	4	31

Question: "Please rate your SATISFACTION with…Naval Officer application format."
* One recruiter did not respond to the question.

Table 4. First Recruiter Survey: Satisfaction with Navy Recruiting VHS Video Format

	Naval Recruiting Districts (NRDs)							
	Denver	Los Angeles	San Antonio	San Diego	San Francisco	Seattle	Naval Reserve, Area Pacific	All
Response	Percent							
Very Satisfied	50.0	42.8	25.0	0.0	0.0	50.0	0.0	18.0
Somewhat Satisfied	0.0	28.6	25.0	20.0	0.0	0.0	0.0	12.0
Neutral	50.0	14.3	0.0	40.0	75.0	50.0	50.0	41.0
Somewhat Dissatisfied	0.0	14.3	50.0	20.0	12.5	0.0	0.0	16.0
Very Dissatisfied	0.0	0.0	0.0	20.0	12.5	0.0	50.0	13.0
Total								
Percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number	2	7	4	5	8	2	4	32

Question: "Please rate your SATISFACTION with…Navy Recruiting video format (VHS)."

Table 5. First Recruiter Survey: Satisfaction with Navy Recruiting Interactive CD-ROM Video Format

	Naval Recruiting Districts (NRDs)							
	Denver	Los Angeles	San Antonio	San Diego	San Francisco	Seattle	Naval Reserve, Area Pacific	All
Response	Percent							
Very Satisfied	0.0	42.8	25.0	20.0	0.0	50.0	0.0	19.0
Somewhat Satisfied	0.0	28.6	50.0	20.0	50.0	50.0	0.0	32.0
Neutral	100.0	14.3	0.0	40.0	25.0	0.0	50.0	29.0
Somewhat Dissatisfied	0.0	0.0	25.0	0.0	12.5	0.0	0.0	6.0
Very Dissatisfied	0.0	14.3	0.0	20.0	0.0	0.0	50.0	14.0
Total								
Percent	100.0	100.0	100.0	100.0	87.5*	100.0	100.0	100.0
Number	2	7	4	5	7	2	4	31

Question: "Please rate your SATISFACTION with…Navy Recruiting interactive video format (CD-ROM)."
* One recruiter did not respond to the question.

Table 6. First Recruiter Survey: Satisfaction with Accessibility of Navy Recruiting Videos

	Naval Recruiting Districts (NRDs)							
	Denver	Los Angeles	San Antonio	San Diego	San Francisco	Seattle	Naval Reserve, Area Pacific	All
Response	Percent							
Very Satisfied	0.0	42.8	25.0	0.0	0.0	50.0	0.0	16
Somewhat Satisfied	0.0	14.3	50.0	20.0	12.5	0.0	0.0	16
Neutral	50.0	28.6	0.0	40.0	37.5	50.0	50.0	35
Somewhat Dissatisfied	0.0	14.3	25.0	20.0	50.0	0.0	0.0	23
Very Dissatisfied	0.0	0.0	0.0	20.0	0.0	0.0	50.0	10
Total								
Percent	50.0*	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number	1	7	4	5	8	2	4	31

Question: "Please rate your SATISFACTION with…Navy Recruiting videos accessibility."
* One recruiter did not respond to the question.

Table 7. First Recruiter Survey: Satisfaction with the Format of the Naval Officer Application Forms

	Naval Recruiting Districts (NRDs)							
	Denver	Los Angeles	San Antonio	San Diego	San Francisco	Seattle	Naval Reserve, Area Pacific	All
Response	Percent							
Very Satisfied	0.0	28.6	0.0	0.0	0.0	0.0	0.0	6.0
Somewhat Satisfied	50.0	57.1	50.0	40.0	25.0	50.0	25.0	42.0
Neutral	0.0	0.0	0.0	20.0	25.0	50.0	50.0	19.0
Somewhat Dissatisfied	50.0	14.3	25.0	40.0	25.0	0.0	0.0	23.0
Very Dissatisfied	0.0	0.0	0.0	0.0	25.0	0.0	25.0	10.0
Total								
Percent	100.0	100.0	75.0*	100.0	100.0	100.0	100.0	100.0
Number	2	7	3	5	8	2	4	31

Question: "Please rate your SATISFACTION with…Format of the application forms."
* One recruiter did not respond to the question.

Table 8. First Recruiter Survey: Overall Satisfaction with the Format of the Current Naval Officer Application

	Naval Recruiting Districts (NRDs)							
	Denver	Los Angeles	San Antonio	San Diego	San Francisco	Seattle	Naval Reserve, Area Pacific	All
Response	Percent							
Yes	0.0	57.1	25.0	60.0	37.5	100.0	25.0	50.0
No	100.0	28.6	25.0	40.0	62.5	0.0	50.0	50.0
Total								
Percent	100.0	85.7*	50.0*	100.0	100.0	100.0	75.0*	100.0
Number	2	6	2	5	8	2	3	28

Question: "Overall, are you satisfied with the current Naval Officer application process?"
* A total of four recruiters did not respond to the question.

C. APPLICANT SURVEY

The applicant survey was designed to gauge the satisfaction level of Nuclear Officer applicants with the format of the Nuclear Officer Application CD. The survey contained seven questions very similar to the initial recruiter survey, but geared specifically to the usability of the application CD. This survey was launched online on October 11, 2004. Although no surveys were completed, three applicants visited the Web survey. This lack of information does not affect the present study, which compares the CD with paper application forms. Since applicants would likely have been exposed only to the Nuclear Officer Application CD, any feedback provided would not have been relative to the current format. For example, a positive appraisal of the CD would lack a reference point or benchmark and would only beg the question, "good, as compared with what?"

D. FOLLOW-UP SURVEY

The final recruiter survey was designed to evaluate the satisfaction level of officer recruiters with the Nuclear Officer Application CD as compared with the current format of the Naval Officer application. This survey included nine questions and was launched online in late November of 2004, allowing for at least a month's use of the CD. The survey could be accessed only by officer recruiters in Region West who were involved in Nuclear Officer recruiting. Region West staff also provided two responses. Out of the eight districts in this region, seven completed the survey; once again, NRD Phoenix did not participate in the survey.

The feedback provided on this survey starkly contrasted from the feedback provided on the initial recruiter survey. An overwhelming majority of respondents found the Nuclear Officer Application CD to be a major improvement over the current application format. However, some were dissatisfied with the CD's format and did not see it as a significant improvement over the current format of the Naval Officer application. The specific results of each question are discussed in detail in the following sections.

E. RECRUITER SATISFACTION WITH APPLICATION CD

When asked to rate their satisfaction with the Nuclear Officer Application CD, 55 percent of the Nuclear Officer recruiters in Region West were satisfied as seen in Table 9. Another 33 percent remained neutral and 11 percent were dissatisfied. On the initial survey 55 percent were also satisfied, 13 percent were neutral, and 32 percent were dissatisfied. Though the comments received in response to this question were generally more favorable than on the initial survey, only the percentages of neutral and dissatisfied respondents changed. The proportion of neutral respondents increased by 20 percentage points. Also, the proportion of dissatisfied respondents decreased by 21 percentage points.

Table 9. Second Recruiter Survey: Satisfaction with the Format of the Application CD

Response	Number	Percent
Very Satisfied	2	22.2
Somewhat Satisfied	3	33.3
Neutral	3	33.3
Somewhat Dissatisfied	1	11.2
Very Dissatisfied	0.0	0.0
Total	9	100.0

Question: "Please rate your SATISFACTION with…Format of the application CD…."

F. RECRUITER SATISFACTION WITH APPLICATION CD VIDEOS

When asked to rate their satisfaction with the Nuclear Officer Application CD videos, roughly 63 percent of the respondents stated that they were satisfied and 38 percent remained neutral, as seen in Table 10. On the initial survey, 32 percent were satisfied, 41 percent were neutral, and 29 percent were dissatisfied. Overall, the proportion of satisfied respondents increased by 31 percentage points, and the proportion of neutral respondents decreased by 3 percentage points. Also, the proportion of dissatisfied respondents decreased by 29 percentage points. This indicates a substantial rise in satisfaction with the format of the videos contained on the application CD.

Table 10. Second Recruiter Survey: Satisfaction with the Format of the Application CD Videos

Response	Number	Percent
Very Satisfied	1	12.5
Somewhat Satisfied	4	50.0
Neutral	3	37.5
Somewhat Dissatisfied	0.0	0.0
Very Dissatisfied	0.0	0.0
Total	8	100.0

Question: "Please rate your SATISFACTION with…Format of the application CD videos…."

G. RECRUITER SATISFACTION WITH APPLICATION CD VIDEO ASSESSIBILITY

When asked to rate their satisfaction with accessibility of the Nuclear Officer Application CD videos, 55 percent of the respondents replied that they were satisfied and 44 percent were neutral as seen in Table 11. On the initial survey, 32 percent were satisfied, 35 percent were neutral, and 33 percent were dissatisfied. Overall, the proportion of satisfied respondents increased by 23 percentage points, and the proportion of neutral respondents increased by 9 percentage points. The proportion of dissatisfied respondents decreased by 33 percentage points. This also indicates increased satisfaction with the accessibility of the videos contained on the application CD.

Table 11. Second Recruiter Survey: Satisfaction with the Accessibility of the Application CD Videos

Response	Number	Percent
Very Satisfied	3	33.3
Somewhat Satisfied	2	22.2
Neutral	4	44.5
Somewhat Dissatisfied	0.0	0.0
Very Dissatisfied	0.0	0.0
Total	9	100.0

Question: "Please rate your SATISFACTION with…Accessibility of the application CD videos…."

H. RECRUITER SATISFACTION WITH APPLICATION CD FORMS

When asked to rate their satisfaction with format of the Nuclear Officer Application CD forms, 44 percent of the respondents replied that they were satisfied and 56 percent were neutral as seen in Table 12. On the initial survey, 48 percent were satisfied, 19 percent were neutral, and 33 percent were dissatisfied. Overall, the proportion of satisfied respondents decreased by 4 percentage points. While the proportion of neutral respondents increased by 37 percentage points, the proportion of dissatisfied respondents decreased by 33 percentage points. However, the slight decline in the level of satisfaction with the format of forms contained on the application CD is not surprising.

The applications forms are not very user-friendly, and simply digitizing them only improves the format and process, not the forms themselves. Due to the current restrictions prohibiting any modification to the forms, great care was exercised to ensure that the original content of the forms was preserved in digitization.

Table 12. Second Recruiter Survey: Satisfaction with the Format of the Application CD Forms

Response	Number	Percent
Very Satisfied	2	22.2
Somewhat Satisfied	2	22.2
Neutral	5	55.6
Somewhat Dissatisfied	0.0	0.0
Very Dissatisfied	0.0	0.0
Total	9	100.0

Question: "Please rate your SATISFACTION with…Accessibility of the application CD videos…."

I. DOES THE APPLICATION CD SAVE TIME?

When initially asked, how long it takes to fill out a complete application, using the current application format, the responses ranged from a few hours to a few months. When asked the same question using the application CD, the responses ranged from "15 min[utes]" to "I have not noticed any difference." One recruiter responded saying, "Not sure, but it will save a lot of time." Since the exact amount of time spent on filling out the application forms cannot be accurately and independently tracked, the perceptions of the recruiters serve as the best measure of the time required for the task. As it turned out, however, the responses of recruiters varied widely, so the question remains unanswered. The comments of recruiters do provide some insight, and they suggest that the forms could be improved along with application processing.

J. DOES THE APPLICATION CD REDUCE REWORK?

When initially asked how many times the application needed to be reworked, the weighted average response was that the application required rework about 2.59 times.

When asked the same question using the application CD, the weighted average response was that the application required rework about 2.13 times. On the surface, it does not appear that the application CD significantly reduces the amount of rework involved in the application process. This is also consistent with the fact that the application forms had not been changed and therefore would not create a sizable expectation for reducing rework.

K. DOES THE APPLICATION CD MAKE REWORK EASIER?

On the second recruiter survey, when asked if it was easier to rework an application using the application CD, about 67 percent of the respondents said "Yes," as seen in Table 13. Though the majority of respondents indicated that rework was potentially easier, some qualified their responses by citing a lack of rework experience using the CD. One of the responses generally summed up the sentiment by saying, "Overall, electronic is always easier than paper."

Table 13. Second Recruiter Survey: Satisfaction with the Ease of Rework using the Application CD

Response	Number	Percent
Yes	4	66.7
No	2	33.3
Total	6	100.0

Question: "Is it easier to rework an application, using the application CD?"

L. IS THE APPLICATION CD FORMAT AN OVERALL IMPROVEMENT OVER THE CURRENT APPLICATION FORMAT?

When asked if the application CD format is an improvement over the current application format in place, 71 percent of those surveyed responded in the affirmative as seen in Table 14. One of the many positive responses in the comments portion of the survey claimed that "[The CD] appeared to be a very useful program that is past its due." While some recruiters felt that "The concept is excellent," others felt that certain improvements were still needed.

Two respondents stated that they were dissatisfied with the CD's format and did not see it as an overall improvement, when compared with the current format of the Naval Officer application. One of these respondents felt that "the current piece-mailing of the forms seems to work better" and found that "some of the links were not working within the CD when clicked on." This person also commented that "an online system (somewhat like Turbo-Tax) would be more of an improvement to this system."

Table 14. Second Recruiter Survey: Overall Satisfaction with the Application CD

Response	Number	Percent
Yes	5	71.4
No	2	28.6
Total	7	100.0

Question: "Overall, is the application CD format an improvement over the current application format in place?"

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V. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

A. SUMMARY AND CONCLUSIONS

The primary purpose of this thesis was to investigate the possibility of improving the Naval Nuclear Officer Application format by digitizing all of the necessary application resources. To this end, an alternate application format was designed on a CD, developed, and tested for the Naval Nuclear Officer program.

The design process began by selecting the software program that would work best to improve the application. Next, the most current versions of the necessary elements for the officer application were compiled and digitized. A framework was built incorporating these elements into a digital format. This framework was designed to help potential applicants learn about the programs in a way that could not encumber the application process.

The development process employed informal focus groups to gauge the usability of the early versions of the CD application. Additionally, human factors principles in Web design were examined to improve the usability of the CD application based on the feedback of the focus groups.

Testing occurred in the field using Navy Recruiting Region West, which is comprised of eight Navy Recruiting Districts (NRDs). Finally, electronic surveys were designed and administered to measure improvement and user satisfaction throughout the research process.

The majority of officer recruiters in Region West thought the Nuclear Application CD was an improvement over the current application format. Six out of the seven NRDs that responded to the survey provided comments that ranged from "the general information about the positions and programs is awesome" to "enjoyed having all aspects in one place, in a format that can be given to an applicant; would like to see this [CD] expanded to all GOF programs." Although the CD was an overall success, improvements can still be made in the format of the application.

B. POTENTIAL NAVAL OFFICER RECRUITING BENEFITS/SAVINGS AND RECOMMENDATIONS

Starting in June, near the end of each fiscal year, each Officer Programs department head (OPO) at each of the twenty-six Naval Recruiting Districts (NRDs) around the nation begins putting together the next year's Market Operations Plan (MOP) as well as budget inputs. Both of these items are closely tied together, since the budget inputs are driven by the prospective goals assigned in the MOP and the MOP is designed around the projected budget for the next fiscal year.

In fiscal 2004, the Navy's recruitment budget was about $572 million, which covered a nationwide staff of about 4,000 recruiters, advertising, and other costs. This is about $26 million less than in the previous fiscal year. Of this, an estimated $46,719,000 was allocated to Officer Programs at Commander, Navy Recruiting Command (CNRC).[9] Compared with the other services, the Navy had the second-largest budget for officer acquisition. The Air Force had the largest at $73,866,000, followed by the Navy, with a little more than half that amount. The Army's budget ranks third at $31,037,000, nearly two-thirds of the Navy's budget. The smallest budget was that of the Marine Corps, at $23,326,000, nearly half of the Navy's budget.

Of the $46,719,000 in the Navy's budget, $2,745,000 is reserved for national advertising costs. An additional $9,127,000 is allocated under the category of Operations & Maintenance, Other Recruiting Support. This broad category serves as a catch-all, funding programs such as improved recruiting practices or initiatives to better penetrate a market segment (e.g., diversity populations or 2-year colleges). Similarly, each OPO has the general budget category of Other Officer Recruiting Program that is also sometimes used to fund recruiting innovations. Because these budget categories are so general, it is difficult to specify exactly how much is spent on miscellaneous projects. Consequently, the cost savings of application digitization would not be directly quantifiable using these budget categories.

Because of the ambiguity of the budget categories that currently fund extraneous application costs, one cannot easily determine the direct cost savings from digitizing the

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9 Office of the Secretary of Defense. *DD804 Summary of all the Armed Forces Officer Programs*. Washington: GPO, 2003.

officer application. Nevertheless, some readily apparent savings and benefits can be identified. These are summarized below.

1. Materials Cost Savings

Currently, videos are reproduced in VHS format at a cost of about $1 a tape, if purchased in quantities of 100. CDs, on the other hand, can be reproduced at a cost of $0.25 per unit, also if purchased in quantities of 100. (This cost is drastically reduced with promotions and rebates, sometimes making the CDs free.) An argument for VHS might be made, since they come with their own labels. However, the cost of CD-ROM labels is of little consequence, since they can be purchased in a quantity of 100 for about $20, adding $0.20 to the cost of each CD. Moreover, the professional look (unattainable at the same cost on VHS format) easily obtained on most bundled CD-labeling software, more than offsets this cost.

2. Storage Space Savings

The digital format offers a significant space savings compared with the VHS format, because one can store hundreds and hundreds of hours of digital-quality video in a binder or album instead of using heavy, bulky, banker's boxes. Additionally, since the CD format can store data as well as video, it allows an additional storage capacity equivalent to "roughly 250,000 typed pages."[10]

3. Transportation Savings

Because the officer markets at most NRDs are so geographically dispersed, officer recruiters often find themselves traveling an average of 180 miles to deliver an application package to a potential applicant. With the national average cost of gasoline per gallon at about $1.80 in early 2005, this results in a cost of $324 per potential applicant. By using the CD format, that amount of transportation costs could be saved.

4. Benefits of Superior Format

During normal extended use, a CD is also much more durable than a VHS tape. Additionally, the CD format guarantees high video and sound quality, copy after copy and edit after edit. Also, the time required to duplicate a CD is shorter and less labor-intensive.

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10 Tranter, Jeff. "The Linux CD-ROM HOWTO" http://distributions.linux.com/howtos/CDROM-HOWTO/x76.shtml Accessed: 09/29/2003

Most importantly, the CD format is an on-demand format that is more consistent than the VHS format with the high-tech organizational image and the "Accelerate Your Life" slogan promoted by the Navy. Unlike VHS tapes, the CD can also be cued up right to the desired portion of the video almost instantly.

5. Benefits of a User-Friendly Format

Because the CD format supports multimedia storage, it allows for the creation of an all-inclusive application. No longer will recruiters need to send applicants online to download the Electronic Personnel Security Questionnaire (EPSQ) or sift through dozens of sheets of paperwork and still make a trip in to the office to watch the video. Instead, the CD format allows for the combination of all of these resources. This facilitates increased productivity for both the applicant and recruiter.

6. Potential Costs

While numerous potential benefits can be identified by moving to the CD format, potential costs are found as well. Costs are especially important, since recruiting practices within the Department of Defense come under increasing scrutiny in recent years. The Government Accountability Office (GAO), for example, reports that many of the current inefficiencies within the recruiting commands are rooted in the goal-based recruiting systems used by the services.[11] This rings true in Navy Officer recruiting, since the application format still plagues officer recruiting as a major inefficiency.

Obviously, any new format would have new or different costs. Another criticism of digitization is that it uses expendable media, creating sunk costs. The benefits of digitizing the application far outweigh the mere dimes associated with the cost of a blank disc and label. For instance, having the application in a digital format ensures reliability for future use, compactness, as well as the potential for future referrals if the discs are passed on to other potential applicants.

Since the modern Navy requires at least a minimum level of skill with computers, the format could also be used as a "weeding out" device. At the same time, some applicants may simply prefer paper to digital. In these cases, the application could easily be printed out to accommodate applicants.

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11 Pry, David A. "An analysis of the U.S. Navy goal-based recruiting system." Naval Postgraduate School, 1996.

By printing a version number, date and providing links to Web resources, applicants can be sure that they have the most current forms. Appropriate document security settings can help to minimize and manage any threat of malicious editing.

7. Summary of Benefits and Costs

In summary, the application CD was well received by most officer recruiters in Region West. Recruiter satisfaction levels with the recruiting videos definitively increased using the application CD. Additionally, the numerous positive comments from recruiters indicate that the new application format is preferred by most over the one currently in place. Finally, the estimated costs of converting to the CD format are likely far outweighed by the potential benefits.

8. Further Exploration and Development

The application CD format merits further exploration and development. To greater aid the improvement of the application format, online support should be provided by Commander, Navy Recruiting Command, (CNRC) for all of the forms used in officer recruiting. The Navy Recruiting Orientation Unit (NORU) Web site at www.cnrc.navy.mil/noru/orojt/ojt.htm is an exceptional resource for explaining the purpose and requirements of each form in each officer program's application but links to an electronic version of each form are still needed. Since CNRC plans to distribute a CD in January 2005 containing all of the most current application forms for officer programs, it would not require much effort to post these electronic forms on www.cnrc.navy.mil/officer or NORU's Web site. This would allow the Nuclear Application CD to be linked to the most current form available, instead of the forms now on the CD, which will soon be outdated. Additionally, this would allow for the expansion of the application CD concept to other officer programs, using the Nuclear Officer Application CD as a prototype. Depending on cost-effectiveness, the legwork to create other program CDs could be done in-house at CNRC or through a contract.

The Nuclear Officer Application CD was relatively well received by the recruiters in Region West, although it was originally conceived as a supplementary tool. Many recruiters who responded to the initial survey felt that the best way to improve the application's current format would be to "put it all online." The Navy's main officer recruiting component should reside on the Web and should likely mirror the majority of

the content found on LT Kelly Beamsley's site for Naval Reserve recruiting at www.kellybeamsley.com/military. This Web site was offered as a "best practice" from a Naval Reserve officer recruiter on the initial survey. Also, based on the feedback from another recruiter, "the application format could be made much simpler if it were a computer application program or Web-based application." The application CDs would then serve both as a link to dynamic application resources, such as application forms and sign-on bonus information, and as well as a mobile, compact data library for static application resources such as the recruiting videos. Further, until Internet technology improves, CDs and DVDs reign supreme as the optimal platforms for high-quality video and audio.

In the long term, CNRC needs to take a hard look at streamlining and simplifying the officer application forms. Some feel that redundancy is important in the officer application, since each form goes to a different place for selection review. This position holds little validity, however, when weighed against the excessive administrative burden created for applicants, recruiters, and processors alike because of inefficiency. One recommendation from a recruiter was to "consolidate the information drawn from the EPSQ and application for commission without redundancy." To increase satisfaction with the forms, each form would need to be simplified by using plain language. Additionally, measures should be taken to reduce and, if possible, eliminate the redundancy of information required by all of the forms. Fixing these issues should address the chief criticisms of the forms pointed out on the initial recruiter surveys. This should be done with all of the application forms, so that the information required of applicants is asked and entered into the forms only once. Making the forms more efficient would not only reduce the paperwork for applicants, recruiters, and processors, but could eventually speed up the entire recruiting process.

Another measure CNRC could explore to make the officer application more efficient and user-friendly would be implementing a "Turbo-Tax-type" interface that would consolidate the forms and automatically check the information entered for consistency, spelling, or other errors. NRD San Francisco has already made great strides in this venue using Perl programming language and its database capabilities. Again based on cost-effectiveness, the development and fine-tuning of this effort could be

conducted by CNRC or contracted out to use a professional Macromedia® format consistent with current interactive videos.

Adding the use of electronic signatures to the electronic application would likewise help to streamline the process. Electronic fingerprints, used at the Military Entrance Processing Stations for enlistees, could also be expanded to include officer applicants. These features would further add to the efficient, "e-kit" format.

Finally, the process in which application kits are sent to CNRC should be modernized. In this age of digital communication, it would be most efficient to capitalize on existing technologies and make this process a purely digital transfer of information. As one recruiter put it, "The transfer process of kits should be digital upload and download, vice mailing...faxing to an email...transferred via CD to computer and distributed to processors in Millington." Under the current system, it often takes recruiters multiple attempts, with no confirmation of receipt by CNRC, to get entire application packages sent successfully by fax. According to one recruiter, the current process "wastes too many man-hours on menial labor copying, faxing, and scanning when technology is available for easy upload, download, and simplified corrections to streamline the process."

Most of these recommended changes to the current application format are rooted in recruiter responses obtained from the online surveys. Others are based on concepts uncovered while researching usability design and human factors. As the Navy continues to compete with large, civilian corporations for a limited pool of talented people to fill its officer ranks, it must employ the most current recruiting technologies to remain competitive. Swift implementation of these changes is essential to ensure that the Navy can meet its officer manning needs of tomorrow.

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APPENDIX A: SURVEY PROTOCOL AND INSTRUMENT

-----Original Message-----
Sent: Monday, July 26, 2004 1:34 PM
To: pickele@cnrc.navy.mil
Subject: Officer Program Survey

Officer Program Recruiter,

We are two former OPOs currently conducting thesis research at the Naval Postgraduate
School . We greatly need your assistance.

Please take a few minutes to complete a short (7 question) survey that briefly examines the naval officer application process.

We guarantee that your responses will be anonymous. To begin, just open the link below and follow instructions.

http://www.zoomerang.com/survey.zgi?p=WEB2LUGUSM4

We're hoping for 100% participation.
Thanks for your help!

V/r,
LT Bob Reddy

Figure 7. Copy of e-mail instructions sent to the Officer Programs Officers (OPOs) in Region West for the Initial Recruiter Survey

Dear OPOs,

Congratulations! Your district has been selected to participate in a Region West sponsored initiative to digitize the Nuclear Officer application.

Enclosed are six copies of a CD designed to be an all-encompassing resource for use in nuclear recruiting. Please feel free to duplicate and distribute this CD as needed. HOWEVER IN ORDER TO EVALUATE AND CONTINUE THIS INITIATIVE, RECRUITER AND APPLICANT FEEDBACK IS CRUCIAL. PLEASE ENSURE THE FEEDBACK SURVEYS ARE COMPLETED.

While this CD was specifically designed for Nuclear Officer Programs, there are forms included that are universal and can be used for most officer programs (e.g. Application for Commission, EPSQ, etc.). Also, just so you know, the OCS video "Commitment to Excellence" is also included on the disc in the folder "Videos". Rather than linking the applicant directly to this video, I felt it best to leave it unlinked in the folder so that the recruiter could introduce it to the applicant when most appropriate.

If you need any assistance in reproducing the CD or label, do not hesitate to contact me at rgreddy@nps.edu / (831) 869-8034. I greatly appreciate your time and cooperation and hope that you will ultimately reap dividends in nuclear recruiting by using this CD. I also hope that you and your applicants find the CD to be user-friendly and an overall useful tool.

Very respectfully,

LT Bob Reddy

Figure 8. Copy of Survey Letter sent with the CDs to the Officer Programs Officers (OPOs) in Region West

-----Original Message-----
Sent: Monday, October 11, 2004 12:41 AM
To: Davis, Bradford LT
Subject: Naval Nuclear Officer Application CD info
Importance: High

LT Davis,

Please pass on the following to the OPOs in Region West:

Hello. My name is Bob Reddy and I used to be an OR, OPO and EPO at NRD Minneapolis. Currently, I'm at the Naval Postgraduate School in Monterey, CA. Based on my own personal experience in the field, I'm working on a thesis to test the viability of digitizing the Naval Nuclear Officer application onto a CD.

In a few days, all of you should be receiving five copies of a CD in the mail. This CD was designed to be an all-encompassing resource for use in nuclear recruiting. It can be duplicated and distributed as needed, bearing in mind that the application may fundamentally change in the near future.

I greatly appreciate the participation on the initial survey. I ask for your continued support by having your applicants fill out surveys as well, once they've used the CD. The link for their survey is :

http://www.zoomerang.com/survey.zgi?p=WEB223ULMYHF9W
<http://www.zoomerang.com/survey.zgi?p=WEB223ULMYHF9W>

Additonally by the end of November, I will need each recruiter that has used the CD to participate in one last survey. I cannot stress enough how crucial recruiter and applicant feedback is to evaluating as well as continuing this initiative.

If you have any questions or need any assistance in reproducing the CD or label, feel free to contact me by email or by cell phone at (831) 869-8034. As someone who has a genuine interest in improving the recruiting process and dampening the already steep learning curve, I hope this CD helps. Regardless, I thank you all for your cooperation and wish you all the best in your recruiting efforts in this new FY.

Very respectfully,
LT Bob Reddy

Figure 9. Copy of e-mail instructions sent to the Officer Programs Officers (OPOs) in Region West for the Applicant Survey

-----Original Message-----
Sent: Thursday, November 18, 2004 12:18 PM
To: DavisBr@cnrc.navy.mil
Subject: Final Recruiter Survey on the Nuke Application CD
Importance: High

LT Davis,

Please pass on the following to the OPOs in Region West:

Hello again. As promised, I've attached a link below for the final survey on the Nuclear Officer
Application CD sent out over a month ago. This survey, much like the initial survey, was written to assess your satisfaction level as a recruiter with the application format, but is focused on the application CD.

(RECRUITER SURVEY LINK):
http://www.zoomerang.com/survey.zgi?p=WEB223XT3VFYMX

This survey needs to be completed by Thanksgiving and requires maximum participation. This is your final opportunity to voice your feedback on the use and improvement of that application CD as well as the entire application format.

If you still have applicants that have used or are using the CD, please encourage them to fill out a survey at the link below as their feedback is also vital to this initiative.

(APPLICANT SURVEY LINK):

http://www.zoomerang.com/survey.zgi?p=WEB223ULMYHF9W

I truly do appreciate your support on this effort. Based on your feedback, I've referenced Kelly Beamsley's site for future development and improvement. I'm also currently working with NRD San Francisco's OPO to combine efforts in digitizing the application format. My sincere hope is that these efforts will ultimately result in accession dividends for your district as well as Region West overall.

Finally, if you have any questions about the surveys or need any assistance in reproducing the CD or
label, feel free to contact me by email or by cell phone at (831) 869-8034.

Very respectfully,
LT Bob Reddy

Figure 10. Copy of e-mail instructions sent to Officer Programs Officers (OPOs) in Region West for the Final Recruiter Survey

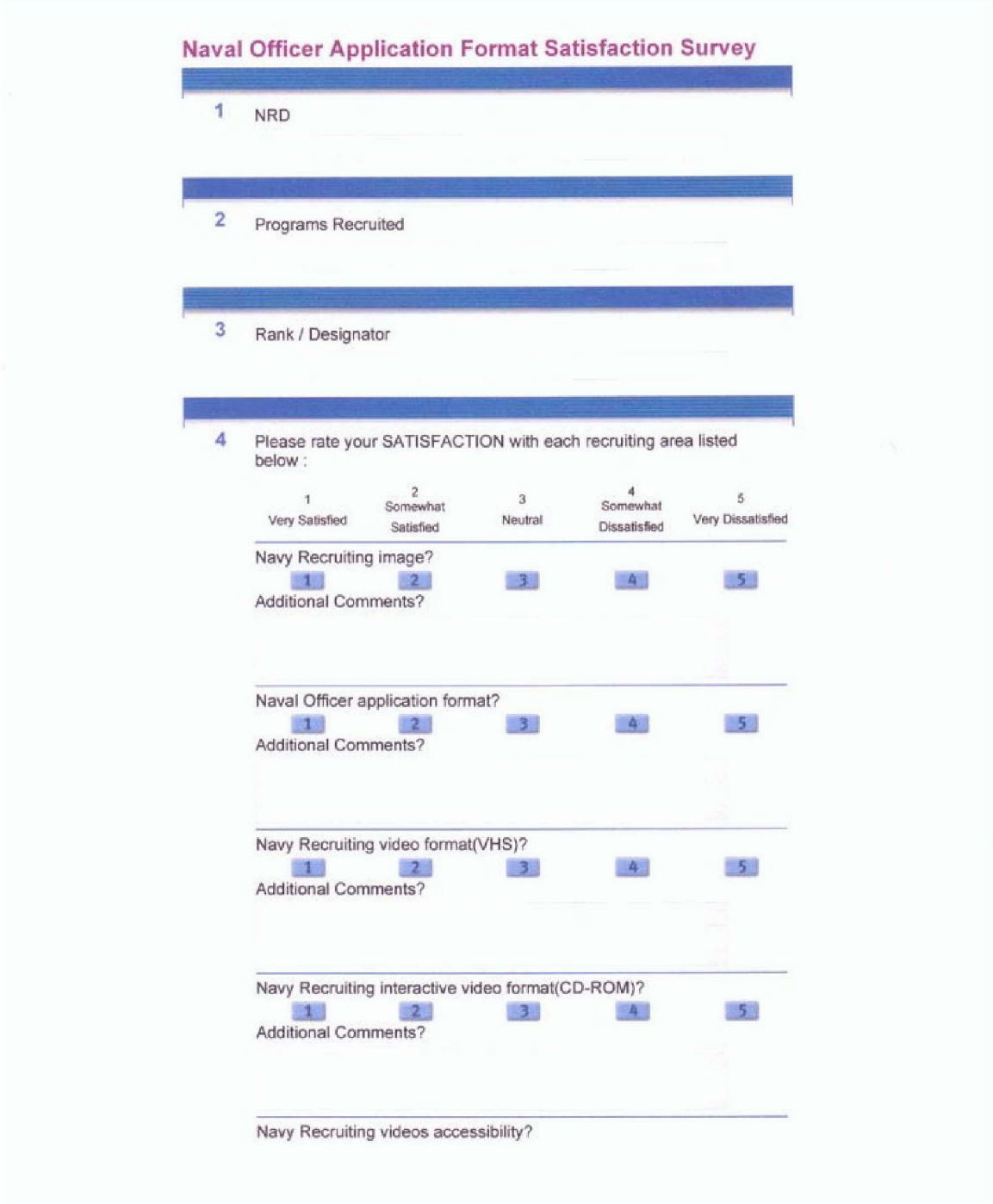


Figure 11. Screen Capture of Initial Recruiter Survey, Page 1

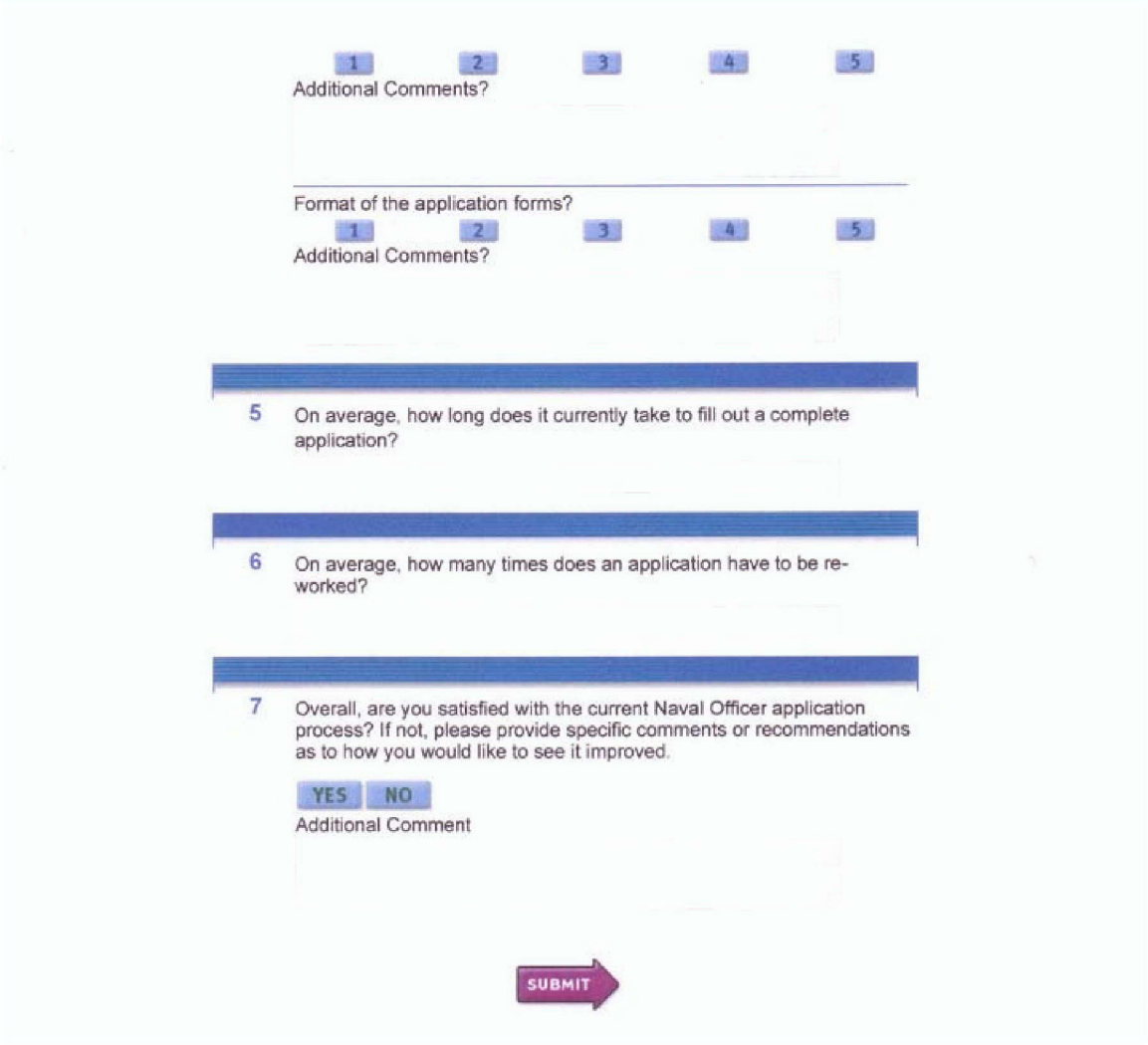
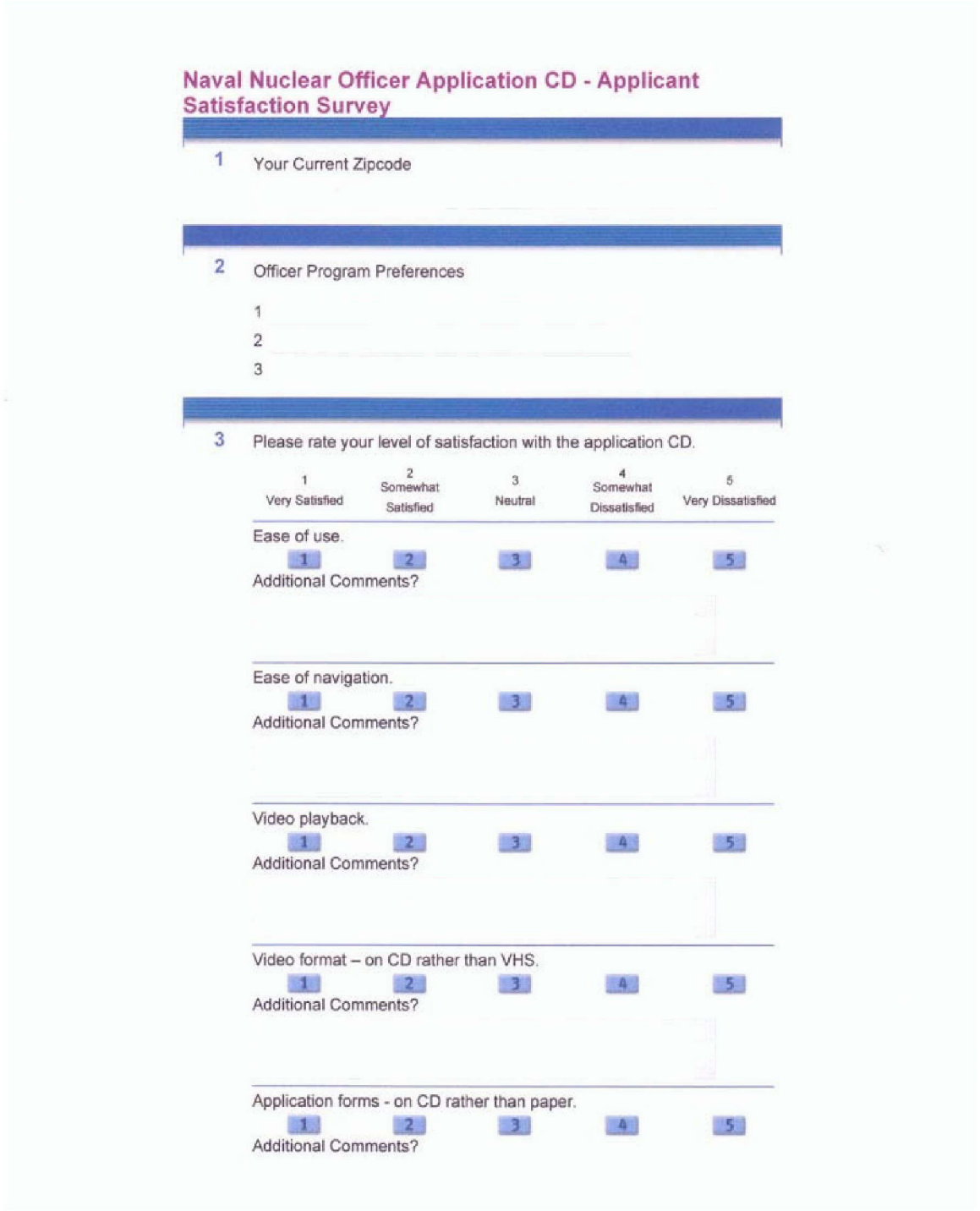


Figure 12. Screen Capture of Initial Recruiter Survey, Page 2



Naval Nuclear Officer Application CD - Applicant Satisfaction Survey

1 Your Current Zipcode

2 Officer Program Preferences

1
2
3

3 Please rate your level of satisfaction with the application CD.

	1 Very Satisfied	2 Somewhat Satisfied	3 Neutral	4 Somewhat Dissatisfied	5 Very Dissatisfied
Ease of use.	1	2	3	4	5
Additional Comments?					
Ease of navigation.	1	2	3	4	5
Additional Comments?					
Video playback.	1	2	3	4	5
Additional Comments?					
Video format – on CD rather than VHS.	1	2	3	4	5
Additional Comments?					
Application forms - on CD rather than paper.	1	2	3	4	5
Additional Comments?					

Figure 13. Screen Capture of Applicant Survey, Page 1

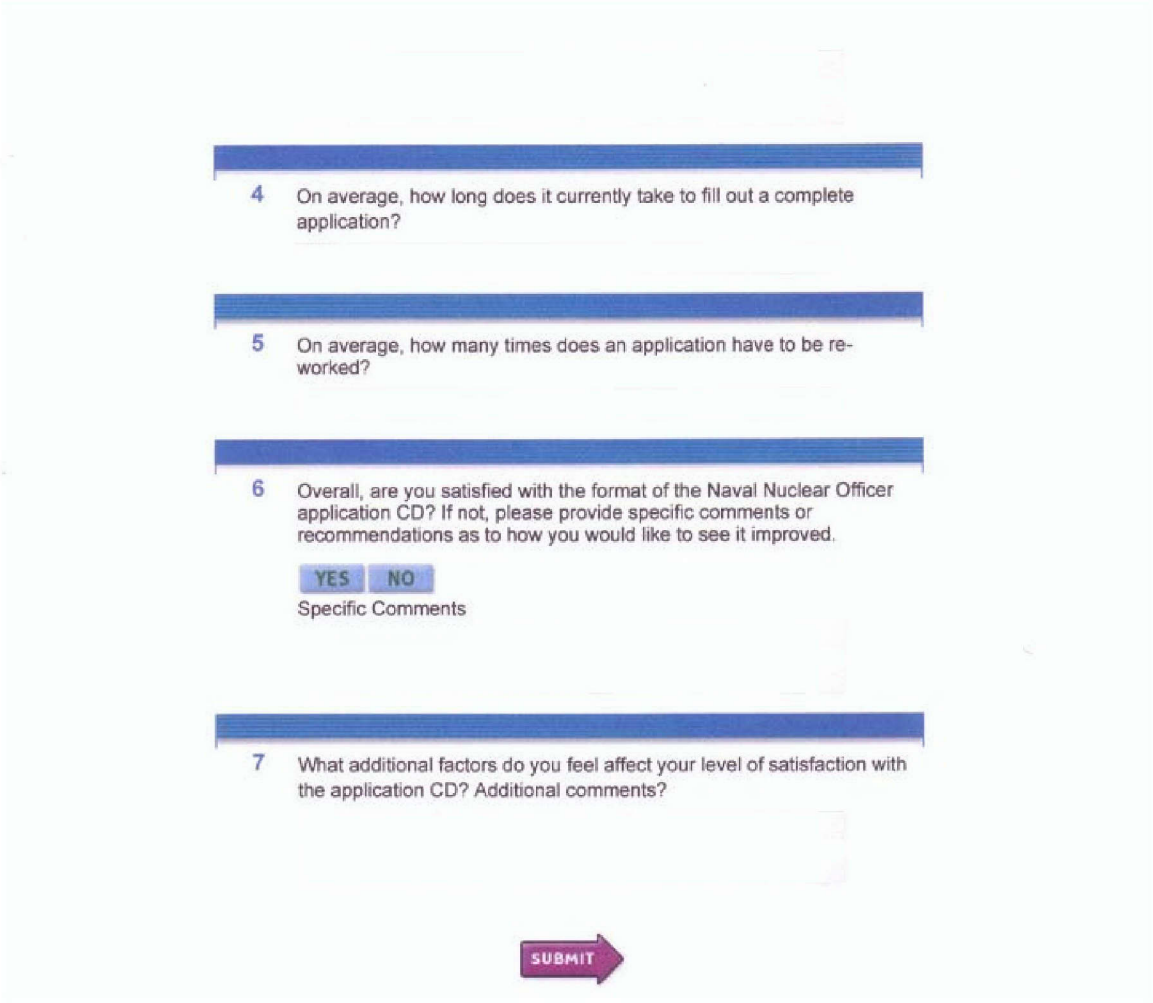
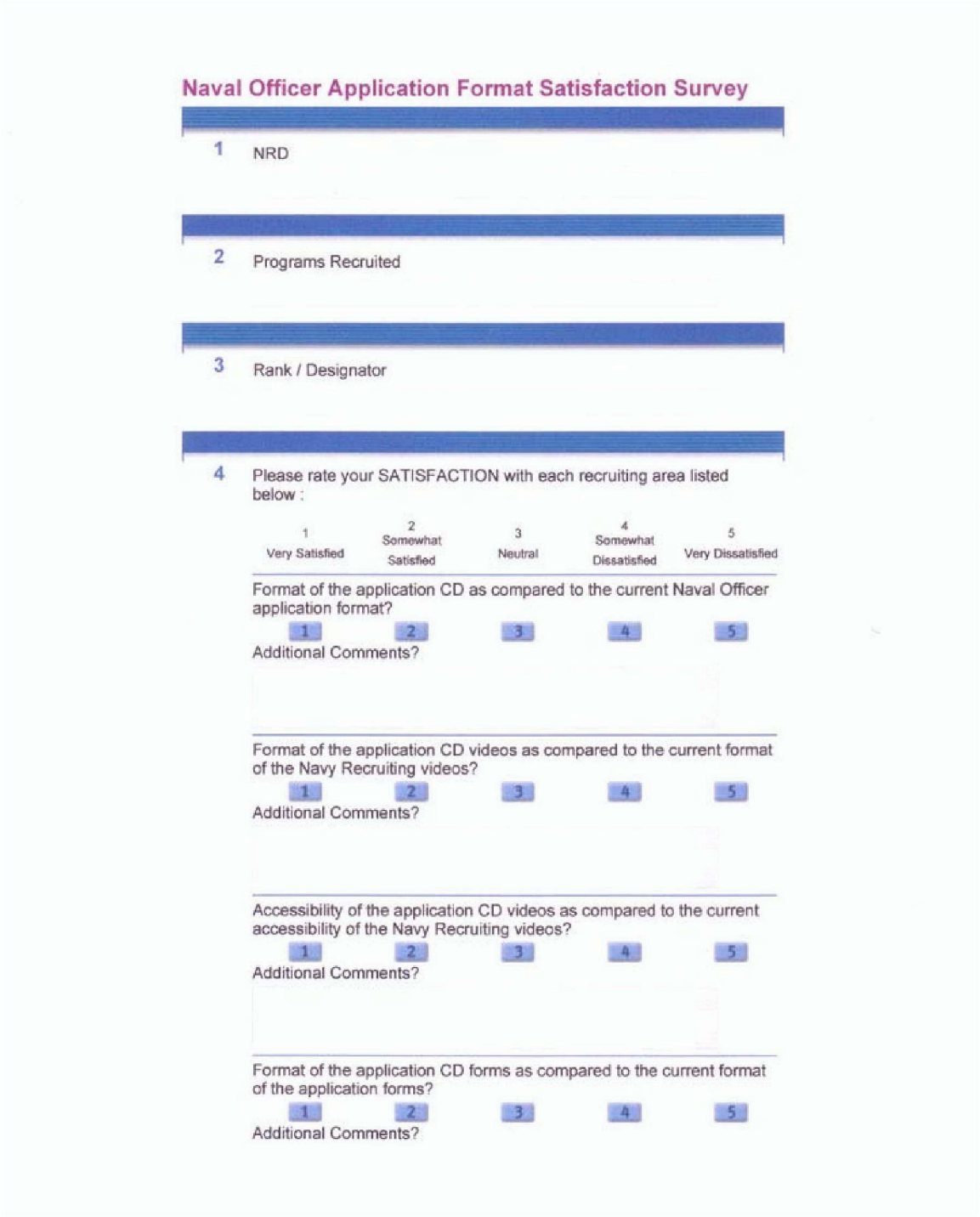


Figure 14. Screen Capture of Applicant Survey, Page 2



Naval Officer Application Format Satisfaction Survey

1 NRD

2 Programs Recruited

3 Rank / Designator

4 Please rate your SATISFACTION with each recruiting area listed below :

1 Very Satisfied	2 Somewhat Satisfied	3 Neutral	4 Somewhat Dissatisfied	5 Very Dissatisfied

Format of the application CD as compared to the current Naval Officer application format?

1 2 3 4 5

Additional Comments?

Format of the application CD videos as compared to the current format of the Navy Recruiting videos?

1 2 3 4 5

Additional Comments?

Accessibility of the application CD videos as compared to the current accessibility of the Navy Recruiting videos?

1 2 3 4 5

Additional Comments?

Format of the application CD forms as compared to the current format of the application forms?

1 2 3 4 5

Additional Comments?

Figure 15. Screen Capture of Final Recruiter Survey, Page 1

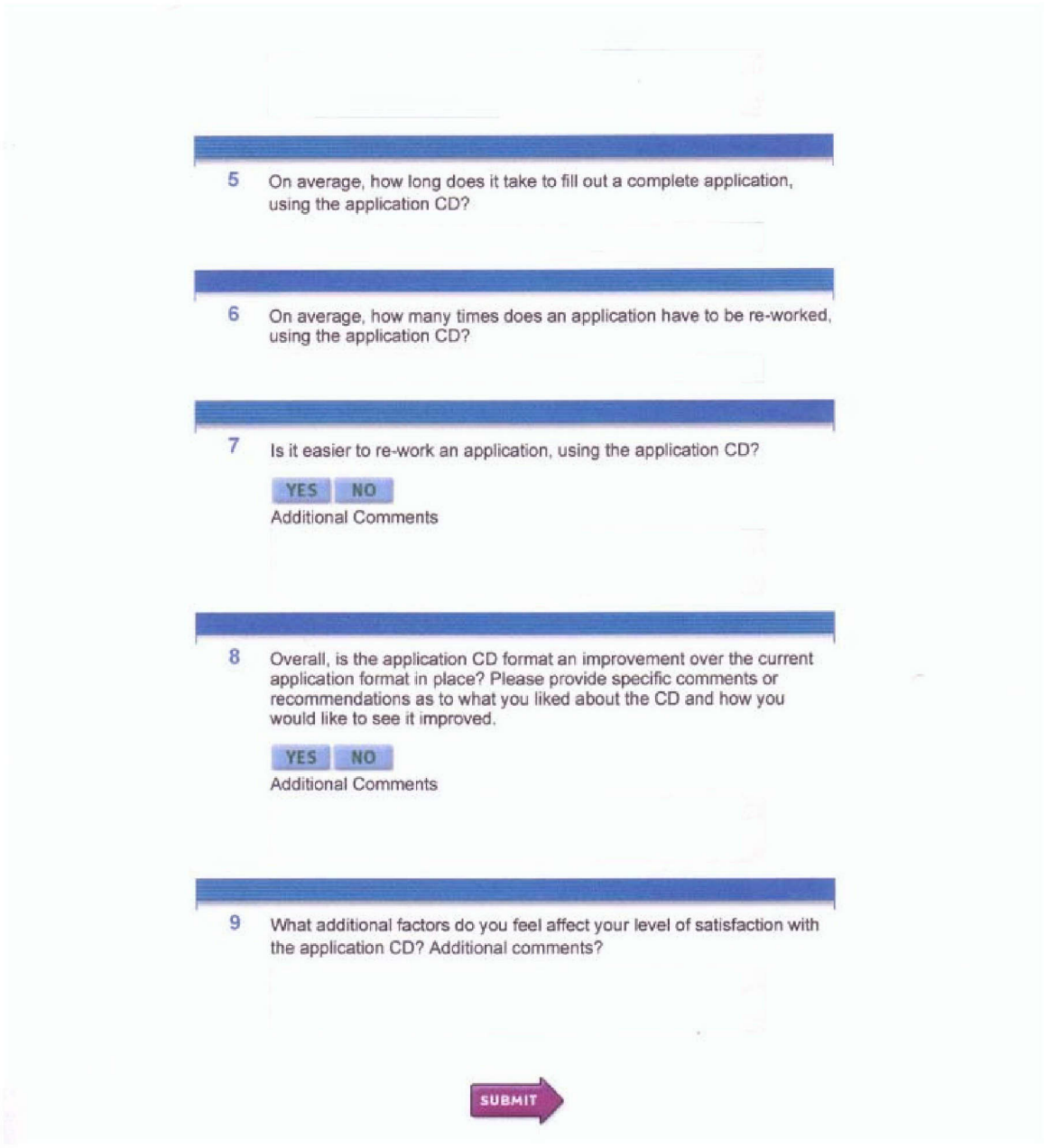


Figure 16. Screen Capture of Final Recruiter Survey, Page 2

APPENDIX B: SCREENSHOTS OF CD PAGES

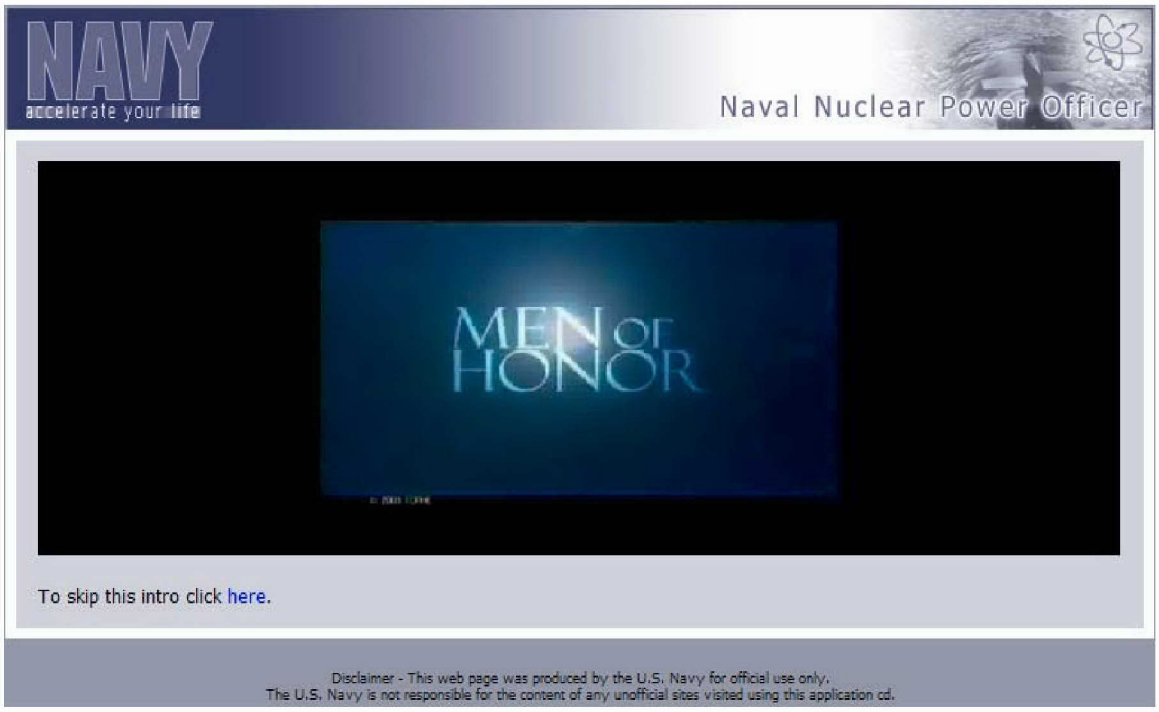


Figure 17. Screen Capture of Intro Page

Figure 18. Screen Capture of Home Page

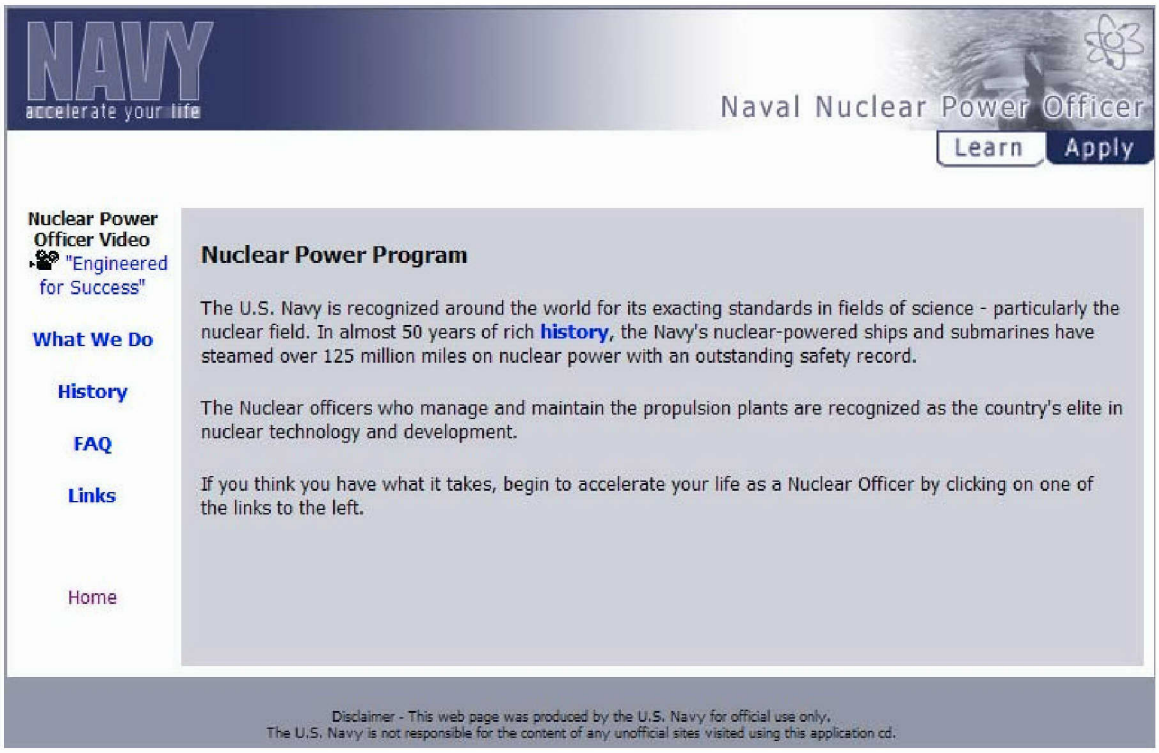


Figure 19. Screen Capture of Learn Page

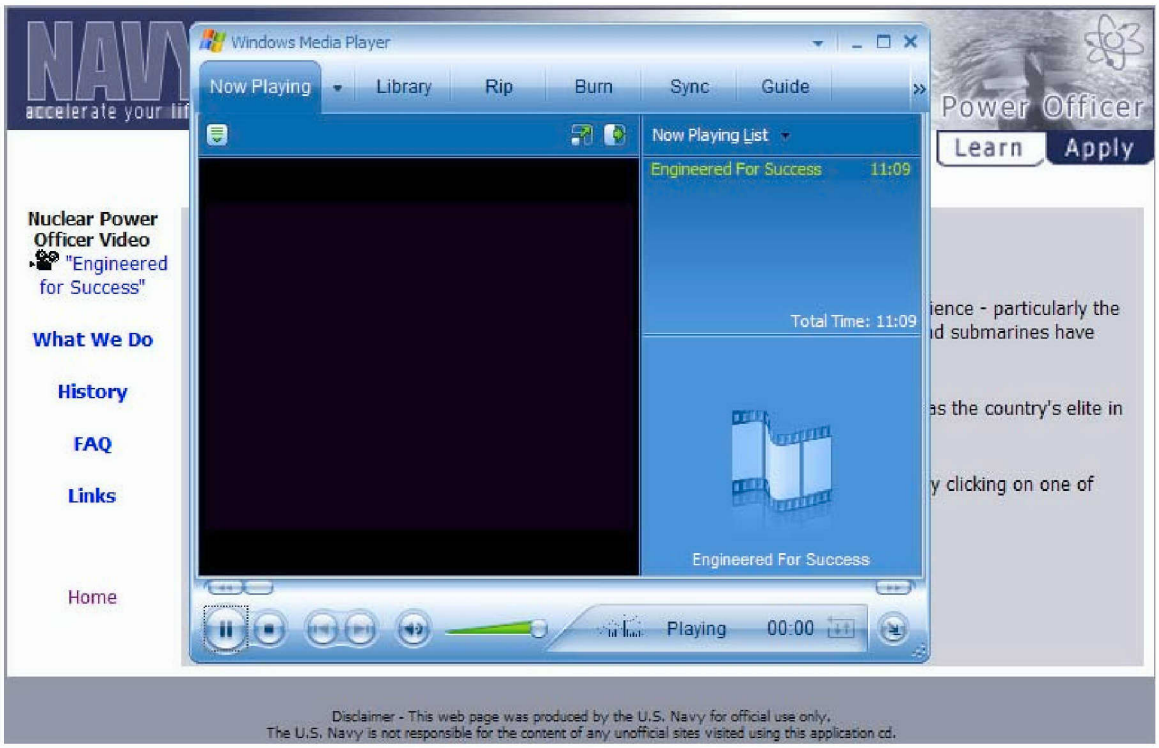


Figure 20. Screen Capture of "Engineered For Success" Video

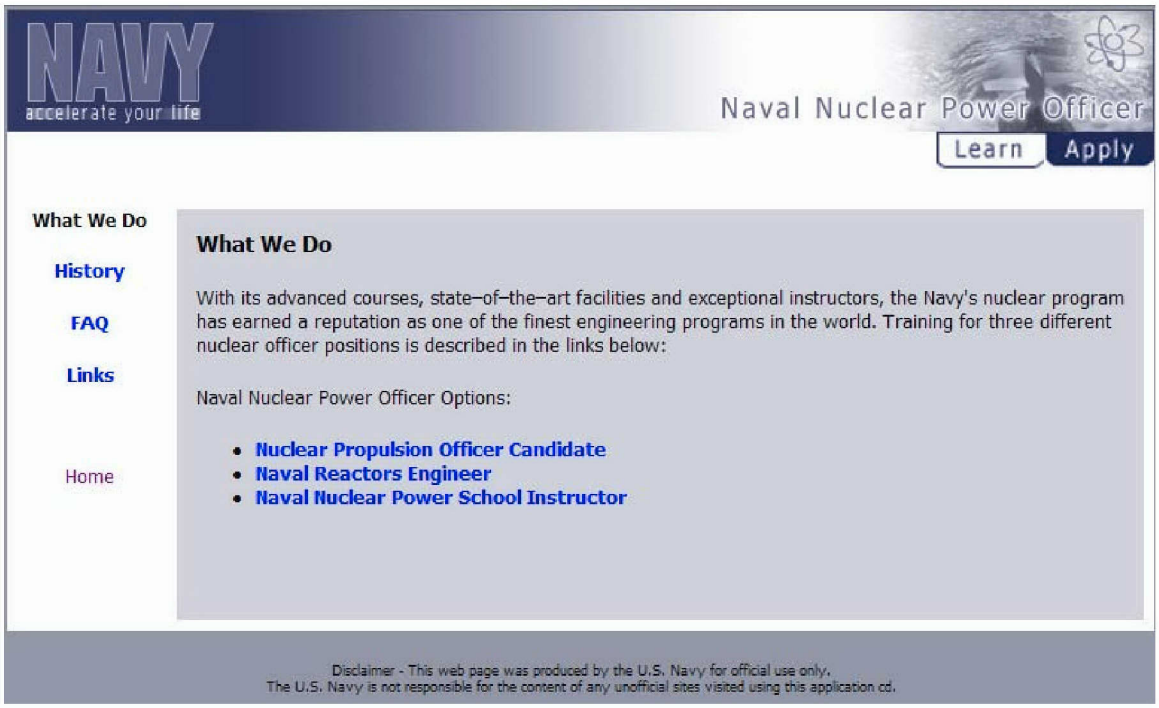


Figure 21. Screen Capture of What We Do Page

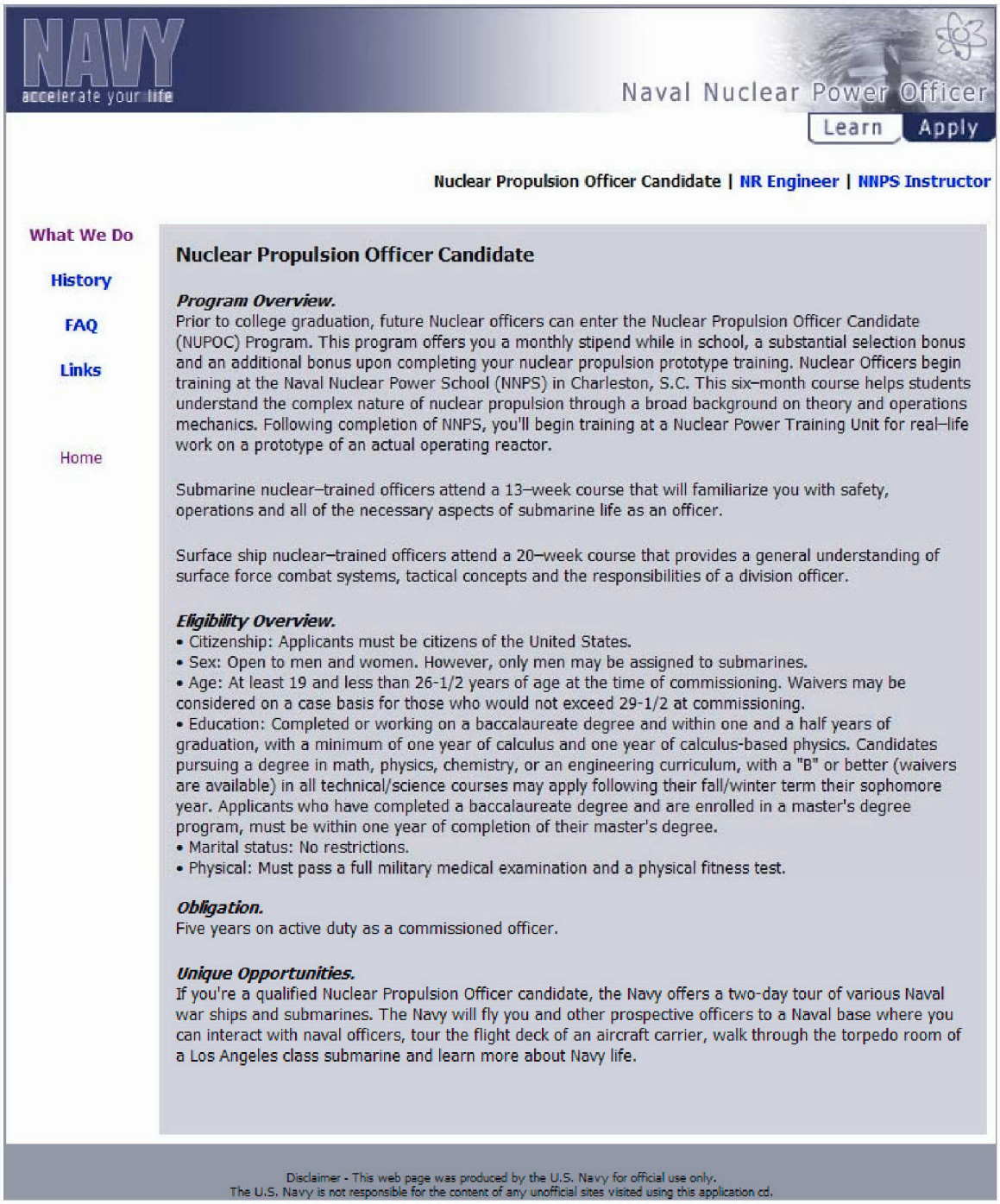


Figure 22. Screen Capture of Nuclear Propulsion Officer Candidate Page

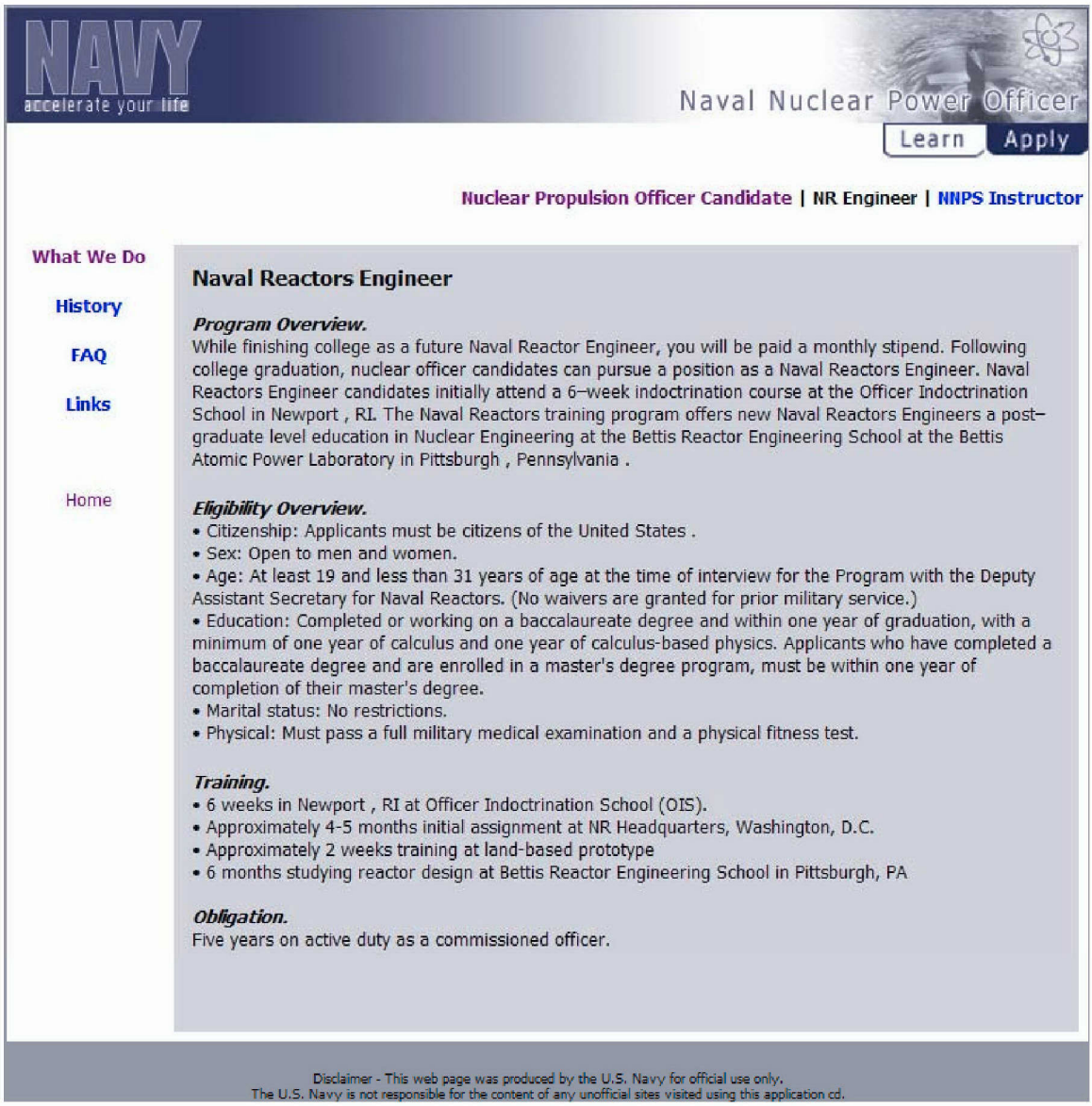


Figure 23. Screen Capture of Naval Reactors Engineer Page

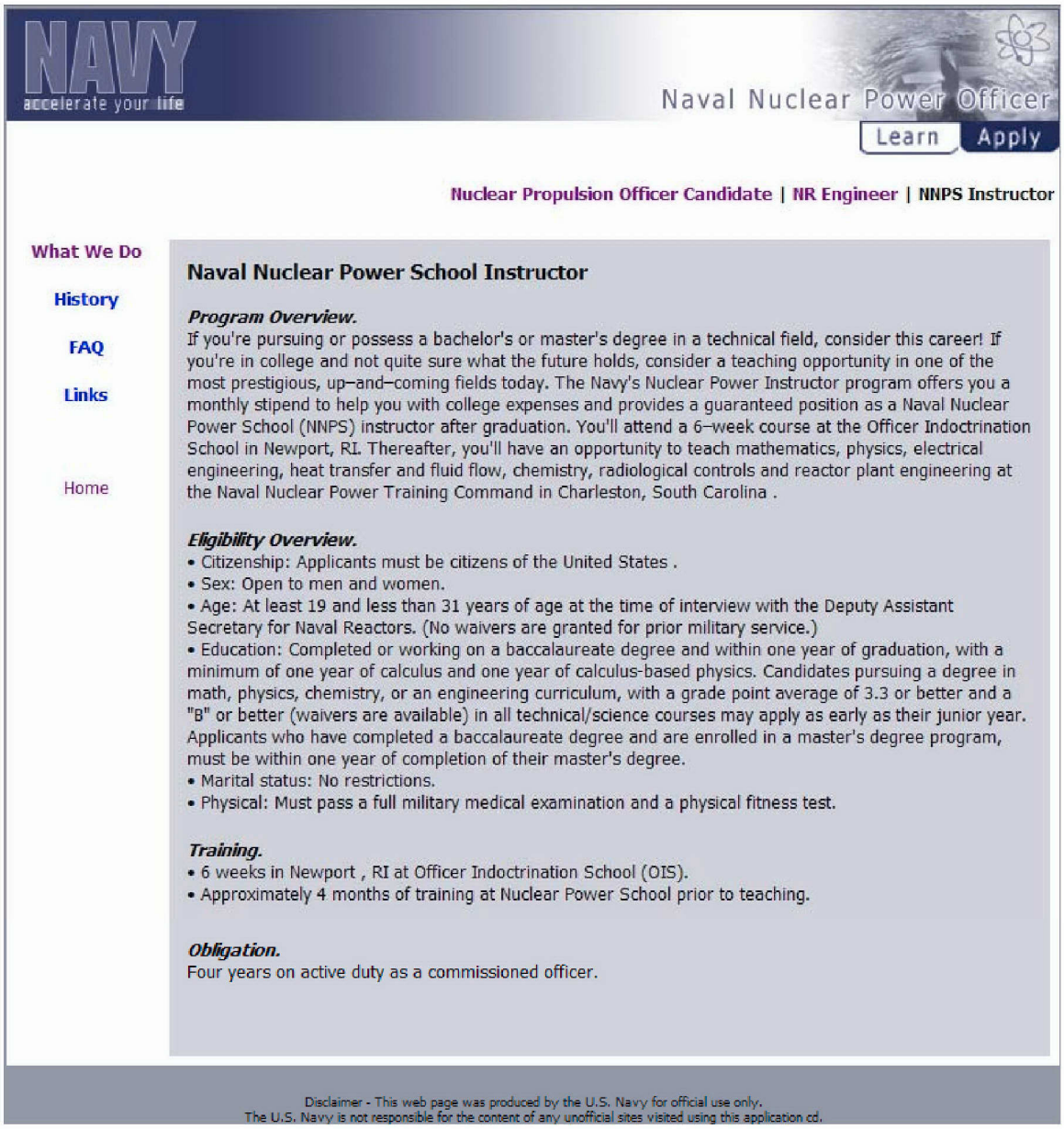


Figure 24. Screen Capture of Naval Nuclear Power School Instructor Page

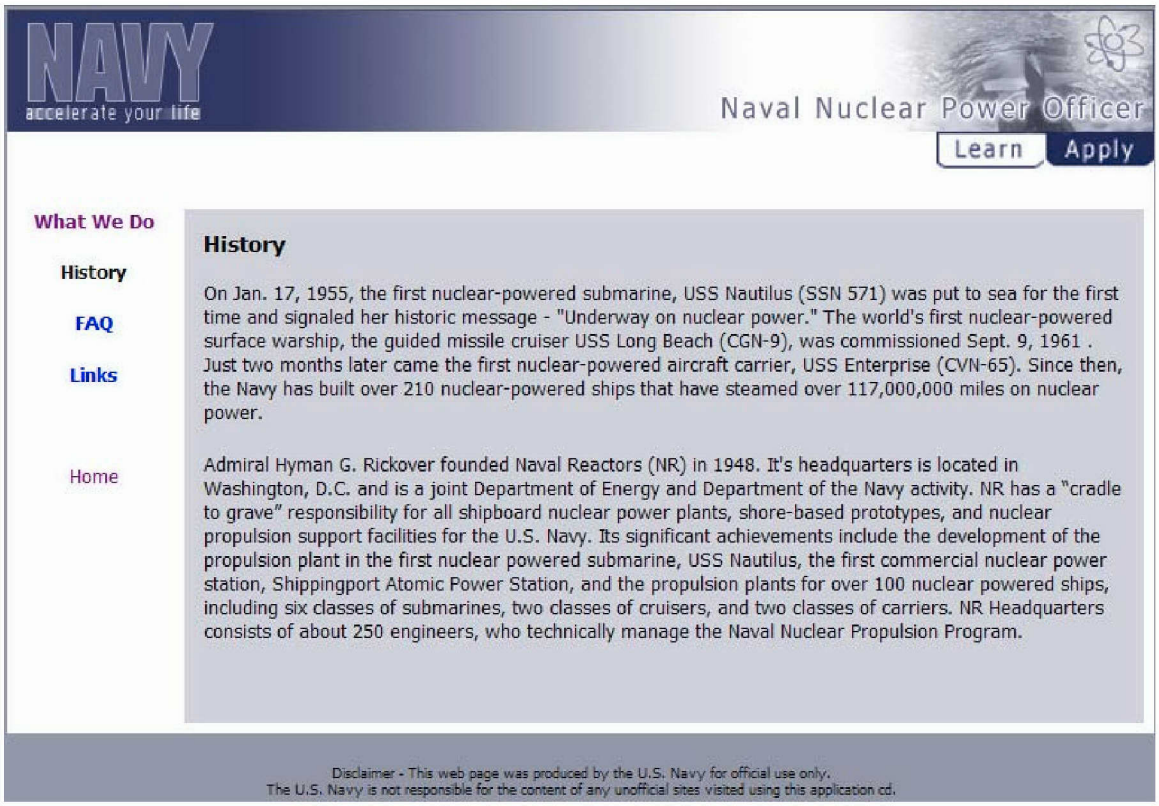


Figure 25. Screen Capture of History Page

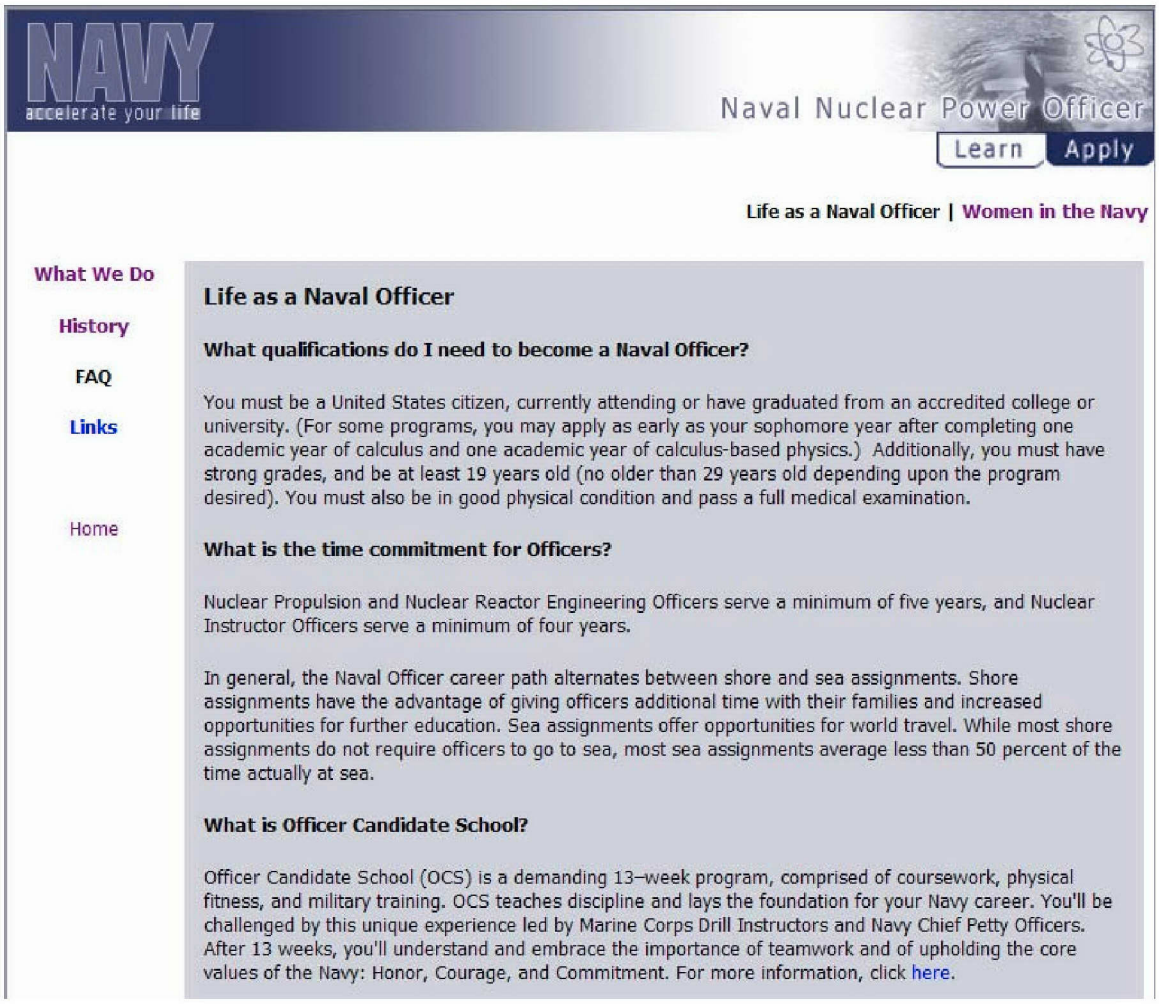


Figure 26. Screen Capture of FAQ Page, Part 1

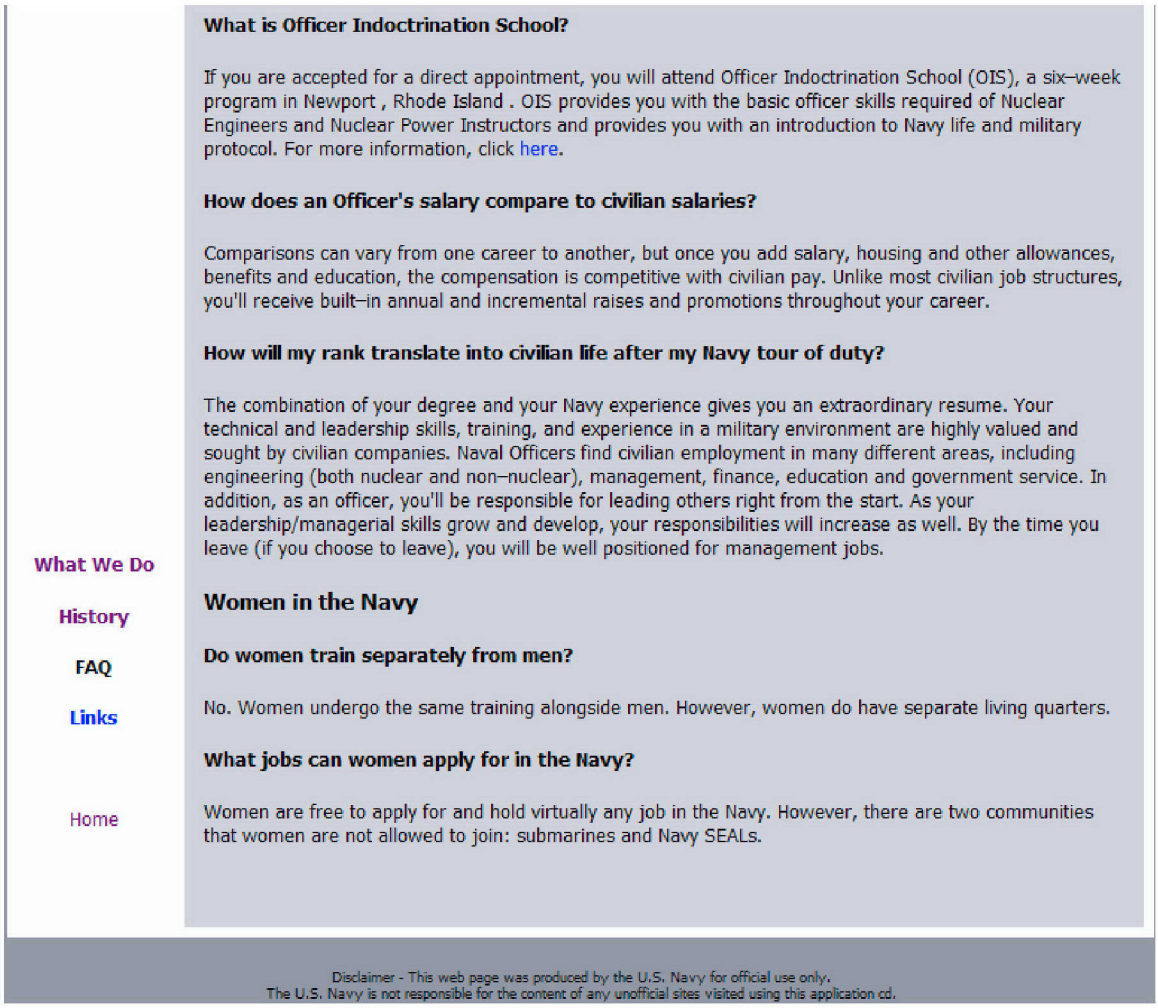


Figure 27. Screen Capture of FAQ Page, Part 2

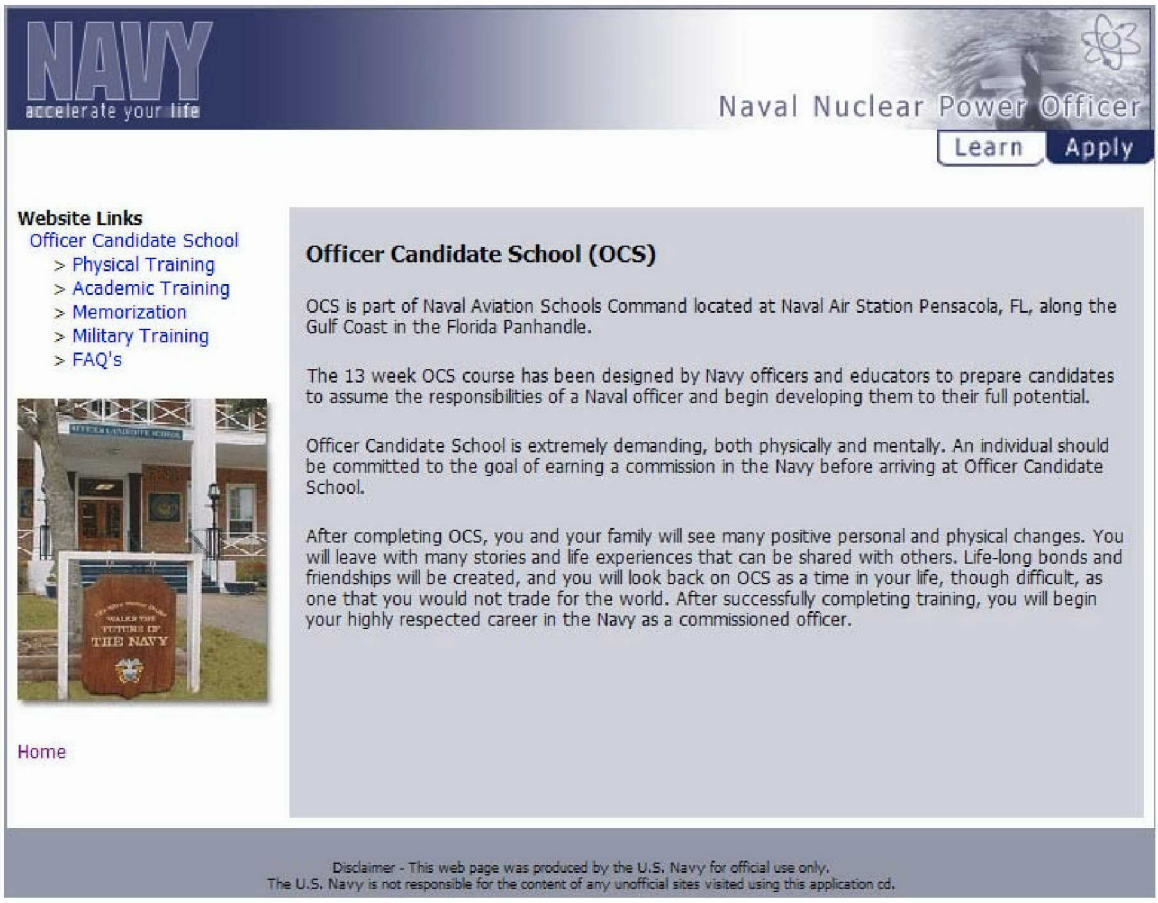


Figure 28. Screen Capture of Officer Candidate School Page

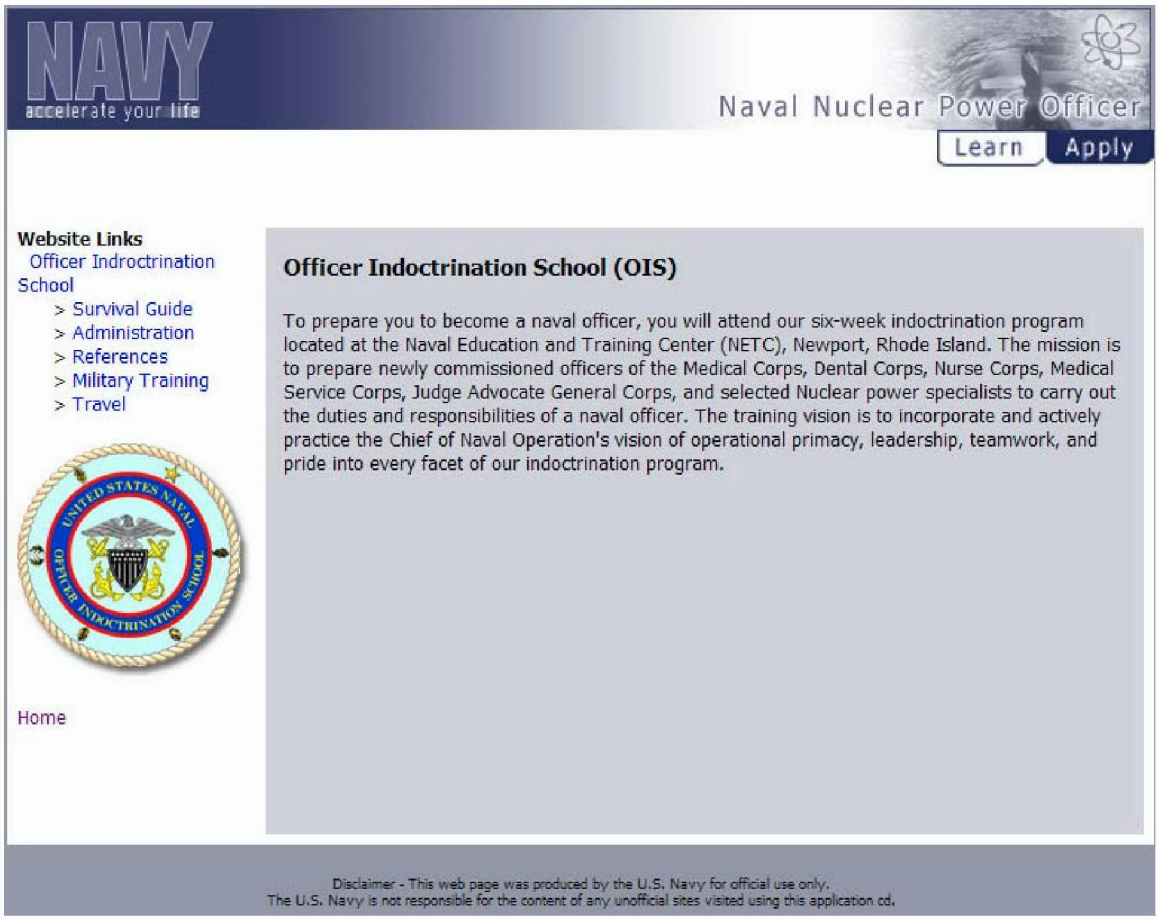


Figure 29. Screen Capture of Officer Indoctrination School Page

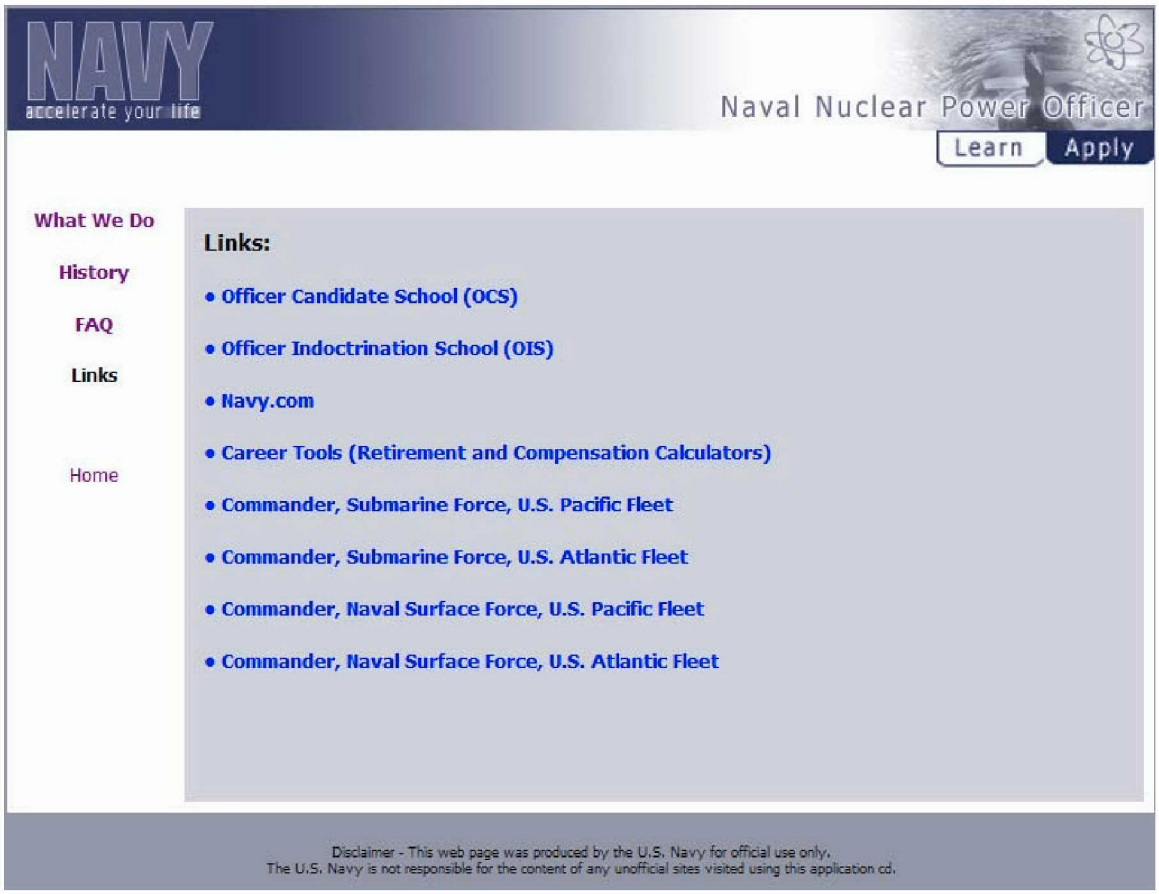


Figure 30. Screen Capture of Links Page

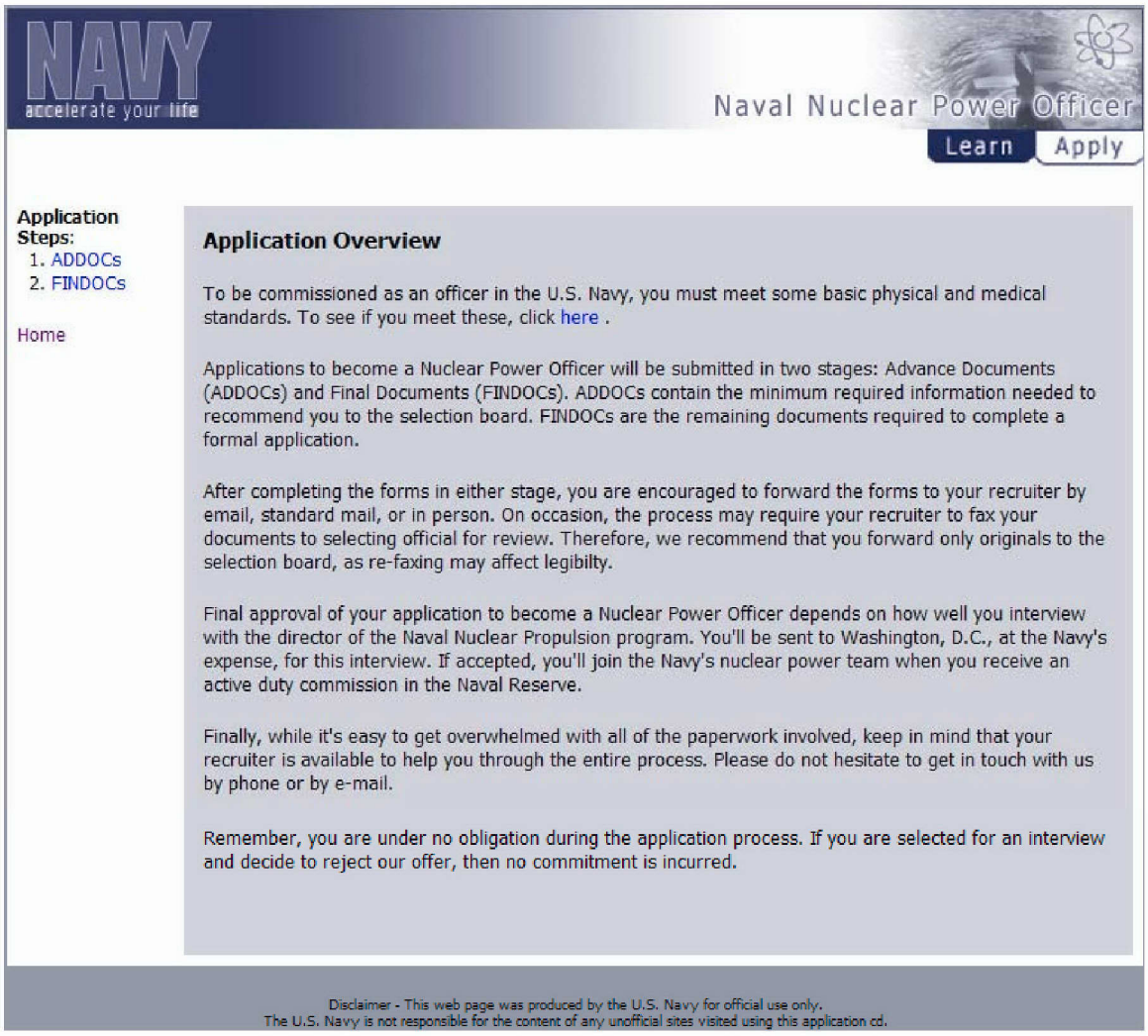


Figure 31. Screen Capture of Apply Page

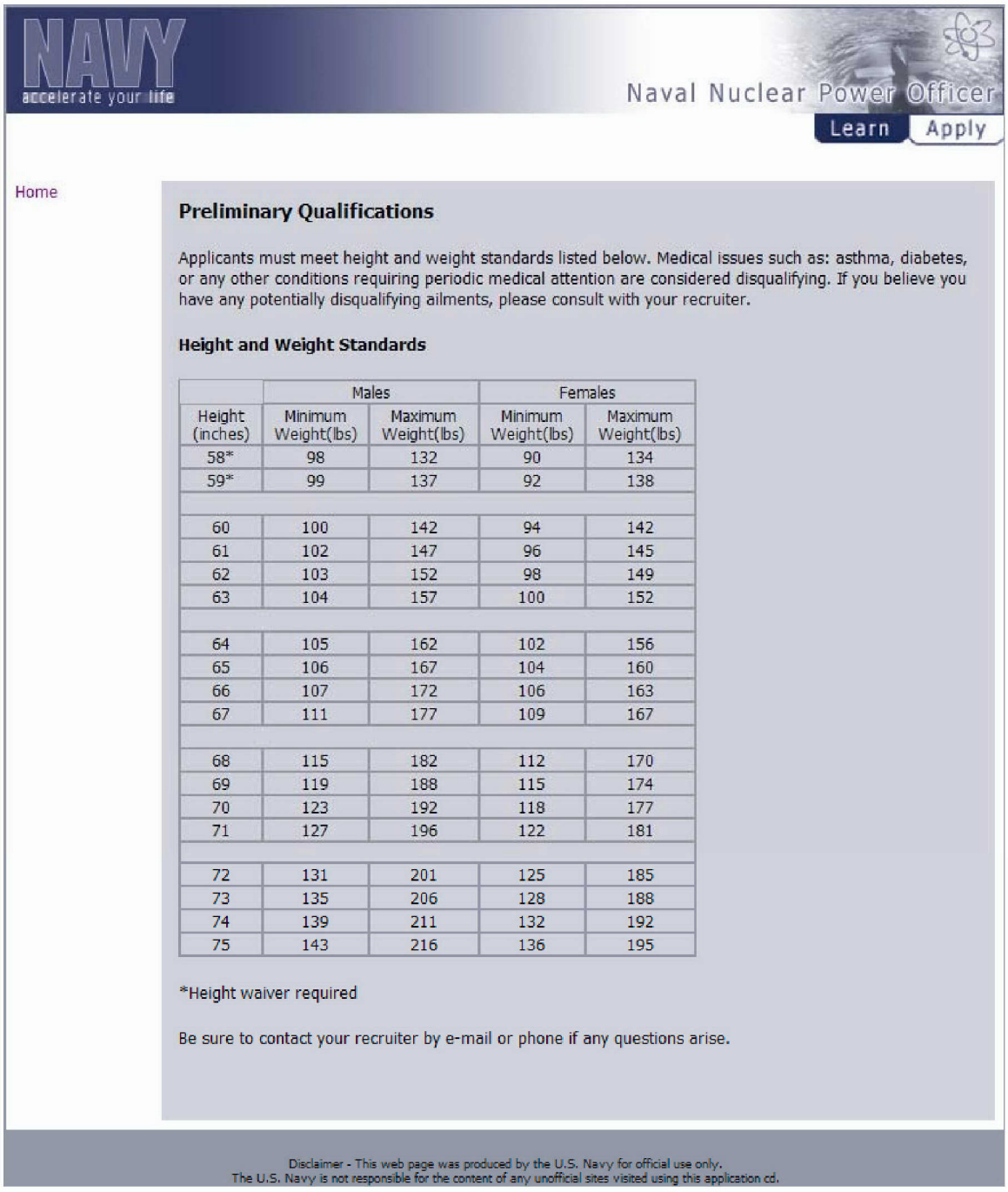


Figure 32. Screen Capture of Preliminary Qualifications Page

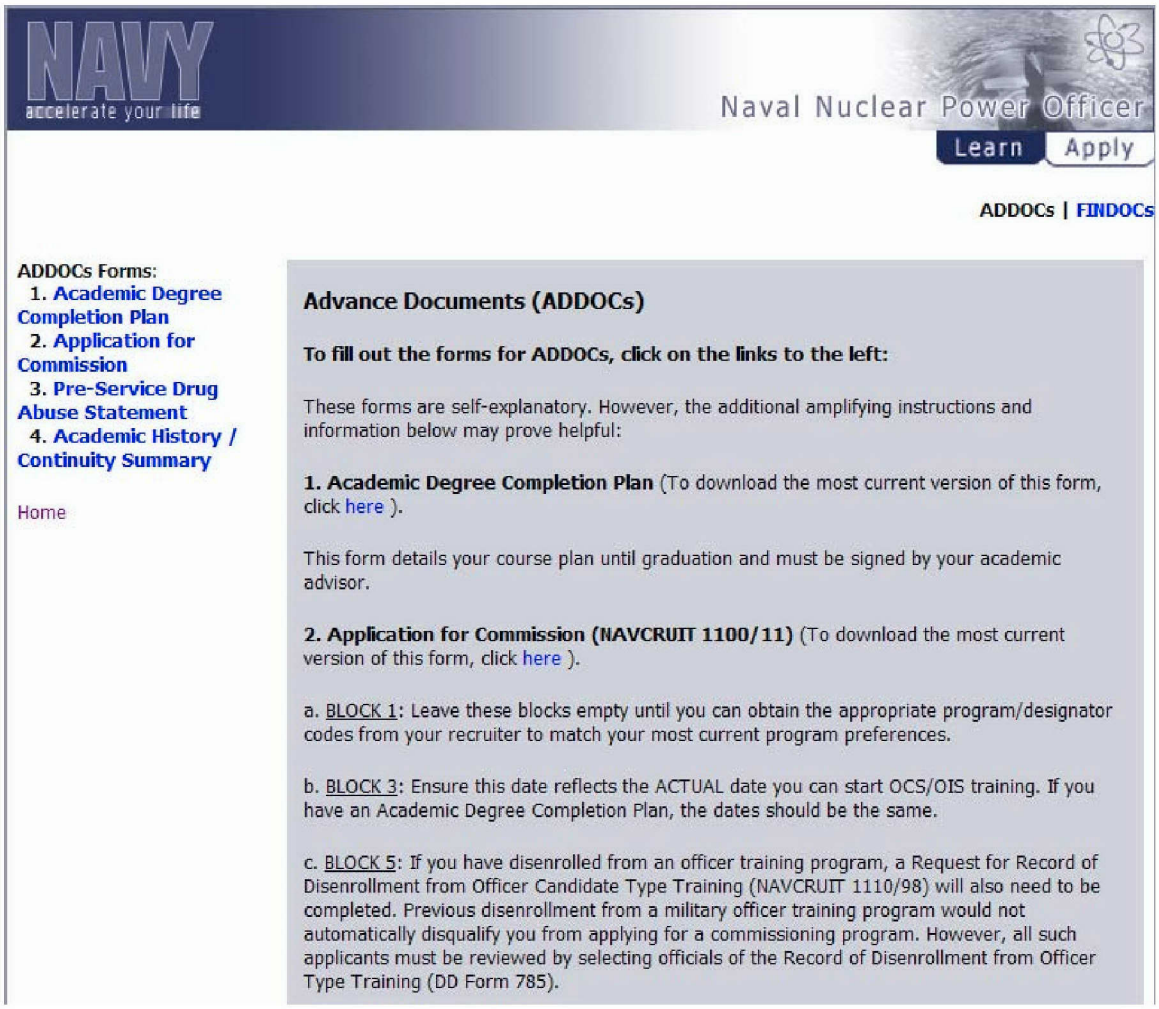
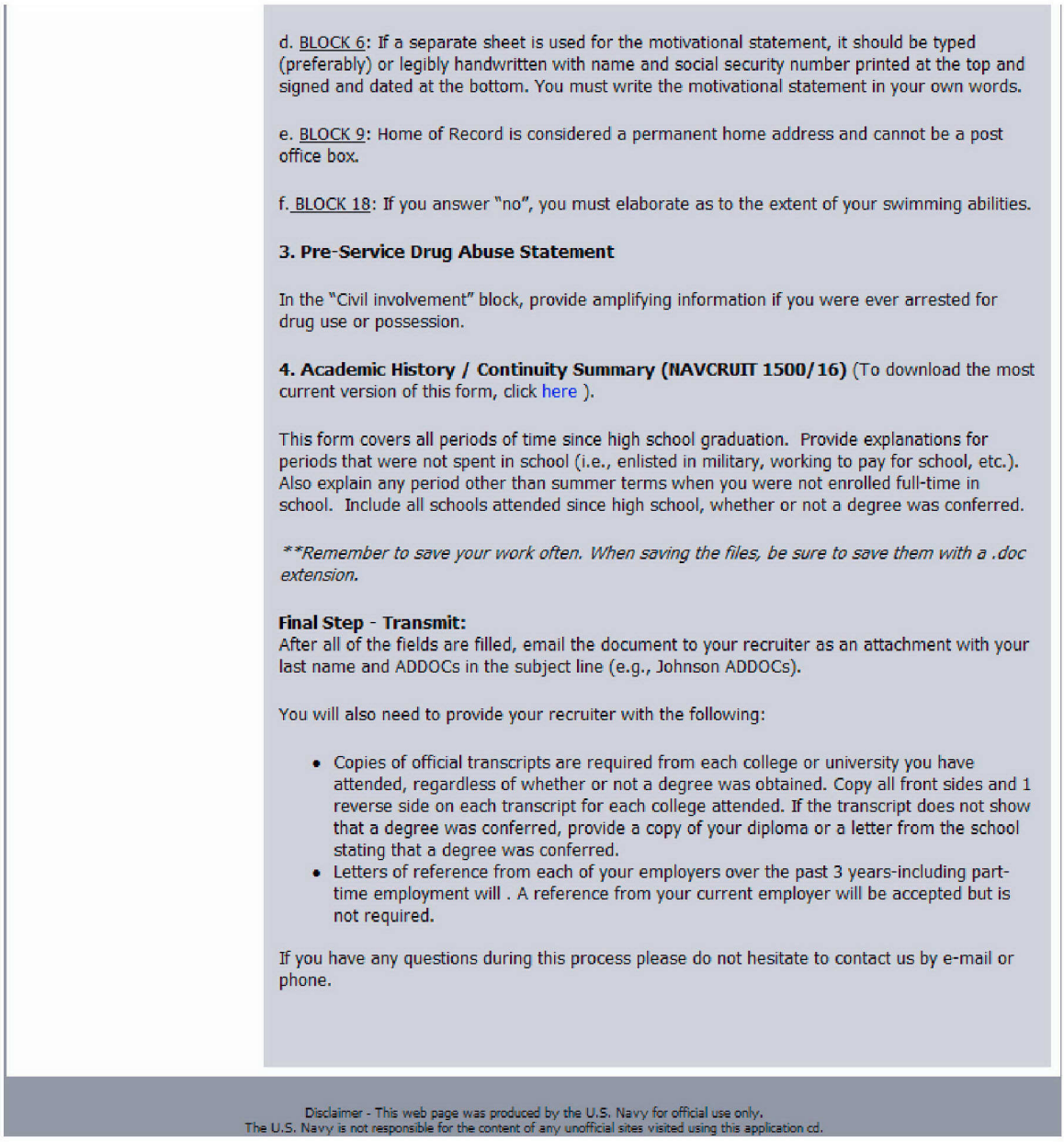


Figure 33. Screen Capture of Advance Documents Page, Part 1



d. BLOCK 6: If a separate sheet is used for the motivational statement, it should be typed (preferably) or legibly handwritten with name and social security number printed at the top and signed and dated at the bottom. You must write the motivational statement in your own words.

e. BLOCK 9: Home of Record is considered a permanent home address and cannot be a post office box.

f. BLOCK 18: If you answer "no", you must elaborate as to the extent of your swimming abilities.

3. Pre-Service Drug Abuse Statement

In the "Civil involvement" block, provide amplifying information if you were ever arrested for drug use or possession.

4. Academic History / Continuity Summary (NAVCRUIT 1500/16) (To download the most current version of this form, click here).

This form covers all periods of time since high school graduation. Provide explanations for periods that were not spent in school (i.e., enlisted in military, working to pay for school, etc.). Also explain any period other than summer terms when you were not enrolled full-time in school. Include all schools attended since high school, whether or not a degree was conferred.

***Remember to save your work often. When saving the files, be sure to save them with a .doc extension.*

Final Step - Transmit:
After all of the fields are filled, email the document to your recruiter as an attachment with your last name and ADDOCs in the subject line (e.g., Johnson ADDOCs).

You will also need to provide your recruiter with the following:

- Copies of official transcripts are required from each college or university you have attended, regardless of whether or not a degree was obtained. Copy all front sides and 1 reverse side on each transcript for each college attended. If the transcript does not show that a degree was conferred, provide a copy of your diploma or a letter from the school stating that a degree was conferred.
- Letters of reference from each of your employers over the past 3 years-including part-time employment will . A reference from your current employer will be accepted but is not required.

If you have any questions during this process please do not hesitate to contact us by e-mail or phone.

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Figure 34. Screen Capture of Advance Documents Page, Part 2

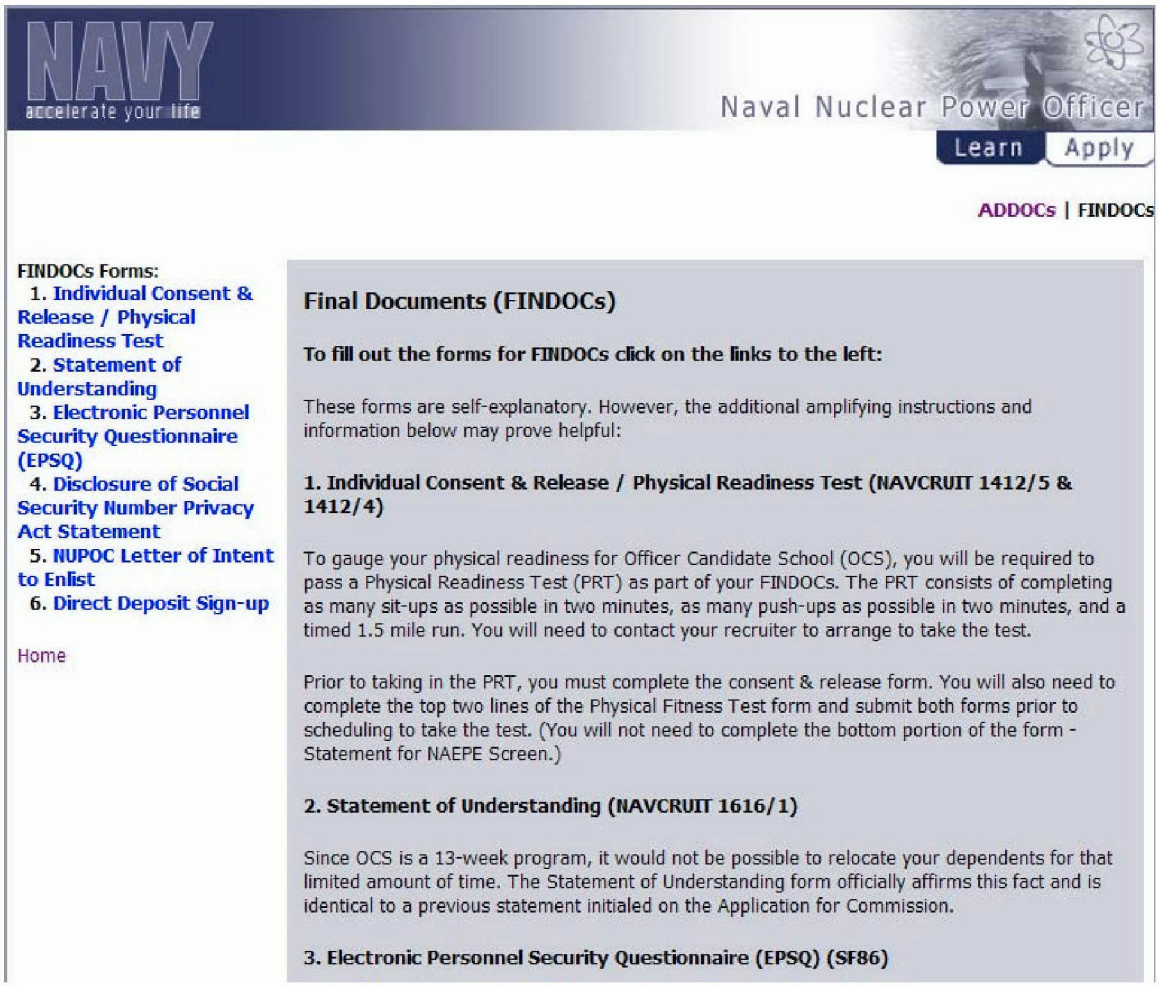

Figure 35. Screen Capture of Final Documents Page, Part 1

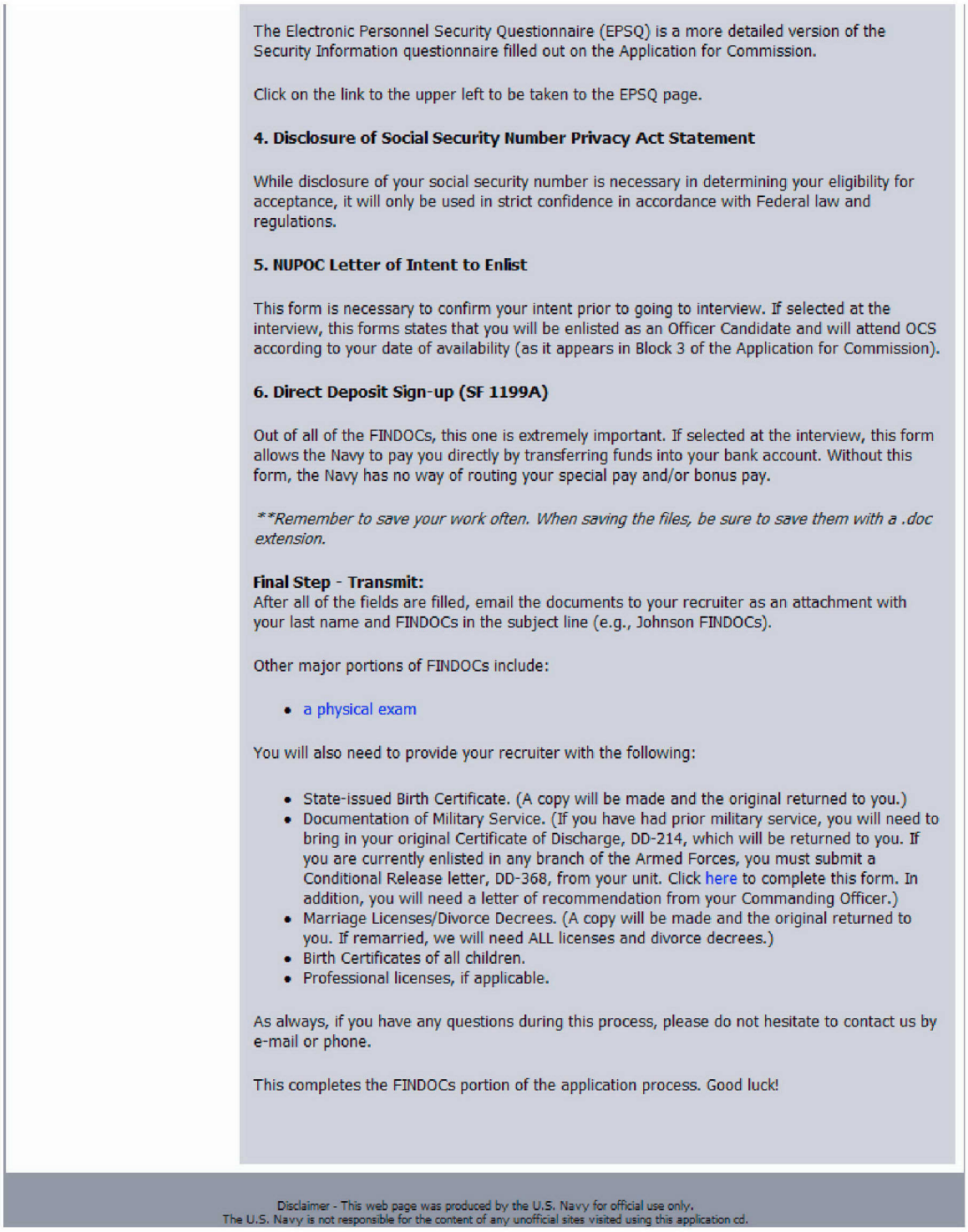

Figure 36. Screen Capture of Final Documents Page, Part 2

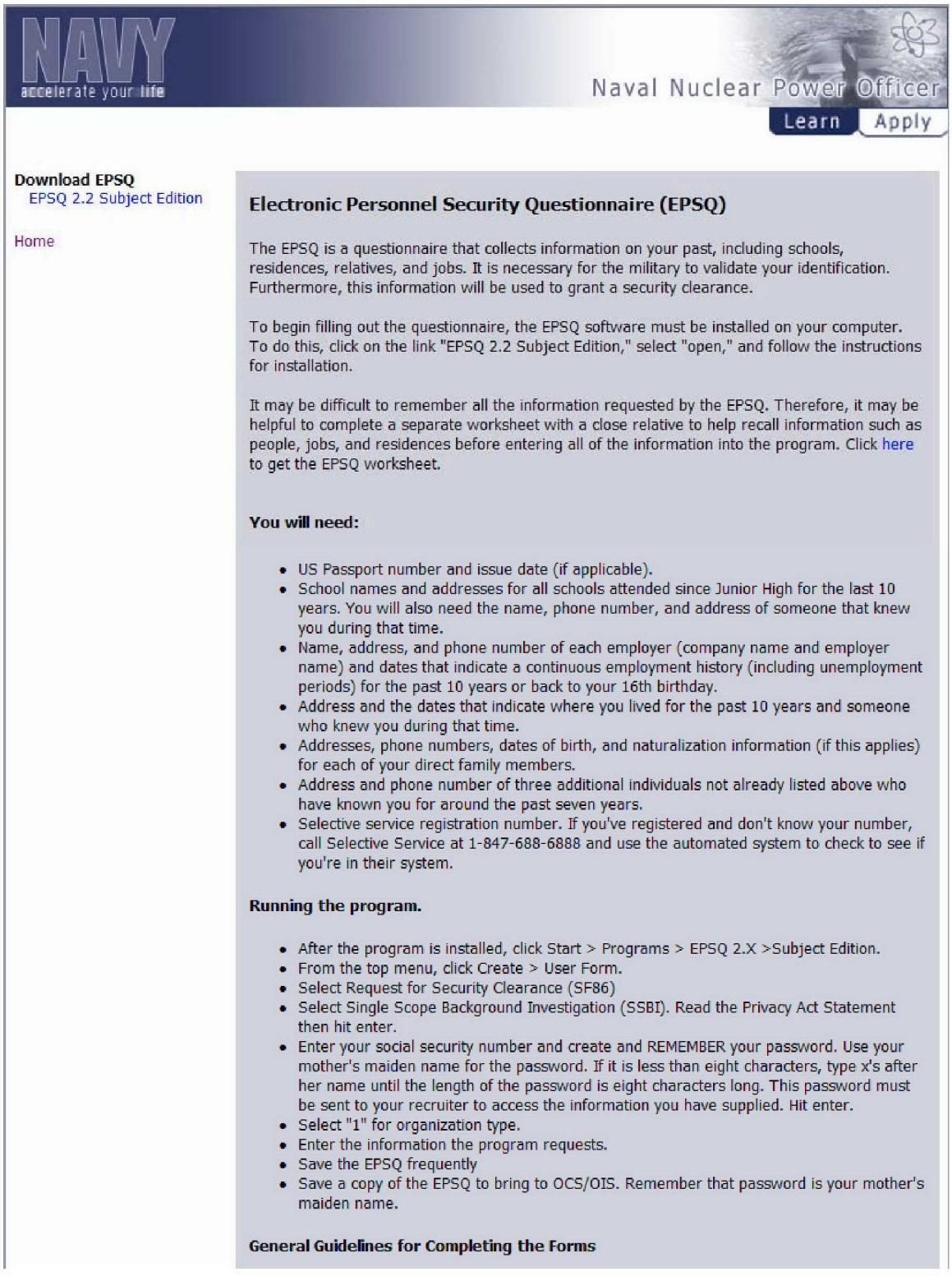

Figure 37. Screen Capture of Electronic Personnel Security Questionnaire Page, Part 1

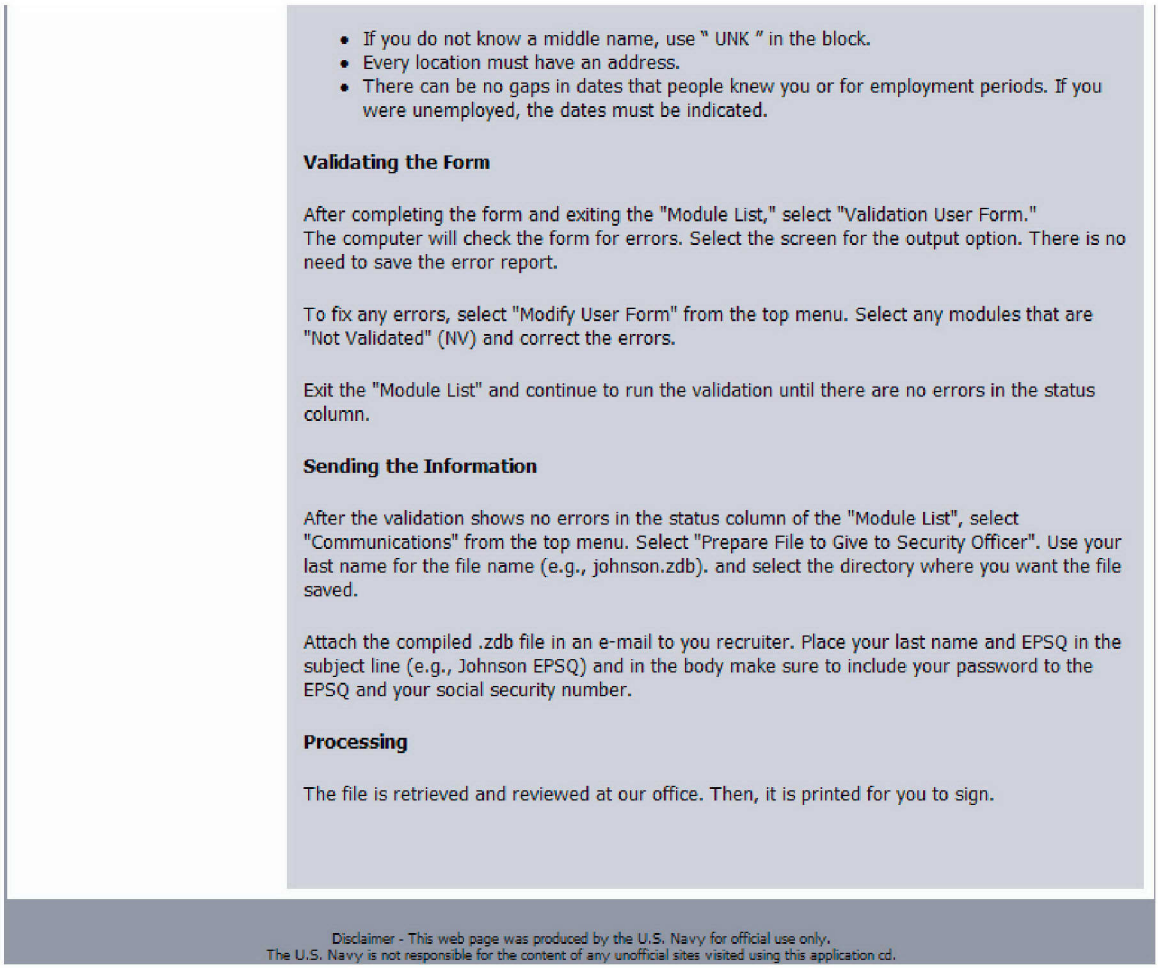

Figure 38. Screen Capture of Electronic Personnel Security Questionnaire Page, Part 2

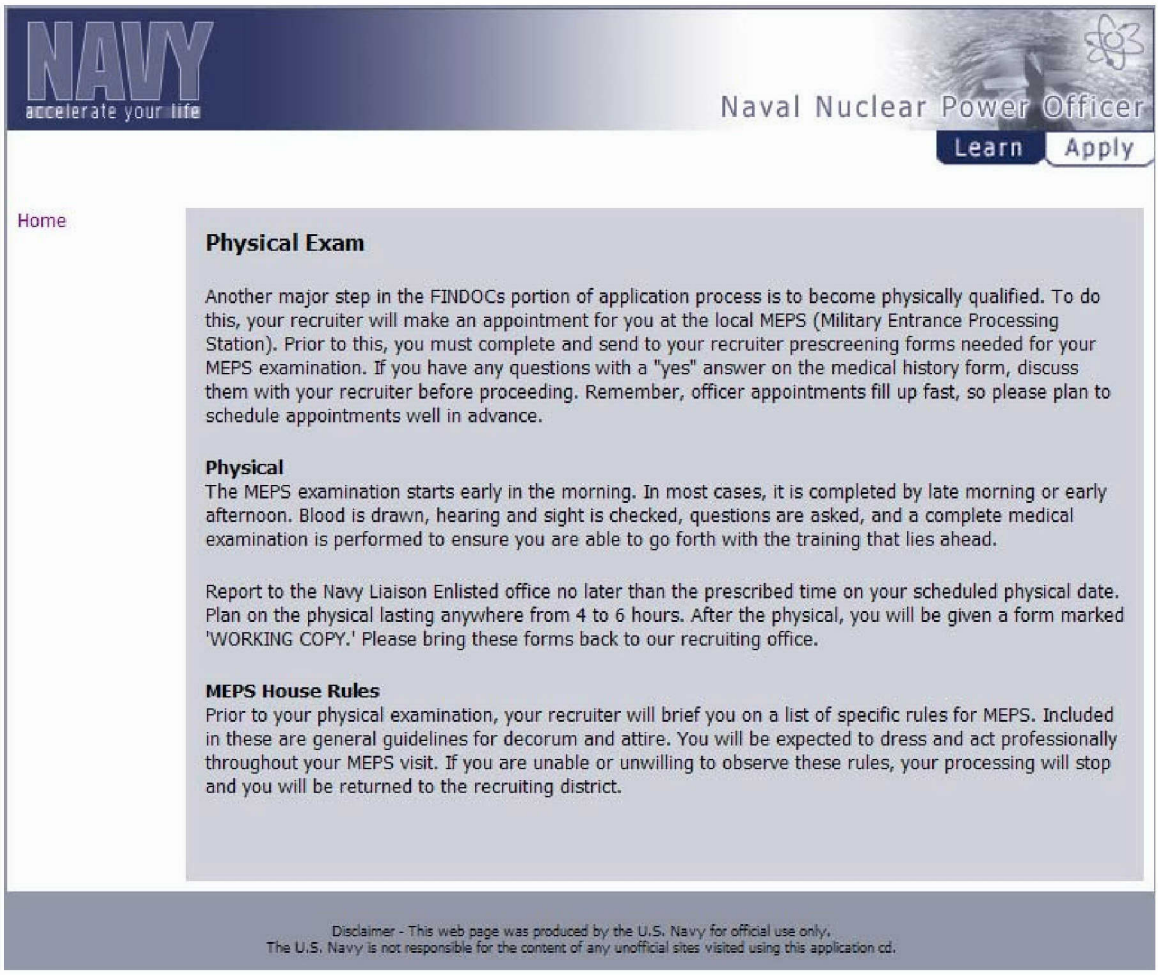

Figure 39. Screen Capture of Physical Exam Page

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