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MASTER OF MILITARY STUDIES

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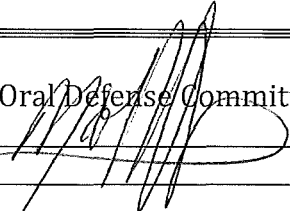
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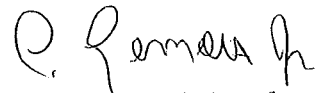
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Executive Summary

Title: Fulfilling the Service Responsibility to the Restricted Officer Community

Author: Major Paul Brendan Keener, United States Marine Corps

Thesis: The Marine Corps does not invest the time or money into the restricted officer community that it needs to in order to make these Marines true duty experts in cyber. The case of the 06xx restricted officer community uniquely highlights this deficiency as a result of the massive growth in cyber responsibilities from the Marine Component (MARFORCYBER) down to the lowest network enclave.

Discussion: The realities of the Marine Corps restricted officer community are in stark contrast to the widely accepted perceptions across the service. The Marine Corps regards the restricted officers as the unquestioned duty experts in their particular MOS field. However, this stands in contradiction to the actual money, time and effort that the Marine Corps spends in the education and training of the restricted officers. With a few exceptions (Marine Gunner, Recruiter, Marine Band, and the Drum and Bugle Corps), the entry bar to the technical officer community is too low. This in itself would not be an issue if the Marine Corps invested money in training beyond initial entry into the Warrant officer ranks. The lack of training opportunities, coupled with the misperception of the technical capabilities of the restricted community, leads to the retention of officers who do not meet the requirement to be a technical officer.

Conclusion: There are changes that the Marine Corps can make that will positively impact the restricted officer communities and address the education and professional development disparity: (1) First, the Marine Corps needs to change the educational management of the restricted officer community and allow them to attend resident technical and professional courses in a manner similar to the U.S. Army Warrant Officer programs; and (2) address the technical competence within the restricted officer community by taking a hard look at the continuation boards for the Chief Warrant Officers.

DISCLAIMER

THE OPINIONS AND CONCLUSIONS EXPRESSED HEREIN ARE THOSE OF THE INDIVIDUAL STUDENT AUTHOR AND DO NOT NECESSARILY REPRESENT THE VIEWS OF EITHER THE MARINE CORPS COMMAND AND STAFF COLLEGE OR ANY OTHER GOVERNMENTAL AGENCY. REFERENCES TO THIS STUDY SHOULD INCLUDE THE FOREGOING STATEMENT.

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PREFACE

I began this project with the thought of addressing the lack of graduate level instruction available to the 06xx (Communications) Restricted Officer community specifically as it related to the professionalization of the cyber workforce. I had spent the last three years as the Occupational Field (OccField) Manager for the 06xx field, as well as three SEP (Special Education Program), MOS's (Military Occupational Specialty) which are the 8846 (Computer Science), 8848 (Information Technology Management), and the 8858 (Joint Command, Control, Communications, Computers, and Intelligence – JC4I). It was my interaction with the SEP curricula that made me start to wonder why the Restricted Officer community was not taking advantage of the free courses offered by the Naval Postgraduate School in Monterey. As I began to look further into the issue, I found that the requirement for admission to NPS, even for the certificate programs, was a baccalaureate degree, which created an issue for the restricted officers, as most did not have the required degree to apply to NPS.

As the OccField Manager, I was actively involved in the career management of the 06xx restricted officer community and I felt that they were not being given the opportunity to professionally advance in the way that the unrestricted officers were. As I was working on this thesis, I realized that I was focused on the symptom rather than what was the crux of the problem. The problem was not whether or not the restricted officers had access to graduate level education, which they did provided that they met the entry requirements; rather, the problem was in how we perceived the education requirements as a service for our restricted officers. As I delved even further into the issue, I realized that even the education requirements issue is a symptom, not the true problem. It is also important to address the sensitivity of what this thesis will address with respect to the individual officers currently holding the restricted officer MOS.

The problems identified and solutions recommended are not meant to denigrate the competence or dedication of any of the fine men and women who serve as restricted officers. As the OccField Manager for the 06xx field, I developed a great respect and admiration for the officers who have continued to perform and exceed the expectations of the Marine Corps in a very austere environment. It is because of this admiration that I propose the changes in this thesis. The Marine Corps owes better to our restricted officers and this thesis humbly aims to point the way to a better solution.

INTRODUCTION

This thesis addresses the true nature of the problem, which is the view of the restricted officer community as a whole. To maintain the scope of the Master's program, this analysis focuses on the 06xx restricted officer community rather than trying to address all of the restricted officer communities within the Marine Corps. There are a few exceptions within the restricted officer community writ large, and those are the Infantry Weapons Officer (Marine Gunner), Recruiting Officer, as well as the Marine Band and the Drum and Bugle Corps, and they are addressed briefly to provide context. The paper presents the following arguments: the Marine Corps does not invest the time or money into the restricted officer community that it needs to in order to make these Marines true duty experts in cyber; and that the case of the 06xx restricted officer community uniquely highlights this deficiency as a result of the massive growth in cyber responsibilities from the Marine Component (MARFORCYBER) down to the lowest network enclave. Given these shortcomings, the problem becomes even more apparent as the Marine Corps has moved from a Contractor Owned/Contractor Operated (CO/CO) model under NMCI (Navy and Marine Corps Internet), to a Government Owned/Government Operated (GO/GO) model. What this means is that the responsibilities that were once covered under the NMCI contract now fall squarely on the Marine Corps, more specifically, the 06xx restricted officer community. Without the necessary skills and the structure (number of billets), the Marine Corps will again become reliant on a contractor solution for day-to-day management of the network, as is currently happening with the Hewlett Packard Enterprise Systems. This solution is both costly and exceptionally ineffective for the long-term growth and professionalization of the cyber force. Moreover, at some point, given the current fiscal realities, the Marine Corps will not be able to sustain the number and amount of contractors required to effectively manage the network.

Literature Review

The sources utilized throughout this thesis are official Marine Corps orders and regulations governing the restricted officer communities. (I also rely to some extent on my years of experience as the Occupational Field Manager for the 06xx Community.) The most recent MOS manual, which was signed in July 2014, is the standard for the selection of Warrant Officers and is the only authorized source for determining the eligibility of a particular applicant for the Warrant Officer program. The promotion board convening messages are used to identify what the requirements are for their respective promotion boards. The FY15 boards are complete and all documentation for each of the boards is now publicly available through the MMPR (Manpower Management Promotions Branch) website. The Enlisted to Warrant Officer, Enlisted to Warrant Officer - Gunner, and Enlisted to Warrant Officer – Recruiter are all pulled from the MARADMIN section on the www.marines.mil website. The Enlisted to Warrant Officer MARADMINS are from FY16 and are the most recent convening messages. These boards are owned by Marine Corps Recruiting Command (MCRC) and are not a promotion board, but an accession program. All accession programs are owned by MCRC and have different rules and allow for different inputs than the normal promotion boards, so that is why they are relevant for this thesis. The Secretary of the Navy Instruction (SECNAVINST) 1412.9B is the authoritative source for the management of the restricted officer community. SECNAVINST 1412.9b provides the definitions for each of the category of officer including restricted, unrestricted, warrant, and the limited duty officer, which are useful in validating the perception of the restricted officer community and highlighting the dichotomy that these officers exist within.

There are sources external to the Marine Corps used to identify an alternate way of viewing

and managing the restricted officer community. These include the official U.S. Army recruiting sites that specifically address the recruiting and management of Army warrant officers; these documents provide a key point of contrast to Marine Corps practices. The Office of Personnel Management (OPM) site identifies what the federal government views as appropriate requirements for the 2210 series, which is the Information Technology series within the Government Service (GS) employment structure. This will help to show the disconnect between what the Marine Corps requires for education and certification and what the federal government says is the standard for GS employees for equivalent grade and experience. Job descriptions from commercial companies, such as Amazon and USAA, highlight what can be considered an industry standard for Information Technology engineers and managers. These sources will show what an equivalent civilian company would require from someone of the equivalent grade and experience of our restricted officers. These companies represented another key point of contrast since they are well established, have worldwide services, and are almost completely reliant upon information technology systems to manage their day-to-day business. The majority of readers will likely be able to recognize, even if they are not IT professionals, the significance of qualified personnel to manage the IT systems of these civilian companies. It is important to note that these companies are used illustratively and clearly do not have the life and death burden that tactical Command and Control networks have within the US military, and no attempt is made to compare them in that fashion. The most current documents as utilized as source material, but the reader needs to understand that the MOS manual and billet descriptions are updated annually and may change hereafter to reflect changes in policy, hiring, and management of personnel.

Taken together, these sources represent the best material on the topic. Blending Marine Corps documentation with Army publications is critical because the Army is doing something

very different with their Warrant Officer program, and this paper is arguing that much of that process be emulated in the Marine Corps. Of course, given the civilian domination of the cyber domain, a look at industry practices is essential, and this is done here notwithstanding the wide range of practices within this sector of cyber. It should be noted the limited sources available concerning the restricted officer community, which should further illustrate the short shrift that the restricted officer community gets when it comes to training and professional development.

The Current Paradigm

In order to understand the current paradigm, one must possess a better definitional understanding of the two different types of officers that comprise the Marine Officer ranks.

According to the SECNAVINST 1412.9b,

- a. A "**restricted officer**" is an officer who possesses unusual talent or expertise and is limited, or "restricted" to filling positions which are too specialized in scope to permit the effective development and continued use of broadly trained unrestricted officers. There are two types of restricted officers: warrant officers and limited duty officers.
 - (1) A "**warrant officer**" is a technical officer specialist who performs duties that require extensive knowledge, training, and experience with the employment of particular capabilities which are beyond the duties and responsibilities of senior noncommissioned officers.
 - (2) A "**limited duty officer**" is a technical officer specialist who performs duties that require extensive knowledge, training, and experience with the employment of particular capabilities which are beyond the duties and responsibilities of a warrant officer and which cannot be met by an unrestricted officer.
- b. An "**unrestricted officer**" is an officer in the grade of second lieutenant or above, who is not designated as a limited duty officer. Unrestricted officers provide the flexibility for use in a broad span of managerial and career broadening assignments, which are necessary to meet Marine Corps requirements.¹

These requirements reveal that the Marine Corps recognizes the need for a specialized officer corps that is able to focus on a specific technical area and that this focus will benefit the Marine

Corps as a whole by having true duty experts in critical MOS fields. While this may seem axiomatic to most, this is actually a point of confusion within the Marine Corps as a whole.

Discussions on what the LDO does and does not do, as well as why they even exist are constantly occurring within Headquarters Marine Corps. At the Restricted Officer Working Group (ROWG) in April 2014, the discussion about what role the 0605 LDO and whether or not the LDO track needed to continue was seriously contested.² The ROWG provides recommendations to the C4 OAG (Command, Control, Computers, and Communication Operational Advisory Group), which in turn provides recommendations to the Director, C4. Recommendations from the Director, C4 then are provided to the advocate for C4, which is the Deputy Commandant for Combat Development and Integration (DC/CD&I), usually through the CEAB (Command Element Advocacy Board).³ One of the major points of contention with respect to the 0605 LDO was that there was nothing that distinguished them from a equally competent 0602 Captain, Major or LtCol other than they were previously Chief Warrant Officers. This statement is not meant to demean or degrade the exceptional competence of the officers who currently hold the 0605 LDO MOS, rather it was meant then and is meant now to point out that without some defining characteristic, such as education or training, the justification for the LDO and other restricted officers becomes difficult when money becomes tight. The ambiguous definitions above do not adequately parse out the differences between the types of officers and actually make it much more difficult to quantify the training and education necessary to develop professional development paths for these exceptional officers.

The communications occupational field (06xx) comprises approximately 14,000 officer and enlisted personnel. The 06xx restricted officer community has 184 officers across four specialty areas. The 0610 Telecommunications Systems Engineering Officers plan, design,

engineer, and analyze enterprise level classified and unclassified telecommunications systems.⁴ The 0620 Tactical Communications Planning and Engineering Officers (TCPEO) engineer, supervise, and manage the planning, installation and operation of transmission, multiplexing, timing subsystems, circuit integration, and technical control functions within the tactical communications architecture in support of the MAGTF, Joint, and Coalition networks.⁵ The 0640 Strategic Spectrum Management Officer supervise and manage the planning, integration and use of the electromagnetic spectrum in support of the Marine Air Ground Task Force (MAGTF).⁶ Last, the 0650 Cyber Network Engineering Officers supervise and manage the security, planning, and operation of Information Technology (IT) Systems.⁷ The 0605 Cyber Network Operations Officer develops, plans, and implements the overall tactical and strategic goals of the MAGTF computer network systems.⁸

Of these groups, the 0605 is the only LDO in the 06xx community and feeds directly from the 0650 Warrant Officer MOS and is not a separate specialty area, rather a difference in responsibility and authority. This structure has the advantage of allowing officer level technical specialization, which is not present in the normal MOS structure of the unrestricted officer community. The depth and breadth of the technical skill requirements across the 06xx occupational field make it impossible to teach within one course of instruction for the 0602 Communications Officer. The best comparison within the unrestricted officer community is the SEP (Special Education Program) Marines. The Marine Corps annually sends unrestricted officers and select senior enlisted Marines to the Naval Postgraduate School to obtain advanced technical degrees as part of the Commandant's Career Level Education Board (CCLEB) and Commandant's Professional Intermediate Level Education Board (CPIB). Once these officers complete the prescribed degrees, they then go back to serve in a billet specifically created for the

degree they were awarded. For example, an officer who graduates with from the JC4I curriculum and is awarded the 8858 MOS, would go to one of the six 8858 billets across the Marine Corps. Without the special capabilities these officers gain through the graduate degree programs, the Marine Corps would have to either use a GS (General Schedule) employee, contractor or just outsource the capability, such as modeling, and manpower systems management.

The restricted officer MOS groupings make sense due to the large amount of equipment within the communications field and the need for experts able to focus on specific areas of communications. Within the last few years, the push within the communications field to shift to IP-based radios and EoIP (Everything over Internet Protocol, Black-Core or Colorless routing) made those differences less obvious. The skills necessary to manage VTC (Video Teleconference), VoIP call managers, routers, switches, IP radios are becoming indistinguishable. The training for the restricted officer community did change to address the advent of the new technologies at the initial entry school, which was at Quantico until 2014 when it transferred to MCAGCC (Marine Corps Air-Ground Combat Center) under MCCES (Marine Corps Communications-Electronics School). The quality of instruction for brand new Warrant Officers is quite good given the myriad of platforms and systems the new officers are expected to know. Once the new Warrant Officers have completed their respective technical Warrant Officer course and are sent to their new commands as newly minted ‘duty experts.’ They have no further professional education requirements under any Marine Corps or SECNAV (Secretary of the Navy) policies. This is inconsistent with what the Marine Corps defines as a Warrant Officer, which, as quoted previously, requires a performance of duties beyond the scope of the senior non-commissioned officers.

It is therefore necessary to show the disconnect between the current perception and the reality. Figure 1 below shows the list of schools and their respective training days for the 06xx officer community, both restricted and unrestricted.⁹ What one could reasonably infer from this information is that the Marine Corps invests a great deal in the mid to senior grade SNCOs (Staff Non-Commissioned Officers), but clearly not as much in the restricted officer community. This is mainly due to the inability to maintain a consistent throughput into the schoolhouses that would justify the personnel and costs of additional courseware.¹⁰ In fact, the training days for the 0650 is 81, while the 0659 who goes on to become a Communications Chief (0699), will have received 271 days of training in their area of specialty. The Warrant Officer, who is supposed to be the technical specialist gets approximately 30% of the MOS specific training given to the enlisted Marines, and this does not take into account the required professional development courses (Sgt's Course, SNCO Career Course, SNCO Advanced Course, E-8 seminar) that are required for promotion for our enlisted Marines.

Enlisted Courses	Training days	Note
JC4	25 TD	
Comm Chief (0699)	56 TD	
Radio Chief (0629)	77 TD	
Radio Sup Course	26 TD	taught at the CTC
Electromagnetic Spectrum Managers	100 TD	only for 0629/99. Prerequisite for 0640
AEHF Planner	15 TD	
Telecommunications Chief (0619)	77 TD	
Telecommunications Sup Course	26 TD	taught at the CTC
Cyber Systems Chief (0659)	77 TD	Prerequisite CCNA
CCNA	56 TD	
Cyber Network Sup Course	82 TD	Prerequisite CCNA
Information Assurance Manager (0689)	23 TD	
Information Assurance Tech	82 TD	
EKMS/KMI (0681)	14 TD	
Officer Courses		
Basic Comm Officer (0602)	147 TD	
ACOC (0603)	74 TD	
Telephone Officer (0610)	84 TD	
TCPEO (0620)	67 TD	
Spectrum Officer (0640)		No requirement. Must have completed the managers course prior
Cyber Network Operations Engineer (0350)	81 TD	
JC4	25 TD	

Figure 1 – 06xx Enlisted Career Progression Courses and Officer Initial Entry schools.

It is hard to claim that the Warrant Officer is better trained since the Marine Corps does not provide professional advancement training to this group officers. This is not meant, in any

way, to disparage or demean those who serve as restricted officers, since they succeed and build the reputation of the restricted community despite the barriers inadvertently put in place by HQMC. What is even more difficult to understand is the unwritten requirement for the Warrant Officers and LDOs to complete the distance programs for EWS (Expeditionary Warfare School) and CSC (Command and Staff College) in preparation for the promotion boards. This requirement is an anachronism that needs to be addressed once we have solved the problem of restricted officer education. This is not just because of the advent of cyber nor is this point being made in order to put forward the position that restricted officers should not be required to learn how the MAGTF (Marine Air Ground Task Force) operates. On the contrary, since the restricted officer community is so small, most of the billets are at the senior command levels. For example, the 0640 Strategic Spectrum Officer is only at the MEB (Marine Expeditionary Brigade) and above. The issue with this 'requirement' is that we do not afford the restricted officer the opportunity to attend the resident courses, which does not invest the restricted officer in what the Marine Corps considers to be an important aspect of officer growth and professionalization. The instantiation of the CCLEB and CPIB were the result of the Commandant's push to ensure a greater number of unrestricted officers were afforded the opportunity for resident PME (Professional Military Education). There is even a program to allow senior enlisted Marines (E-8/E-9) to attend officer resident PME schools, which makes one wonder why this opportunity is not afforded to the restricted officer even though it is one of the discriminators used by the promotion boards.

In December 2012, the DMAG (Deputy's Management Action Group) released guidance to establish the Cyber Mission Force (CMF) with a very aggressive timeline of 2016 to establish 133 teams which comprise support for Combatant Commanders, Defending the Nation, and

Defending the DoDIN (Department of Defense Information Network).¹¹ The plan for the Marine Corps included a 100% growth in the Cyber Security Technician MOS (0689), and growth in the 0650 and 0605 communities. The recognition by the Secretary of Defense through the DMAG in 2012 that 'cyber' was now a unified DoD effort did not include any requirements to change the way restricted officers are educated or levy any additional professional requirements upon the 'duty experts'. The biggest problem facing the Marine Corps and the DoD writ large is how to create and sustain a trained, competent cyber force. Within the 06xx Occupational Field branch at HQMC C4 (Command, Control, Communications, and Computers), the concern was how to ensure that Marines assigned to the Cyber Mission Force gained and maintained their unique qualifications as they conducted the normal rotations expected of all Marines every three to four years. For those Marines assigned to MARFORCYBER, the NSA (National Security Agency) handles the training for all personnel who operate under NSA authority. The policy for personnel working with NSA is that any absence longer than 90 days requires the individual to have to recertify.¹²

There are many reasons why this is required, and national security issues are at the top of this list. The training provided by the NSA for the CMF is excellent, however, it is only available to those assigned to the CMF or to one of the units in support of the NSA through the Central Security Service (CSS). While this training paradigm works for the NSA, it does not work for the Marine Corps writ large. This is because all of the training provided to the CMF by NSA is at the Top Secret/Sensitive Compartmented Information (TS/SCI) level and resides on the NSA internal network (NSANet), which precludes access to all but those assigned to the CMF, USCYBERCOM, or one of its component commands like MARFORCYBER. The only way this training becomes effective for the Marine Corps is if the training is able to be delivered outside

of the NSA internal network, such as JWICS (Joint Worldwide Intelligence Communications System) run by the Defense Intelligence Agency (DIA).

The next issue that has to be addressed is whether to create a construct similar to MARFORSOC (Marine Forces Special Operations Command), which has CSOs (Critical Skills Operators) that stay within the SOF (Special Operations Forces) community for the entirety of their career. This proposed solution did not solve the issue for the Marine Corps. The 06xx occupational field has a responsibility to operate and defend the MCEN (Marine Corps Enterprise Network), which is done through the MCNOSC (Marine Corps Network Operations and Security Center), MITSC's (MAGTF IT Support Centers), RNOSC's (Regional Network Operations Support Centers), and deployed units. The MCNOSC has a Title 10 responsibility as the CNDSP (Computer Network Defense Support Provider), which requires the MCNOSC to provide the following main functions: certification and accreditation of the network; forensic investigations of intrusions; red team network penetration testing; vulnerability management and patching; training and remediation of network vulnerabilities; and a 'hunt' capability, which is simply looking for intruders or evidence of intruders within the MCEN.

The requirements for the 06xx occupational field contributions to the Cyber Mission Force fall within the outlined CNDSP roles, and one can reason that if the requirements in both areas (MCEN and CMF) are similar, then the need for a special type of operator is likely not necessary. There are differences in scope between the Marines assigned to the CMF and those assigned to Marine Corps units, as well as differences in the training required to operate on classified platforms. The problem is that there is no change in the requirements for the technical leaders of the 06xx occupational field. These technical officers are no better equipped to handle the increased requirements now than they were three years ago when the CMF was established.

If one were to look at the industry requirements to get an idea of what our technical leaders should be required to know in order to do the job they are being asked, one would come to either one of two conclusions; first, the civilian information technology industry places unreasonable burdens on their IT managers; or, that the Marine Corps does not require enough of our Warrant Officers and LDOs.

Those two conclusions may seem at first glance to be overly simplistic, and one would have to agree that it is rarely a binary choice like the one laid out here. But this binary thinking is what is commonly presented by action officers to dissuade senior leaders against changing the current mechanisms and policies. It is important to point out here that this is not some sinister plot hatched by action officers within different HQMC agencies, but it is equally important to point out that different stakeholders have different equities and different end states. This could be a function of fiscal constraints, which is normally the case, or something else such as a lack of available structure to support a particular initiative. As an example, here are the duties and requirements for someone applying for the Amazon Fulfillment Technologies (AFT) Director of Technical Operations and Infrastructure:

Job Description

The AFT Technical Operations and Infrastructure group is responsible for all of the infrastructure technology which runs Amazon's worldwide, industry-leading fulfillment systems. In addition to operating our LANs and WANs which power our fulfillment network, we operate and innovate in the areas of wireless networking, client devices, machine vision and security.

Qualifications

- Bachelors in Computer Science or Engineering is required
- 10+ years of people management experience
- 5+ years of experience of managing products, budgets and justifying resource needs to senior leaders and finance partners
- 5+ years of experience managing a large, geographically-distributed organization
- Proven track record of operating large - scale, high - quality systems focused on the infrastructure layer of the technology stack
- Develops long-term strategies and influences leadership decisions
- Deep understanding of how their functional systems interface with – and depend upon – systems throughout the company
- Exceptional and effective verbal and written communication skills
- Exceptional attention to detail and organizational skills
- Exceptional project management skills

Preferred Qualifications

- MS or PhD in Computer Science or Engineering
- Experience managing large, international organizations
- 5+ years of experience with open-source technologies
- Business management or a related degree
- 7-10 years of related experience with large-scale strategic planning within a dispersed organization.¹³

Based on the job description and the experience qualifications, this would be the equivalent of a CWO5 or LDO LtCol. That begs the question as to whether a Marine CWO5 or LDO LtCol with at least 30 years of work experience with a global enterprise network like the Marine Corps Enterprise Network (MCEN) would even make it through the door at Amazon. One would have to say that if that Marine had completed only the prescribed educational requirements, he or she would be woefully unprepared. This is, of course, based solely on the paper qualifications and is not meant to denigrate the large number of warrant officers who are exceptional at their jobs.

Lest one complain that Amazon's standards are too high, let us take a look at the requirements for USAA, and OPM respectively. USAA, which provides insurance and banking services among a myriad other services, is almost completely an online company, which means that they are heavily reliant on qualified IT personnel, particularly in cybersecurity. The following are the requirements for the Senior Information Security Risk and Regulatory Advisor position in San Antonio, Texas:

Minimum Requirements

- Bachelor's degree in MIS, Computer Engineering, Cyber Security, IT or related disciplines or 4 years of additional work experience in IT, Information Security, Cyber Security or equivalent in lieu of a degree.
- 6+ years work experience in Information Technology or related discipline.
- 4+ years working in a matrixed corporate environment.
- Strong ability to work within a matrixed corporate environment.
- Strong knowledge of risk, control, budgets, process and loss costing.
- Strong knowledge and experience in relevant industry data sources, standards, data analysis tools and techniques (e.g. Archer, MetricStream, BWISE).
- 6+ years facilitating risk assessment sessions with all levels of management and executive management.

Preferred

- An advanced degree in MIS, Computer Engineering or Cyber Security Professional designation in CISSP, CISA, CRISC, or CRMA.
- Regulatory exam management, IS standards management and GRC regulatory development.
- Strong knowledge of IS risk/controls and process management.
- Strong knowledge and experience in relevant industry data sources, standards, data analysis tools and techniques (e.g. Archer, MetricStream, BWISE).
- 8+ years facilitating risk assessment sessions with all levels of management and executive management.

- 8+ years leading and/or working (participating) within a matrixed corporate environment.¹⁴

This particular job description highlights a further discrepancy within the 0650 MOS requirements. The 0650 Warrant Officer feeder MOS comes from the network operation and management MOS, as well as the Cybersecurity MOS. A look at the two job descriptions above reflects the skills that the Marine Corps expects the 0650 Warrant Officer to possess. However, one can see that the skill sets needed to be successful at the senior levels are diverse and extensive. Even the federal government recognizes that education is key to developing a competent force. The OPM website that covers the Information Technology (IT) Management Series, 2210 GS (General Schedule) qualifications lists the following requirements:

<u>Level</u>	<u>Education</u>
GS-5 (or equivalent)	bachelor's degree
GS-7 (or equivalent)	1 full year of graduate level education or superior academic achievement
GS-9 (or equivalent)	master's degree or equivalent graduate degree or 2 full years of progressively higher level graduate education leading to a master's degree or equivalent graduate degree
GS-11 (or equivalent)	Ph.D. or equivalent doctoral degree or 3 full years of progressively higher level graduate education leading to a Ph.D. or equivalent doctoral degree ¹⁵

The requirements laid out by OPM are in stark contrast to how we approach the restricted officer community. The GS-11 requirement almost seems absurd. However, that is the equivalent grade to our Warrant Officers, which again, begs the question, based on this requirement, would any of our duty experts qualify? One could look around the DoD, and the Marine Corps in particular and see that this requirement has no bearing on the realities of current hiring practices within the DoD. What this shows is recognition of the skills necessary to do the jobs required within the Information Technology field. However, the reality of finding someone with those skillsets who is willing to work at the GS-11 level is another issue entirely.

The Problem with Perception

The Marine Corps views the restricted officer corps as the duty experts from the time they either finish the Warrant Officer Basic Course or the follow-on school that particular MOS requires. The requirement for selection to 0610/20/40/50 Warrant Officer is Sergeant and eight years time in service.¹⁶

The Marine Corps does not view the Sergeant who does not put in a Warrant Officer Package as a duty expert requiring no further training. The NCO is required to go to PME schools (Sgt's Course, SNCO Basic, SNCO Advanced, E-8 seminar) in order to be eligible for promotion. If a Marine does not complete the appropriate PME for grade, he or she is not considered for promotion and their package is set aside. In order to maintain competitiveness, enlisted Marines also are recommended to complete the MOS specific advancement courses, such as the Cyber Network Supervisor Course, Switch Systems Chief Course, Radio Supervisor's Course, Radio Chief's Course, and the Communications Chief Course. By the time a Marine reaches the rank of Master Gunnery Sergeant, he or she is rightly considered to be the duty expert within their specific occupational field. This is a result of professional and technical development over the course of 20 or more years of service.

According to the FY16 (Fiscal Year 16) Enlisted to Warrant Officer Board MARADMIN (Marine Administrative Message):

Per ref (a), the WO program is designed to provide the Marine Corps with technical specialists who perform duties that require extensive knowledge of a particular military occupational specialty (MOS), and who can be assigned to successive tours of duty in their primary mos. MOS credibility is a key factor for selection. **In accordance with refs (a) and (c), applicants must be technically and professionally qualified to serve in the MOS to which they are applying.** Applicants are encouraged to contact their respective military occupational (OCC) field sponsor to determine technical eligibility for a MOS.¹⁷

This quote highlights the need to be technically and professionally qualified to serve as a Warrant Officer. The question that comes up again and again is how a Marine Sergeant with

eight years of service can possibly be technically and professionally qualified to serve as a Warrant Officer. This dissonance between the perception and reality is why the Occupational Field (OccField) Manager is required to brief the selection board on what that particular Occupational Field determines are the attributes it is looking for in new Warrant Officer applicants. The board is only required to follow the MOS Manual.

The OccField Manager, however, provides the current operational requirements that ensure the success of the Warrant Officers. The guidance given to the board for the 0650 MOS focuses on certifications and where the Marine has gained his or her experience as a network planner. The OccField tends to focus on certifications such as the CISSP (Certified Information Security Systems Professional) provided by (ISC)² (International Information System Security Certification Consortium)¹⁸, and the GCIH (GIAC Certified Incident Handler) provided by the SANS (SysAdmin, Audit, Networking, and Security) Institute¹⁹ among the many certifications available to network and network security professionals. The goal is to ensure that those selected to be the ‘duty experts’ are in fact the duty experts. The requirements to become a Warrant Officer are varied based on the MOS selected. However, the 0650 MOS requires eight years of enlisted service and the rank of Sergeant (E-5) as a starting point.

A concern has arisen in the last few years within the 0650 community as to whether or not that requirement is sufficient to be considered a ‘duty expert’ since the Sergeant rarely supervises a network installation. The concern has merit, but the likelihood of that requirement changing is very low. The only Warrant Officer MOS’s that have a different requirement are the Marine Gunner (Infantry Weapons Officer), Recruiter and USMC band and Drum and Bugle Corps officers.

The requirements in the MOS manual highlight a fairly significant disparity in expertise required. Using the Marine Gunner as an example, consider the difference between the technical requirements for the 06xx Warrant Officers and the Gunners:

b. Prerequisites

- (1) Must be a Gunnery Sergeant with a minimum of two years' time in grade at the time of application.
- (2) Must have attended Infantry Squad Leaders Course (ISLC) or Infantry Unit Leaders Course (IULC).
- (3) Must have previously served in the 0369 MOS in an infantry battalion or regiment.
- (4) Or must have previously served in the 0321 MOS with the following caveats:
 - (a) Marines who lat-moved from a non-03xx MOS are not eligible for the 0306 MOS.
 - (b) Marines without prior 0369 experience must have attended Infantry Squad Leaders Course (ISLC) and the Infantry Unit Leaders Course (IULC).
 - (c) Or must have previously served in the 0313 MOS with the following caveats:
Must have attended Infantry Squad Leaders Course (ISLC) or Infantry Unit Leaders Course (IULC).
- (5) Must have attended one or more of the following:
 - (a) Advanced Machinegun Leaders Course.
 - (b) Advanced Mortar Leaders Course.
 - (c) Advanced Anti-Armor Leaders Course.
 - (d) Advanced Assaultman Leaders Course.
- (6) Must have a minimum GT score of 110.

While this quote is extensive, seeing it in its entirety is important gain an appreciation of how a clearer requirement for expertise is articulated, and, more importantly, for what MOS it is articulated. While all Marines acknowledge that the Marine Corps is at its heart an infantry organization, one would have to question why the requirements for technical expertise are not similarly spelled out for the other technical officer MOS's. The time in service requirement is sixteen years and the Marine must be a Gunnery Sergeant (E-7) with two years time in grade when the application is submitted.²⁰ The requirement here makes sense because of the infantry roots of the Marine Corps, so there is a desire to ensure only those who are actual duty experts ever pin on the bursting bomb. Since the 0650 MOS is unlikely ever to have that level of

requirement, nor should there be an attempt to do so, how does the Marine Corps ensure that those who are not expert when selected become experts?

This problem becomes clearer when one compares the prerequisites for the 0650 Cyber Network Operations Engineer Warrant Officer to the previously shown 0306 Gunner prerequisites:

b. Prerequisites

- (1) Must be a U.S. Citizen.
- (2) Warrant Officers assigned this MOS must have previously served in one of the following data communications related MOS's: 0651, 0659, or 0689.
- (3) Security requirement:
 - (a) Sensitive Compartmented Information (SCI) eligibility.
 - (b) All 0605's assigned to MARFORCYBER are required to maintain Top Secret (TS) with the additional adjudication of Sensitive Compartmented Information (SCI) eligibility.

When one compares the prerequisites for the 0650 Warrant Officer to the 0306 Gunner, it becomes very clear where the priority of the Marine Corps lies and where the change is necessary. Like the NCO who does not go down the Warrant Officer path, the Marine Corps also does not view the unrestricted officer community as duty experts in leadership or MOS skills once they graduate from the Basic School and their respective MOS school. The consequences of this viewpoint are significant, in that the Marine Corps risks being outstripped in technical competence by our enemies and our industry partners given new technology. This makes it challenging to retain and attract quality personnel into technical fields where they can plainly see there is no truly advanced training that differentiates them from the senior enlisted.

A Shift in the Paradigm

The Marine Corps has to stop viewing the restricted officer community as duty experts the minute they pin on their red bars. This statement is not intended to slight the incredible officers within the restricted community who have made technical competence the hallmark of their service as a Marine. But the truth is, the view that a Marine is a duty expert after eight years

of service and attaining the rank of Sergeant is damaging to the overall to the health of the force. What happens is that the Marine Corps has set the bar so low for entry into the technical officer ranks that Marines who would not be otherwise qualified to perform at the level the Marine Corps expect to become our de facto 'experts,' and the process for removal for poor performance is exceptionally difficult. An example of this is Marines who fail selection to Chief Warrant Officer-3 (CWO-3), which is the first competitive look for Chief Warrant Officers. The promotion to CWO-2 is based on time in grade and occurs after 18 months of successful service as a WO-1. A Marine who fails selection twice to CWO-3 has not demonstrated technical or professional competence, but because we consider them to be experts, there is reticence to take action to remove them from the ranks of the Warrant Officers.

Lest one think that this is a bit harsh of a view for the restricted officers, it is important to note that restricted officers compete for promotion only when there are openings in the next higher grade. So, if there are no openings for a CWO-4, such as retirements, EAS (End of Active Service), etc., there are no slots allocated for that respective board and Marines are not looked at and either selected or passed over. This is different than the unrestricted officer community, which is competitive across grade, not MOS. This means that all majors compete against each other regardless of MOS, while the restricted officer LDO major only competes against fellow majors within the same MOS. An unrestricted officer will eventually get looked at for promotion, but a restricted officer could actually spend six or more years at one grade without ever being afforded the opportunity to compete for advancement. This is why the initial view of who is a duty expert can be so damaging if not balanced by quantifiable requirements and demonstrated expertise.

The Marine Corps should view Warrant Officers and Limited Duty Officers the same way that our enlisted Marines and Unrestricted Officers are viewed. That viewpoint is that our enlisted Marines and Unrestricted Officers need continued professional and technical education in order for them to maintain the competency necessary to be considered an expert in their respective field. This recommendation represents a simple but effective solution, one with precedent and therefore a record of success.

A good example of how to ensure expertise is how the Army trains their Warrant Officers. The 255A Information Services Technician and 255N Network Management Technician MOS's are the Army equivalent to the 0650 MOS. Why did the Army break their MOS's into two fields instead of one, the practice of the Marine Corps? One could argue that the sheer size of the Army and the amount of network support it has to provide to agencies outside the Army necessitate such a split. One could also argue that the complexity of current systems requires such a level of expertise that it is unreasonable to expect one officer to be able to successfully track the depth and breadth of the skills required to be an expert in the field. According to the Army Warrant Officer Recruiting site, the difference between the two MOS's is that the 255A manages the Local Area Network (LAN)²¹ and the 255N manages the LAN and WAN (Wide Area Network).²² It is noteworthy that both tracks require the candidate to have attended college in order to apply for the Warrant program, so this criterion is not a major point of separation.

Another major difference in how the restricted communities are managed is the requirement for follow-on professional education. For the Army, the general requirement is MOS agnostic. All Warrant Officers are required to go to WOCS (Warrant Officer Candidate School), WOILE (Warrant Officer Intermediate Level Education, CW3-CW4), and WOSSE

(Warrant Officer Senior Service Education, CW5). In addition to this, there are MOS specific courses, for example:

The Network Management Technician Warrant Officer Advanced Course (WOAC) is the third level of WOES and a skill level 2 course (MEL Code 6). After completing the WOBC, Active Component (AC), Reserve Component (RC), and National Guard (RC/NG) Soldiers may attend the three-phase resident MOS 255N WOAC. The primary focus of WOAC is to provide progressive network management skills required by the Warrant Officer to fulfill network management supervisory and staff positions in support of the functionality and interoperability of the Army's communication and data networks. CW2s with 1 year time-in-grade are eligible to attend. Warrant Officers will attend their MOS WOAC no later than one year after promotion to CW3. CW2s assigned to CW3 positions will attend their MOS WOAC prior to assignment. Total course length of the three phases is 17 weeks and 4 days.²³

It is important to note that the school is a requirement and not something the Warrant Officer can choose not to attend. This shows a marked difference in the approach to creating and maintaining duty expertise in a very complex environment. The major difference between the Army and Marine Corps Warrant Officer programs is that the Marine Corps will not take interservice transfers directly into the Warrant Officer ranks. The Army does do this and has a recruiting team set up to solicit interservice transfers, which one could conclude necessitates the type of educational requirements levied on Army Warrant Officers and Signal Warrant Officers in particular.

Since the Army allows interservice transfers with little to no knowledge about Army systems, it follows that one way to get this knowledge inculcated into the individual and overcome the knowledge deficit is the education requirements levied by the Signal Corps. The assumption by the Army that the Warrant Officers are not yet, but will be, duty experts in their fields, is a view that the Marine Corps should adopt. Because the Army does not view the new Warrant Officers as bona fide experts, it allows the Army to manage the restricted officer careers in an efficient fashion that meets the needs, in the case of the 255A and 255N MOS's, of the Army Signal Corps.

Conclusion

There are changes that the Marine Corps can make that will positively impact the restricted officer communities and address the education and professional development disparity that has been illustrated in this thesis. First, the Marine Corps needs to change the educational management of the restricted officer community. What this entails is significant and anyone who has worked within Headquarters Marine Corps (HQMC) is fully aware of how slow the machine moves to effect change. Currently there is no 'T2'²⁴ allocated for the restricted officers, which is a travesty since it means that any of the technical courses, such as the Army 255A, 255N, or 255Z courses, are unavailable. Since the Marine Corps is unable to stand up its own courses that could mirror the Army's due to the relatively low number of Warrant Officers within each MOS field, if restricted officers were allowed to attend schools that required a PCS move, then the Marine Corps could take advantage of the multiple schools provided by the Army, Navy and Air Force. The other benefit that this would achieve is that select warrant officers and LDOs would be able to attend the resident EWS and CSC courses.

This would have the substantial benefit for the unrestricted officers as well as the restricted officers who attend in that the restricted officers would gain a greater appreciation of how the staff is supposed to operate and how they can best support the development of operational plans. The unrestricted officer would gain a much greater appreciation of how best to use the expertise of the restricted officer and more importantly, what the limitations are for these exceptional officers so that they are utilized within the scope that the Marine Corps has established. This is similar to the program that allows for senior enlisted Marines to attend resident Command and Staff College, Quantico, Virginia. CSC had a Sergeant Major attend this year and one would have to agree that the Sergeant Major likely received both professional and

personal benefits attending CSC this year, if for no other reason than to impart his years of experience into the seminar groups. This is a good program and is one that should continue for the foreseeable future.

The second change that needs to occur to address the technical competence within the restricted officer community is to take a hard look at the continuation boards for the Chief Warrant Officers. While board members cannot divulge the working of boards they sit on and sign non-disclosure agreements to that effect, one would be hard pressed to find the last time a Warrant Officer was not continued that had not reached the 18 year mark specified by the SECNAV INST 1412.9B.²⁵ This occurs because of two perception issues; first, that the Marine Corps has spent a lot of money in developing the Warrant Officer, which is just not factually correct; and second, because of a desire not to see someone who has served 15 plus years not be allowed to retire, especially if there is no malfeasance in their record. This perception is now a dangerous reality for the restricted officer communities and needs to change. Based on the information provided above in Figure 1, it should be clear that the Marine Corps actually spends the least on educating the restricted officers. The 30% of training days discussed above does not include the professional military education (PME) requirements levied by the Commandant of the Marine Corps (CMC). It costs less in terms of training dollars to make a Chief Warrant Officer-5 than it does to make a Master Gunnery Sergeant. Since the SECNAV 1412.9B identifies the Warrant Officer as technically more capable than the senior NCOs, then this just does not make any sense.

The other, more insidious reality is the unwillingness to gap a restricted officer billet for any duration in order to allow that officer to go get technical training or professional development. One just has to discuss with the MMOA (Manpower Management Officer

Assignments) monitors briefly to get a sense of how little tolerance there is for gapping any of the restricted officer billets. This unwillingness to accept a gap in order to get a better-trained officer will be something that will have to be addressed directly by the CMC. This reticence to have gaps in the restricted billets allows officers to remain in the Warrant Officer communities beyond their capabilities and thereby removing the opportunity for other, more qualified Marines to become Warrant Officers. A solution to this issue would be that if a CWO2 twice fails selection to CWO3, and does not meet the SecNav required 18 years to be automatically continued, then he or she should be offered the opportunity to revert to their previous enlisted grade and continue their career or offered to retire if the officer has over 15 years, but less than 18 years of service.

Taken together, these changes will ensure that the USMC can develop the true duty experts required to adapt to, in the case of the 06xx restricted community, the rapidly changing cyber environment. When this capability is added, the service can engage in the cyber realities more effectively since it will now be able to not only hold the duty experts to a quantifiable standard, but also provide a better metric for recruiting and retention efforts within highly technical fields. This will in time reduce overall personnel management costs as the Marine Corps will be better able to articulate the requirements for and manage the careers of the restricted officer community. This structural change can pay these immediate benefits, ensuring that the cyber age does not overtake and pass by the Marine Corps, leaving the service uncertain of its role in defending cyberspace and how its own cyber professionals can provide critical support across all of the warfighting functions.

Endnotes

¹ Headquarters Marine Corps, NAVMC 1200.1, *Military Occupational Specialties Manual (Short Title: MOS Manual)*, 17 Jul 2014, 2.

² Cirillo, Michael R. 2011. "The 0605." *Marine Corps Gazette* 95 (7): 46-49.

<http://search.proquest.com/docview/874205246?accountid=14746>. This gazette article lays out the argument for the 0605 LDO and was written by the senior 0605 LDO at the time, LtCol (then Major) Mike Cirillo who has since retired. It is a bit far-reaching in what the scope of the 0605 LDO should be doing, but it still remains the only publication on the role of the 0605 LDO.

³ Headquarters Marine Corps, MCO 5311.6, *Advocate and Proponent Assignments and Responsibilities*, 02 Dec 2013. <http://www.marines.mil/Portals/59/MCO%205311.6.pdf>, Enclosure (5).

⁴ Ibid, 1-36 – 1-37.

⁵ Ibid, 1-37.

⁶ Ibid, 1-38.

⁷ Ibid, 1-39.

⁸ Headquarters Marine Corps, NAVMC 1200.1, 1-36.

⁹ Email from Mr. Renè Agosto, Training Management Specialist, HQMC C4/CSP, OccField Management Branch. 23 April 2015.

¹⁰ A number of the discussions I had with Training Command, TECOM (Training and Education Command) and MCCES when I was the OccField Manager were focused on reducing the number of courses offered by the schoolhouse, which was mainly a function of money. This was based on discussions with BGen Simmons, who was the Commanding General of Training Command in 2012 when HQMC C4 was requesting 10 more training days for the 0650 MOS. At the time, BGen Simmons told me the focus of Training Command was to only teach at the schoolhouse that which was absolutely necessary to accomplish Training Command's mission. The CG of Training Command is almost always in a very difficult position, with direction to reduce the number of days Marines are in a T2 status. Adding days to that number is almost always a non-starter without specific direction from CMC.

¹¹ I was part of the OPT (Operational Planning Team) representing HQMC C4 that stood up as a result of the DMAG. Most of the discussions we had about the stand up of the CMF were the training requirements levied by NSA and how we were going to be able to manage it as a service, or whether or not we actually wanted to without money allocated to assist through the RMD (Resource Management Decision), which at the time did not apply to service specific training, only NSA training.

¹² This is based on discussions I had with Company L, MCSB 2602 Warrant Officers as the OccField Manager. I have yet to be able to obtain an unclassified document that provides the reference.

¹³ Amazon.Jobs. AFT Director of Technical Operations and Infrastructure job posting.

<http://www.amazon.jobs/jobs/220266/aft-director-of-technical-operations-and-infrastructure>. Accessed 15 April 2015.

¹⁴ USAA.com Career Center. Senior Information Security Risk and Regulatory Advisor.

<https://search.usajobs.com/en-US/Job-Details/Information-Security-Advisor-Senior-Job/San-Antonio-TX/XjdP-jf837-ct104375-jid43254899>. Accessed 14 April 2015.

¹⁵ Office of Personnel Management (OPM), Classification & Qualifications General Schedule Qualification Standards Information Technology (IT) Management Series, 2210 (Alternative A),

<https://www.opm.gov/policy-data-oversight/classification-qualifications/general-schedule-qualification-standards/2200/information-technology-it-management-series-2210-alternative-a/>. Accessed 14 Apr 2015.

¹⁶ Secretary of the Navy, SECNAVINST 1412.9B, *Marine Corps Limited Duty Officer and Warrant Officer Programs, Promotions, and Continuation Procedures*, 07 Feb 2006, Enclosure (1), 2.

¹⁷ Reidenbach, B., MCBUL 1040 Fiscal Year 2016 (FY16) Enlisted to Warrant Officer (WO) Regular Selection Board, MARADMIN 641/14,

<http://www.marines.mil/News/Messages/MessagesDisplay/tabid/13286/Article/172505/mcbul-1040-fiscal-year-2016-fy16-enlisted-to-warrant-officer.aspx>. Dec 2014.

¹⁸ The CISSP covers eight domains of the common bodies of knowledge that are recommended for security professionals. The most common critique of this certification is that is a 'mile wide and an inch deep', meaning that it does not actually provide a good metric for determining if a security professional is competent.

<https://www.isc2.org/cissp/default.aspx>

¹⁹ The GCIH is a common certification used by professionals in a CERT (Computer Emergency Response Team).
<http://www.giac.org/certification/certified-incident-handler-gcih>

²⁰ Headquarters Marine Corps, NAVMC 1200.1, *Military Occupational Specialties Manual (Short Title: MOS Manual)*, 17 Jul 2014, 1-18 – 1-19.

²¹ US Army Warrant Officer Recruiting, *Warrant Officer Prerequisites and Duty Description 255A – Information Services Technician*, <http://www.usarec.army.mil/hq/warrant/prerequ/WO255A.shtml>. Accessed 28 April 2015.

²² US Army Warrant Officer Recruiting, *Warrant Officer Prerequisites and Duty Description 255N - Network Management Technician*, <http://www.usarec.army.mil/hq/warrant/prerequ/WO255N.shtml>. Accessed 28 April 2015.

²³ US Army Signal Center at Fort Gordon, 255N Warrant Officer Advanced Course Information Page <http://www.signal.army.mil/OLD/442sig/Courses/WOAC/default.html>, July 2013.

²⁴ T2 refers to “Training and Transit”, which is part of the P2T2 (Patients, Prisoners, Transients & Training) personnel management for HQMC M&RA. Generally, this is approximately 30% of the force at any given point.

²⁵ SECNAV INST 1412.9B, 13.

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