



DEPARTMENT OF THE NAVY
HEADQUARTERS UNITED STATES MARINE CORPS
3000 MARINE CORPS PENTAGON
WASHINGTON, DC 20350-3000

IN REPLY REFER TO:
3900
LFS/ajg

From: Deputy Commandant, Installations and Logistics
To: Distribution List

Subj: COMPLETION OF THE FIELD FOOD SERVICE FEEDING STUDY

Ref: (a) MCO 3902.1C

1. A Field Food Service Feeding Study was conducted under the auspices of the Marine Corps Studies System per reference (a). The Study was commissioned by the Commandant of the Marine Corps to assess the impacts of implementing the Fiscal Year 2003 Regional Garrison Food Service Contract (RGFSC). The report can be viewed in its entirety at the following web site:
http://hqinet001.hqmc.usmc.mil/i&L/v2/LF/LFS/4/docs/FFSFS_Final_Report_31_Jan_07.pdf

2. Study Information. The Field Food Service Feeding Study was instrumental in validating the effectiveness and efficiencies associated with the current Food Service System (FSS), identifying deficiencies within the FSS, and exploring courses of action (COAs) to address capability gaps in Marine Corps Food Service training and equipment. The course of the Study was bounded by three broad objectives.

(a) Examine current doctrine and practices for field food services and garrison food service operations, focusing on the appropriate mix of Marine Corps provided food services and contractor provided food services to ensure that the Marine Corps maintains the ability to provide food services to Marines in combat zones as a core competency.

(b) Provide an analytical framework and make recommendations on COAs related to the use of contracted food service support versus the use of organic Marine Corps provided food service.

(c) Make corrective action recommendations to any additional gaps identified by the Study based upon documents collected from the program office, surveys administered during site visits and e-mail, and data provided by I MEF, II MEF, III MEF, the Food Service Program Office, and various MCB Food Service personnel.

Subj: COMPLETION OF THE FIELD FOOD SERVICE FEEDING STUDY

3. Significant Findings and Results. The Field Food Service Feeding Study demonstrated that the RGFSC provides the Marine Corps with an adequate contracting vehicle for feeding Marines in garrison locations within the Continental United States (CONUS). The Study also identified other impacts to the Food Service System, some positive and some negative. For example, while the RGFSC leveraged food service billets making them available for other critical Marine Corps functions, it had the adverse impact on Food Service Marines core competencies by significantly diminishing training opportunities and leaving Marines unprepared when required to operate mess halls overseas or in an operational environment. The Study highlighted the following recommendations:

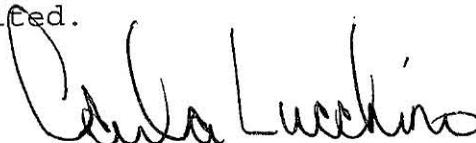
(a) The Food Service System must provide mess hall management positions for active duty Marine Corps Food Service personnel within CONUS. The Study recommended filling those positions within existing structure.

(b) Intermediate feeding equipment beyond the Tray Ration Heater System is required to fill an identified gap in organic feeding capability.

(c) A modification of the Food Service Training and Readiness (T&R) Manual is required to address skills needed in a contracted environment.

4. Action. The results of the Field Food Service Feeding Study help to identify additional tools necessary for the Marine Corps Food Service to successfully operate in garrison and field environments. In order to capitalize on the recommendations made by the Study, the Services Branch (Code LFS) will work toward a decision that restructures the next RGFSC acquisition to provide Food Service Marines with adequate training opportunities, introduces an intermediate feeding equipment system to fill identified gaps in organic feeding capability, and implements changes to the T&R Manual to address the skills needed in a contracted environment.

5. Study Distribution. Unlimited.



CARLA E. LUCCHINO

By direction

Subj: COMPLETION OF THE FIELD FOOD SERVICE FEEDING STUDY

Copy to:

DC, M&RA

DC, CDI

DC, PP&O

DC, AVN

ComMarCorSysCom

ComMarForCom

ComMarForPac

Final Report
Field Food Service Feeding Study

Prepared for:

**HEADQUARTERS MARINE CORPS (HQMC),
DEPUTY COMMANDANT FOR INSTALLATIONS AND
LOGISTICS (I&L), SERVICE BRANCH (LFS)**

**Department of the Navy, United States Marine Corps
Marine Corps Systems Command**



Prepared by:

**MCR Federal, LLC
2010 Corporate Ridge, Suite 350
McLean, VA 22102
Voice: (703) 506-4600
Facsimile: (703) 506-8601
Web Site: www.mcri.com**

31 January 2007

Abstract

This Field Food Service Feeding Study examines the impacts, intended and unintended, of the implementation of the Regional Garrison Food Service Contract (RGFSC) in FY 2003. While it freed up food service billets for other Marine Corps functions, it also had an impact it would have on the ability of Food Service Marines to maintain their core competencies. It has significantly diminished training opportunities, leaving Marines unprepared when required to perform mess hall functions in OCONUS. Compounding the problem has been the unwillingness of many commands to fully utilize the Field Food Service System (FFSS), introduced at about the same time as the RGFSC, due to its large logistics footprint. This has, again, led to fewer training opportunities for Food Service Marines. With input from site visits to the locations of major Marine Corps installations in North Carolina, California, and Japan, and a survey distributed to Food Service personnel, logisticians, and senior officers, this study examines three potential courses of action to address the loss of core competencies within the Marine Corps Food Service. Options include 1) maintain the status quo with the RGFSC and force structure, but make some changes to training, doctrine, and equipment to address some of the negative effects; 2) acknowledge the consequences of contract feeding in CONUS and in theater, and further reduce the force structure to reflect underutilized capacity; and 3) increase the number of positions available within the RGFSC for Marines to cook in and manage mess halls. This last option has two variants, including a) an increase in force structure to fill a portion of the new CONUS mess hall openings; and b) utilizing a theorized underutilization to fill the positions. A third possibility of filling the positions with a combination of an increase in force structure and current Food Service Marines is also examined. All options are analyzed against three operational scenarios of 1) garrison operations; 2) major exercises; and 3) combat operations. This study concludes that the preferred solution is to provide more positions for Marine Corps Food Service within the RGFSC and fill those positions through a combination of restoring structure and utilizing existing structure. In addition, the study recommends the introduction of feeding equipment intermediate between the Tray Ration Heater System and the Field Food Service System to enhance opportunities to exercise organic feeding capability. Finally some modifications to the Food Service curriculum should be considered to address skills needed in a contracted environment.

Executive Summary

Overview

This Field Food Service Feeding Study (FFSFS) was commissioned by the Service Branch (LFS), Installations and Logistics Department (I&L), Headquarters Marine Corps (HQMC) in June 2006 to examine the costs and benefits, intended and unintended, of the implementation of the Regional Garrison Food Service Contract (RGFSC) in FY 2003. The RGFSC allowed the reallocation of Food Service billets in the continental U.S. (CONUS) to other Marine Corps functions. However, it has had a significant impact on the training and readiness of Food Service Marines and their ability to maintain core competencies. While this focus provides a scope for the study, the goal of determining the ultimate readiness of the Food Service to feed Marines in theater requires looking into equipment, rations, doctrine, organization, and practice as integral parts of the feeding system in the Marine Corps. What happens in garrison mess halls has significant influence on the rest of the feeding system well beyond the boundaries of a CONUS-based contract. Furthermore, other systems and subsystems in part reinforce these effects, and in part counter them. This provides the main impetus for this study – to extend the analysis beyond just CONUS mess halls to the entire Food Service system within the Marine Corps, focusing on what could be changed in a new RGFSC issued within the next three years to ensure that all of the Marine Corps food service goals are optimally met, not just those goals directly related to garrison feeding in CONUS.

Through meetings with food service stakeholders, surveys of personnel directly involved in implementing the Food Service System, site visits to Marine Corps bases - both CONUS and OCONUS, analysis of existing documentation, analysis of emerging food service technology, equipment, and rations, and queries of other efforts to reshape the food service in other service branches, past and present, this study has come to a number of conclusions on how to improve food service.

The RGFSC successfully transferred operation of CONUS mess halls from Marines to contractors. However, it had an unanticipated effect on the ability of Food Service Marines to maintain their core competencies. It has significantly diminished training opportunities, leaving Marines unprepared when required to perform mess hall functions in OCONUS. In addition, the large footprint of the Field Food Service System (FFSS), introduced at about the same time as the RGFSC has further decreased training opportunities.

Potential solutions include 1) maintaining the status quo with the RGFSC and force structure, but make some changes to training, doctrine, and equipment to address some of the negative impacts; 2) acknowledge the impact of contract feeding in CONUS and in theater, and further reduce the force structure to reflect underutilized capability; and 3) increase the number of positions available within the RGFSC for Marines to cook in and manage mess halls. This last option has two variants, including a) an increase in force structure to fill a portion of the new CONUS mess hall openings; and b) utilizing a theorized underutilization to fill the positions. A fourth option of introducing a contract similar to the RGFSC for OCONUS operations was considered and dismissed. While it would reduce or eliminate the need for more trained Marine Corps Food Service personnel, it would compound the problem of training opportunities. As long as there is a need for Marines to be able to operate mess halls in theater, there will be a need for training opportunities in garrison. All options are analyzed against three operational scenarios of 1) garrison operations; 2) major exercises; and 3) combat operations. This study concludes that the preferred solution is to provide more positions for Marine Corps Food Service within the RGFSC

and fill those positions primarily through utilizing existing structure, though some increase in force structure may be required. In addition, the study recommends the introduction of feeding equipment intermediate between the Tray Ration Heater System and the Field Food Service System to enhance opportunities to exercise organic feeding capability. Finally some modifications to the Food Service curriculum should be considered to address skills needed in a contracted environment.

Site Visits

The study team made site visits to Camp Lejeune, North Carolina, Camp Pendleton and 29 Palms, California, Camp Butler, Okinawa, Japan, Fort Lee, Virginia, and the Army's Research and Development Command (RDECOM) in Natick, Massachusetts. The team met with representatives of each of the major Marine Corps Bases and each Marine Expeditionary Force (MEF) to:

- Solicit feedback about the RGFSC and its impact throughout the Marine Corps Food Service;
- Assess organic and contract feeding in theater;
- Assess organic and contract feeding during exercises;
- Evaluate experience with the Field Food Service System (FFSS);
- Evaluate experience with the Tray Ration Heater System (TRHS);
- Elicit opinion on rations options driven by the available equipment;
- Administer surveys to Marine Corps Food Service, logisticians, and senior officers;
- Gather input on possible solutions to Marine Corps Food Service issues.

Camp Pendleton and Camp Lejeune represent the west coast and east coast regions of the RGFSC. Feedback from these two major Marine Corps installations was roughly equivalent. The major difference in the two site visits is that much of I MEF, based at Camp Pendleton, was deployed to OIF, whereas the bulk of II MEF units, based at Camp Lejeune had recently returned from deployments. The visits underscored that the RGFSC for the most part satisfactorily fulfills its mission of feeding Marines in CONUS garrison mess halls. Concerns were repeatedly raised, however, about the lack of training opportunities for Marine Corps Food Service in garrison mess halls and the steady deterioration of the core competencies of enlisted Food Service personnel that this has entailed. The second major takeaway from these two site visits is that there is a tendency for commanders to prefer not to deploy the FFSS during training exercise due to limitations on the availability of strategic lift and the general difficulty of moving it to the exercise site. This has led to increased use of contract feeding on site and transporting meals from the nearest garrison mess hall. This in turn, compounds the problem of not fully exercising the organic feeding capability of the Marine Corps.

The RGFSC is only in place at CONUS facilities. III MEF, based in Okinawa, Japan, utilizes Marine Corps Food Service for garrison mess halls. In addition, III MEF rarely uses contract feeding during exercises. The site visit to Okinawa revealed the same basic issues raised at Camps Pendleton and Lejeune, but from a different perspective. Marine Corps Food Service personnel rotating in from CONUS locations now have less experience operating, maintaining, and managing garrison mess halls, but the requirements for the mess halls in OCONUS have not changed. This lack of experience has made it very difficult for personnel new to III MEF to adjust to the need to utilize core competencies that have been taught in the Basic Food Service course, but not exercised in CONUS.

The site visit to RDECOM in Natick, Massachusetts was made to examine some of the equipment and rations alternatives being developed, some of which could be adopted by the Marine Corps. Given that concerns were raised about the large footprint of the FFSS during the site visits to Camps Lejeune, Pendleton, and Butler, the study team was interested in the availability of alternatives with similar feeding capacity but smaller footprints. The Marine Corps currently has the TRHS for feeding Marines in forward areas and the FFSS for forward operating bases (FOBs). RDECOM is testing two pieces of equipment which could provide intermediate capabilities. The Enhanced Tray Ration Heater System (E-TRHS) is similar to the TRHS, except it ships in a container capable of providing refrigeration. This opens up the possibility of migrating to UGR-A rations, which require refrigeration. The Army's Containerized Kitchen (CK) provides significantly greater mobility than the FFSS and a much smaller footprint in terms of electricity and water usage. It has some drawbacks, including excessive heat and not having the sanitation capabilities of the FFSS. The Marine Corps is investigating a modification to the CK, to be known as the Expeditionary Field Kitchen (EFK), as an upgrade to the CK. The EFK could potentially replace the FFSS.

Survey

The study team developed a survey to assess the current Food Service model and evaluate the impact of the RGFSC on the core competencies of Marine Corps Food Service. The survey was administered to Marine Corps Food Service personnel, logisticians, and senior officers during the site visits to Camp Lejeune, Camp Pendleton, 29 Palms, Okinawa, and satellite locations in those regions. Some surveys were administered on site, and others were completed separately and mailed or e-mailed to the study team. The results largely supported the conclusion that the RGFSC has had a negative impact on the core competencies of Marine Corps Food Service and that those core competencies need to be maintained. The small sample size of 89 provides limitations on the conclusions that can be drawn from the survey results, but they clearly indicate support, in the opinion of Marine Corps Food Service, logisticians, and senior officers, for the hypothesis that the RGFSC has resulted in a deterioration of the core competencies of the Marine Corps Food Service. Simultaneously, the results also show overwhelming support for maintaining contracted food service in garrison and in theater. This indicates that the solution is not to roll back the changes made with the introduction of the RGFSC, but to make modifications to address the training gap engendered by the RGFSC.

Regional Garrison Food Service Contract (RGFSC)

Contracted food service has become an integral part of the provision of sustenance to Marines, both in garrison and in theater. However, the level of contracting in CONUS has led to a generation of young Food Service Marines without sufficient training in their MOS to adequately perform their function in theater, exercises, or OCONUS bases. Options for addressing this shortfall range from greatly reducing the level of contracting to finding other means to prepare Food Service Marines. The elimination or any drastic reductions in contracting would require a significant increase in force structure and reorganization of the Marine Corps Food Service. The enormity of the task makes it imperative to examine other options to address some of the negative effects of contracting.

The RGFSC was introduced in FY 2002, eliminating approximately 500 structure spaces within the Marine Corps Food Service, turning over 53 CONUS mess halls to contractors. The clear benefit of this move was to free up 500 positions for other duties within the Marine Corps without significant sacrifice to the quality of feeding in CONUS.

Since the RGFSC is only in effect in CONUS, Marine-operated garrison mess halls remain in place in OCONUS. A conversion of OCONUS mess halls to contractor managed would reduce the need for trained Marine Corps Food Service personnel, but would only compound the problem of the lack of training opportunities for location where Marines are needed, such as in theater, and is therefore not recommended. In addition, though mess halls in theater are increasingly run by contractors, Marines continue to operate mess halls during combat operations. The net result is that the proportion of Marines in the Marine Corps Food Service has decreased by more than a half. In an environment where Marines rotate to locations worldwide throughout their careers, this implies that on average a Marine will spend less than half the time in a garrison mess hall than was the case before the implementation of the RGFSC. The conclusion is that while the number of structure spaces available for garrison mess hall operations is appropriate to provide the level of required services, it is inadequate for providing training and experience in order to maintain core competencies.

Contracting in Theater

The two major areas of contracted food service are in garrison and in theater. The Logistics Civil Augmentation Program (LOGCAP) is the vehicle used by the Army to provide food service and other logistics elements in theater, including Operation Iraqi Freedom (OIF). While it is an Army contract, the Marine Corps has the ability to use LOGCAP to provide food service to Marines in theater. This provides the advantage of freeing Marines to perform other duties. Through LOGCAP, commanders are able to provide their Marines high quality food. While the cost of the contract is very high compared to organically provided food service, the cost has not been borne by the commander, but has been paid to date through supplemental budgets passed by Congress.

If the assumption is made that not all conflicts lend themselves to the quick implementation of LOGCAP or similar contracts, then there remains a need for an organic capability in excess of what is being used in OIF. In the case of OIF, LOGCAP has masked the deterioration of the skill set of Marine Corps Food Service by removing the need for large quantities of Food Service personnel. It is the judgment of this study that the risk is too great that the Marine Corps Food Service will not be adequately prepared to provide Marines high quality, nutritious, healthy rations in mess halls at forward operating bases (FOB) in theater unless it has more opportunities to train in CONUS. The decline in opportunities to train in CONUS can be traced directly to the implementation of the RGFSC in FY 2002. Therefore, this study recommends that in the next competition for the RGFSC, a certain number of Full Food Service (FFS) mess halls be converted to a combination of Management and Mess Attendant (M&MA) facilities and a new category of Mess Attendant only (MA) facilities.

Equipment

Reinforcing the lack of training opportunities is a configuration of equipment which discourages training. The Field Food Service System (FFSS) is a high-quality piece of equipment which adequately performs the functions it was designed for. However, it has an extremely large footprint relative to other solutions which feed nearly as many. It requires 198 KwH, compared to the Army's Containerized Kitchen (CK), which needs only 10 KwH generating power. Water requirements are similarly disparate. The capacity of the two systems does not differ greatly - the FFSS feeds 950 compared to the CK's 700, with the caveat that two CK's in tandem are required to reach the capacity of 700. Feedback in surveys and interviews consistently shows commander reticence to bring the FFSS to training exercises, further hampering Food Service Marines in their opportunities to achieve training.

Given that systems of similar feeding capacity already exist with significantly smaller footprints, this study recommends that the FFSS be replaced at the end of its lifecycle with new intermediary systems, such as the CK. This will provide the following benefits:

- Ability to use at more forward locations;
- Easier transportability to theater and exercises;
- More mobility in theater;
- More opportunities for Food Service personnel to train;
- Lower water and electricity requirements;
- Greater compatibility with the Army.

The Enhanced Tray Ration Heater System (E-TRHS) is currently being studied as a potential supplement or replacement of the TRHS. The E-TRHS has the same physical footprint as the TRHS, but ships in a QuadCold container with refrigeration capability. This study supports the introduction of the E-TRHS to allow the introduction of UGR-A rations for Marines in forward locations. Therefore, the follow-on recommendation is to replace the UGR-B with the UGR-A as the ration of choice for the Marine Corps. This is contingent upon Full Operational Capability (FOC) of the E-TRHS or a CK-like system with supplemental refrigeration capability. This has the further advantage of compatibility with the Army, simplifying logistics in theater.

Training

A series of secondary recommendations include minimum yearly field experience and training requirement for Food Service personnel and an introduction of a new item to the core training – contractor supervision.

Summary

In summary, this Field Food Service Feeding Study makes the following recommendations:

- Increase the number of positions available in CONUS mess halls for Marines;
- Address new requirement in mess halls through a combination of existing structure and new structure;
- Keep OCONUS mess halls as Marine managed;
- Institute minimum annual mess hall and field training requirements for Marines to maintain Food Service certification;
- As FFSS systems reach the end of their lifecycle, replace them with systems with a smaller footprint, such as the CK/EFK;
- Move forward with the introduction of the E-TRHS;
- Introduce contractor supervision to the Food Service curriculum offered at Fort Lee.

These changes will ensure a more highly trained cadre of Marine Corps Food Service personnel, capable of fulfilling all mess hall requirements in theater, during training exercises, and in garrison mess halls, both in CONUS and OCONUS.

Table of Contents

I. Introduction.....	1
II. Background.....	1
III. Problem Statement	4
IV. Investigative Strategy.....	4
A. Data Collection.....	5
B. Analytical Framework.....	6
C. Data Analysis	8
D. Initial Courses of Action	8
E. Decision Framework.....	9
F. Recommended Courses of Action	10
V. Project Activities	10
A. Site Visits	10
B. Surveys	24
C. Document Review	25
VI. Survey Data.....	26
VII. Gap Analysis.....	45
A. Doctrine.....	45
B. Organization	47
C. Training	48
D. Materiel	52
E. Leadership	54
F. Personnel (Manpower).....	54
G. Facilities	55
VIII. Analysis	55
IX. Courses of Action.....	62
IX. Recommendations and Conclusions.....	72
Bibliography	77
Appendix I: Survey	78
Appendix II: PICCM Model Documentation.....	85
Appendix III: Tables of Organization	116
Appendix IV: RGFSC Staffing Model.....	119

List of Figures

Figure 1: Consequences of RGFSC and FFSS	2
Figure 2: Window of Opportunity for Adjusting RGFSC	3
Figure 3: Initial Study Concept, From Data Collection to COAs.....	4
Figure 4: Revised Study Concept.....	5
Figure 5: Answering DOTMLPF Questions Leads to Requirements.....	7
Figure 6: DOTMLPF Analysis is Iterative.....	8
Figure 7: QuadCold Container for E-TRHS.....	21
Figure 8: Tray Ration Heater System.....	22
Figure 9: Field Food Service System – Interior View.....	22
Figure 10: Field Food Service System – Exterior View.....	22
Figure 11: Containerized Kitchen / Expeditionary Field Kitchen.....	23
Figure 12: RTCH and MTRV, Movers for the FFSS and CK.....	23
Figure 13: MRE and First Strike Ration (FSR).....	24
Figure 14: Question 1 - Marines Supported by Marines, Number	28
Figure 15: Question 1 - Marines Supported by Marines, Percent	28
Figure 16: Question 2 – Marines Supported by Contractors, Number	29
Figure 17: Question 2 – Marines Supported by Contractors, Percent	30
Figure 18: Question 3 – FS Marines Working in MOS, Number.....	31
Figure 19: Question 3 – FS Marines Working in MOS, Percent.....	31
Figure 20: Question 4 - FFSS Deployment, Number	32
Figure 21: Question 4 - FFSS Deployment, Percent	33
Figure 22: Question 4 – TRHS Deployed, Number	33
Figure 23: Question 4 – TRHS Deployed, Percent	34
Figure 24: Question 5 – FFSS Left Behind, Number	35
Figure 25: Question 5 – FFSS Left Behind, Percent	36
Figure 26: Question 5 – TRHS Left Behind, Number.....	36
Figure 27: Question 5 – TRHS Left Behind, Percent.....	37
Figure 28: Question 7 – Impact of Contract Feeding on Skills	38
Figure 29: Impact of Contract Feeding on OCONUS Mess Halls	39
Figure 30: Impact of Contract Feeding on FS Ability, Major Exercises.....	40
Figure 31: Question 10 - Impact of Contract Feeding on Flexibility	41
Figure 32: Question 11 – Contract Feeding and Quality.....	42
Figure 33: Question 12 – Retain Contract Feeding at Some Level?	43
Figure 34: Question 13 - % Non-Deployed FS Need to Work in Mess Halls.....	44
Figure 35: LOGCAP Masks Loss of Core Competencies.....	46
Figure 36: LOGCAP Not Available in Every Situation.....	47

List of Tables

Table 1: Question 1 – Distribution of Marines Supported by Marines	29
Table 2: Question 2 – Distribution of Marines Supported by Contractors.....	30
Table 3: Distribution of Contractor vs. Organic Provided Food Service	31
Table 4: Question 3 – Distribution of FS Marines Working in MOS	32
Table 5: Question 4 – Distribution of FFSS Deployment	33
Table 6: Question 4 – Distribution of TRHS Deployment.....	35
Table 7: Question 5 – FFSS Left Behind, Distribution	36
Table 8: Question 5 – TRHS Left Behind, Distribution.....	37
Table 9: Significance Tests for Survey Questions 7-13	45
Table 10: CONUS Mess Halls by Type in the RGFSC.....	48
Table 11: Marine Corps Food Service, by Location	49
Table 12: CONUS Mess Hall Positions Required Based on Training Requirement.....	49
Table 13: Training Implications of RGFSC and LOGCAP	50
Table 14: Comparison of Feeding Systems.....	53
Table 15: Relative Costs of Field Feeding Systems per Marine Fed	53
Table 16: Marine Corps FY07 Authorized Staffing Requirements for Food Service	56
Table 17: Yearly Staffing Profile, Current Structure	56
Table 18: Target Staffing Profile to Decrease by 200	57
Table 19: Yearly Staffing Profile to Decrease Food Service by 200	57
Table 20: Target Staffing Profile, Increase Food Service by 150	58
Table 21: Yearly Staffing Profile to Increase Food Service by 150.....	58
Table 22: Manpower Summary of Three Scenarios	58
Table 23: Costs to Maintain Current Staffing Levels.....	59
Table 24: Cost to Reduce Structure by 200.....	59
Table 25: Cost to Increase Structure by 150.....	60
Table 26: Summary of All Three Scenarios – Cost Data for 2008 - 2016	60
Table 27: T/O for FY 2002 and FY 2007.....	60
Table 28: Assumed Distribution of Force Reduction FY 2002 to FY 2007.....	61
Table 29: Estimated Distribution of Marine Corps Food Service, FY 2002 and FY 2007	61
Table 30: Distribution of Position by Mess Hall Type.....	62
Table 31: Proportion of Marines Working in Mess Halls	62
Table 32: Pros and Cons of “Maintain Status Quo”	63
Table 33: Potential Excess Capacity for MOS 3381	65
Table 34: Pros and Cons of COA “Reduce Structure”	65
Table 35: New Mess Hall Position Needed, No New Structure.....	69
Table 36: New Mess Hall Positions Needed, with New Structure	70
Table 37: New Structure Needed for Desired Experience and Existing Utilization	70
Table 38: Pros and Cons of “Increase MC Food Service in CONUS Mess Halls”	71
Table 39: Pros and Cons of Primary COAs.....	72

I. Introduction

In June 2006, the Service Branch (LFS), Installations and Logistics Department (I&L), Headquarters Marine Corps (HQMC) issued a Request for Quotation (RFQ) for a study to assess the current field food service feeding model and to develop a baseline for migrating to a new model. In recent years several significant changes have occurred within Marine Corps Food Service, including the institution of the Regional Garrison Food Service Contract (RGFSC) and the introduction of the Field Food Service System (FFSS). While these innovations provided some of the desired benefits when introduced, some unintended consequences were observed. These included decreased opportunities for Marine Corps Food Service personnel to practice their profession while stationed in the Continental United States (CONUS), leading to a reduction of skills and capability to feed Marines in the field. Furthermore, the logistics footprint of the FFSS prompted some commanders to resist using it during training exercises, further limiting training opportunities on an important piece of equipment.

This has prompted the need for this study to consider the field food service feeding model as a whole, focusing on the RGFSC. The task is to examine current doctrine and processes for field food services and garrison operations, considering the complementary elements of Doctrine, Organization, Training, Materiel, Leadership, Personnel, and Facilities (DOTMLPF). The study develops a framework for analysis of inputs, variables and constraints under a variety of operating conditions in order to model “what if” scenarios and constitute the foundation for developing courses of action (COAs). While the RFQ stopped short of requesting recommendations for COAs, recommendations are provided given certain assumptions. Furthermore, the models developed provide the capability to generate new recommendations given a different set of assumptions.

MCR Federal, LLC (MCR) put together a team, along with **L3-Titan**, to undertake the present study. **MCR** is the Study Team Leader, with more than 25 years experience in providing independent cost estimating and analysis support to major government acquisition programs. **L3-Titan** has provided a Subject Matter Expert (SME) with 20 years of Marine Corps Food Service experience to provide depth of functional expertise in Marine Corps Food Services.

II. Background

The introduction of contract feeding on a large scale in CONUS in FY 2003 through the RGFSC caused ripples throughout the Marine Corps Food Service. The immediate effect was a reduction of 594 food service positions to account for the reduced workload in CONUS. Feedback to the study team during site visits indicated that there were growing pains as the Marine Corps tried to ensure that contractors lived up to the same standards and expectations in food quality and dining facility operations and maintenance that had been enjoyed during Marine Corps management. However, if the analysis is restricted to how mess hall operations are functioning in the fifth and final base year of the RGFSC contract, the argument can be made that it is functioning well enough to continue more or less as currently configured. If the scope is expanded to food service operations worldwide, unintended consequences of the RGFSC on other parts of the system appear, as demonstrated in **Figure 1**.

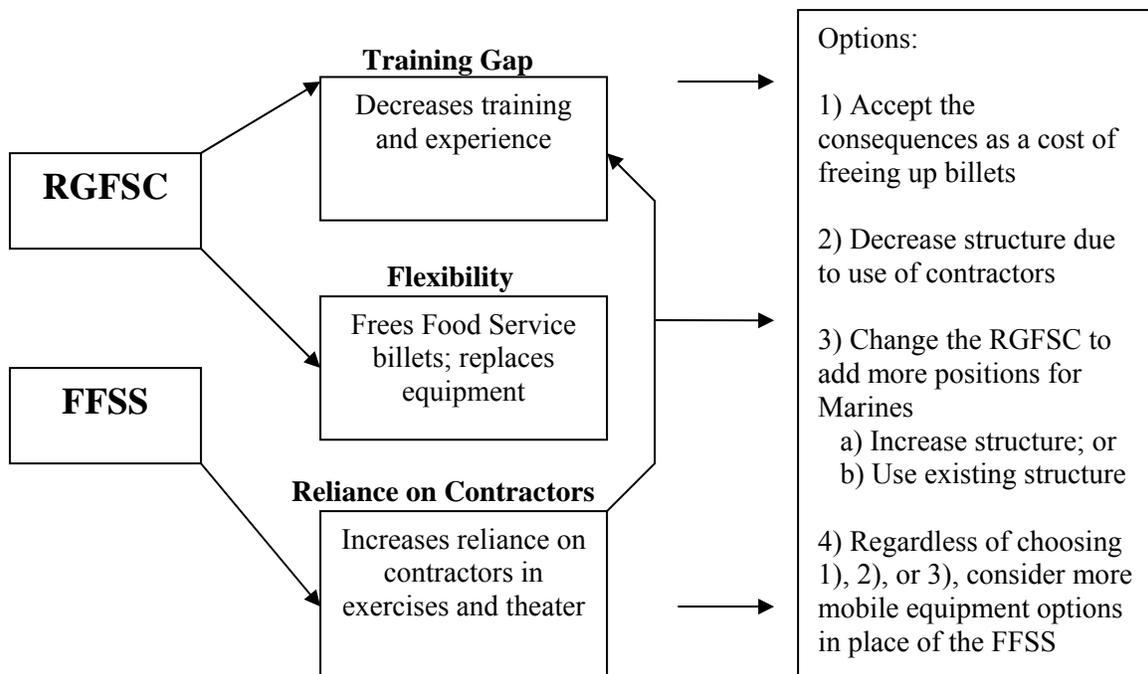


Figure 1: Consequences of RGFSC and FFSS

The RGFSC had the benefit of allowing the Marine Corps to reallocate 594 billet spaces for other functions. This also allowed a reduction in the quantity of equipment the Marine Corps needed to maintain. However, CONUS mess halls had provided a training ground for Marine Corps Food Service to sustain the core competency of operating, maintaining, and managing OCONUS mess halls.

The FFSS provides the Marine Corps a complete field kitchen and sanitation unit, greatly upgrading capability upon its introduction. However, it requires approximately 10 times the power and much greater water usage than comparable systems in use by the Army. This large footprint has created an incentive for commanders to use contract feeding during training exercises rather than utilizing organic food service capability. This exacerbates the training gap caused by the RGFSC.

Options to address the consequences of the implementation of the RGFSC and introduction of the FFSS include:

- 1) Accept the status quo as a cost of freeing up billet spaces for other functions;
- 2) Decrease structure further due to increased use of contractors during exercises and in theater;
- 3) Change the RGFSC to add more positions for Marines in CONUS mess halls, either by
 - a) Using existing structure; or
 - b) Adding structure

There are three option years to the contract, the first of which will be FY08, meaning it is time to consider any changes that might be made to that contract, as shown in **Figure 2**. This provides the main impetus for this study – to extend the analysis beyond just CONUS mess halls to the entire Food Service system within the Marine Corps, focusing on what could be changed in a new RGFSC issued within the next three years to ensure that all of the Marine Corps food service

goals are optimally met, not just those goals directly related to garrison feeding in CONUS.

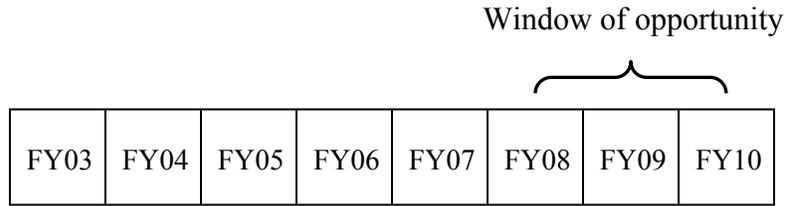


Figure 2: Window of Opportunity for Adjusting RGFSC

When the analysis is extended beyond the RGFSC itself, there are perceptions that there have been some unintended consequences. The primary concern is that Food Service Marines in CONUS now have very limited opportunities to exercise their food service capabilities on a daily basis. They are limited to training in the classroom, training exercises, quality assurance roles, and food preparation in a very limited number of “M&MA” facilities (Management and Mess Attendant – meaning that the contractor provides those functions, leaving food preparation to Marines). Garrison dining facilities in III MEF, based in Okinawa, Japan, continue to be Marine operated. III MEF has reported that Food Service personnel rotating in from CONUS locations have significantly reduced skill sets for running and maintaining dining facilities over what they had a few years before. In some cases this led to the need to “fire” incoming mess hall managers for inability to properly perform their functions. This can directly be traced to the lack of training caused by the RGFSC as currently configured. Part of the purpose of this study has been to assess the validity of this perception, and if it is supported by the evidence, to provide a framework for addressing this concern, either through the new RGFSC or other means.

The second significant change that took place in recent years that may be compounding the lack of training perceived as a result of the RGFSC, is the introduction of the Field Food Service System. The FFSS is a system that provides food preparation and sanitation for a field environment. However, while most feedback observed by the study team indicates that it performs its functions very well and to specifications, surveys and interviews conducted for this study show that there is resistance in some commands to using the FFSS due to its large logistical footprint. It is very difficult to move compared to field kitchens employed by other services, such as the Army’s Containerized Kitchen (CK), and uses considerably more power and water. As a result, commanders often choose not to employ the FFSS in training exercises where the number of Marines fed would justify its use, opting instead for contract feeding. This further limits training opportunities for Marine Corps Food Service personnel.

Therefore there is an auxiliary issue to the central question of configuration of a follow-on RGFSC is the investigation of food service equipment that would be more mobile, more “expeditionary”, a better fit for the Marine Corps model. Such equipment could be towed behind a 5-ton or 7-ton vehicle, making it possible to provide better rations and more qualified Food Service personnel in forward areas, since there will have been more opportunities to train on the equipment.

These two major areas of focus extend throughout the seven DOTMLPF pillars, requiring a need to look at rations, force levels, training, organization, and doctrine. Hence the need to perform a gap analysis of the current system considering doctrine, organization, training, materiel, leadership, personnel, and facilities, and furthermore examine the DOTMLPF implications for any COAs that are offered.

III. Problem Statement

The overall purpose of this Field Food Service Feeding Study (FFSFS) is to examine current doctrine and practices for field food services and garrison operations, focusing on the appropriate mix of Marine Corps provided food services and contractor provided food services to ensure that the Marine Corps maintains the ability to provide food services to Marines in combat zones as a core competency. This analysis will consider all facets that will influence or be influenced by the selection of any Courses of Action (COAs) with regard to Marine Corps/contractor mix, including Doctrine, Organization, Training, Materiel, Leadership, Personnel, and Facilities.

It is an effort to assist the Service Branch (LFS), Installations and Logistics Department (I&L), Headquarters Marine Corps (HQMC) by providing an analytical framework and making recommendations on courses of action (COAs) related to the use of contracted food service support in garrison and in theater versus the use of organic Marine Corps provided food service. Issues of primary concern are the ability to maintain the core competencies of Food Service Marines when contracted support in garrison has removed a training ground in food service provision and management, quality and security issues, and cost. This study will make recommendations based upon documents collected from the program office, surveys administered during site visits and via e-mail, meetings conducted with relevant personnel during site visits, and data provided by I MEF, II MEF, III MEF, the Program Office, and MCB Food Service personnel at Camps Lejeune and Pendleton, and on Okinawa.

IV. Investigative Strategy

The study of the entire feeding system within the Marine Corps begins with a description of the system as it exists today, along with some of the history leading to its current makeup, followed by the development and consideration of alternatives, and a framework which LFS could use to develop its own alternatives and support recommendations for courses of action. The initial concept for approaching the study that the study team proposed at its inception is depicted in **Figure 3**, comprised of: 1) data collection, 2) data analysis, 3) consideration of alternatives, and 4) recommended COAs.

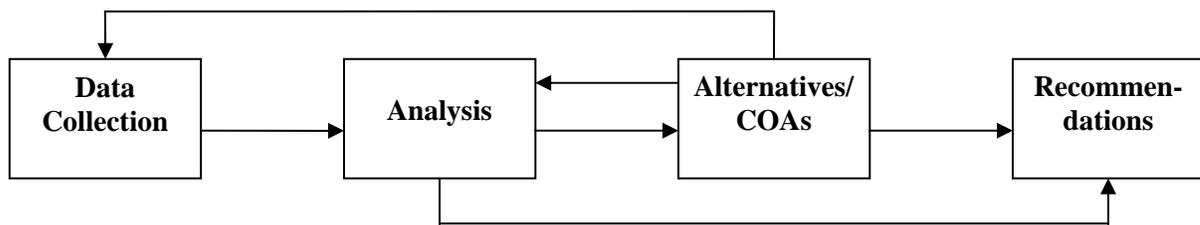


Figure 3: Initial Study Concept, From Data Collection to COAs

However, upon implementing the study, it was apparent that an intermediary step had been missed. The decision framework, a collection of tools when taken together that comprise a model, was developed to analyze potential courses of action. This concept had previously been incorporated into the “analysis” portion of the process. So the strategy and process used was revised as shown in **Figure 4**, showing the insertion of an analysis framework prior to the analysis, leading to an additional output to the COA recommendations (given certain assumptions) of a decision framework by which additional alternatives beyond those outlined here could be considered after the conclusion of the study.

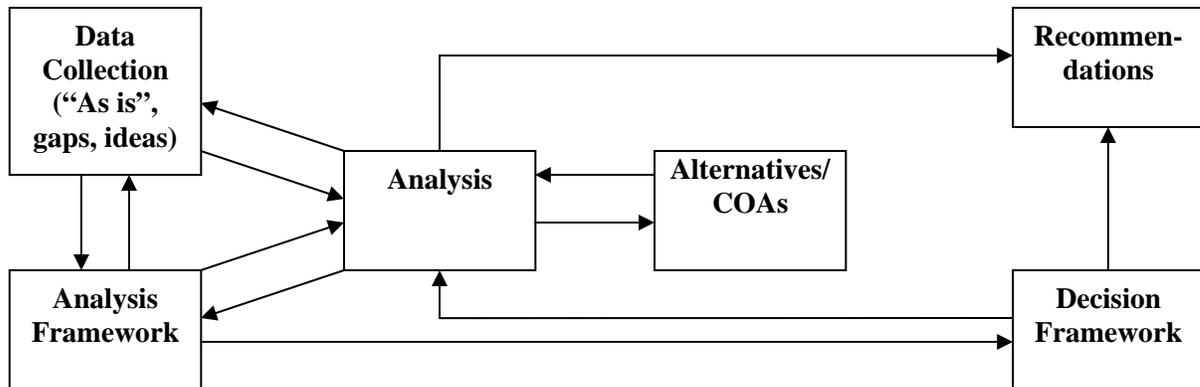


Figure 4: Revised Study Concept

The revised process is still iterative. Data collection, involving site visits, interviews, surveys, and document study, provided the picture of the “as is” food service system, gaps within it, and ideas for addressing those gaps. Simultaneous with data collection was the development of assumptions, evaluation criteria, and models for analyzing the data - the initial “analysis framework.” The framework would be influenced by the available data and itself would influence the collection of data. Running the data through the analysis framework would yield an analysis of the “as is” state, along with providing ideas for alternatives, courses of action, to address the gaps depicted by the analysis. Again, the analysis could show unanswered questions, leading to further data collection or revision of the framework. Alternatives generated would then themselves undergo the same sort of analysis, along DOTMLPF pillars, as had the “as is” state. This process could lead to further revisions, yielding two final outputs, a decisions framework, really a “toolbox” of methodologies for evaluation of courses of action, and recommended courses of action given certain assumptions constituting the inputs into the decision framework. This report, then, is the detailed description of that process as it unfolded, along with the final results.

A. Data Collection

Data collection was conducted through three principal instruments. First, existing documentation was gathered, primarily through requests to I&L for Government Furnished Information (GFI). However, since this study is being conducted because there is not sufficient data available on the effects of Food Service developments in recent years, a second data collection instrument was a survey of food service personnel, logistics personnel, and a selection of officers to attempt to quantify the perceptions of those closest to the issues surrounding provision of food service. Finally, the study team conducted site visits to Camp Lejeune, North Carolina, Camp Pendleton and 29 Palms, California, Okinawa, Japan, Fort Lee, Virginia, and the U.S. Army Soldier Systems Center in Natick, Massachusetts. This provided the perspective of I MEF, II MEF, III MEF, base personnel, the food service school, a similar study being conducted by the Army at Fort Lee, and new ration and equipment technologies. As frequently as possible, these visits incorporated meetings with recently deployed Marines to theaters in Iraq and Afghanistan, among others, to assess how the overall food service system is working in theater and determining how the RGFSC in CONUS is influencing OCONUS food service operations. Since the garrison dining facilities in Okinawa are still Marine operated, that site visit proved particularly valuable in contrasting the situations in CONUS and OCONUS for garrison feeding.

Data sought during these visits, through surveys, and through existing documentations was for the

purpose of supporting the following major elements of the study:

- *Marine Corps Provided Food Service Operations* – This element is defined as the number and percentage of personnel assigned to Marine Corps units being supported by Marine Corps provided food service operations.
- *Contractor Provided Food Service Operations* – This element is defined as the number and percentage of personnel assigned to Marine Corps units being supported by contracted food service operations.
- *Utilization of Marine Corps Food Service Personnel* - This element is defined as the number and percentage of food service Marines (MOS 3381) performing in a food service capacity.
- *Utilization of Food Service Equipment* - This element is defined as the quantity and percentage of food service equipment not being utilized, by equipment type.
- *Disposition of Food Service Equipment* - This element is defined as the quantity and percentage of organic food service equipment that is left behind in garrison by units that are currently deployed, by equipment type.
- *Ration Spoilage and Rotation* - This element is defined as the amount of operational ration spoilage the Marine Corps and DLA have incurred and under what circumstances due to the inability to rotate war reserve equipment.
- *Direct and Indirect Costs* - This element is defined as the direct and indirect costs of the associated data elements.

B. Analytical Framework

The initial analytical framework consisted of the structure provided by the gap analysis based upon the DOTMLPF construct requested in the Statement of Work (SOW). The approach is designed to provide a comprehensive analysis of relevant DOTMPLF factors for alternatives under consideration. It first identifies the scope of the activity and then defines the problem in terms of current environment, risks and benefits and objectives for various alternatives, starting with the “as is” state. The approach then looks at alternatives balanced against the constraints, across the same policy, doctrine and acquisition strategies.

Questions that need to be asked in a DOTMLPF analysis are depicted in **Figure 5**, as cited in the **MCR** proposal for this study.

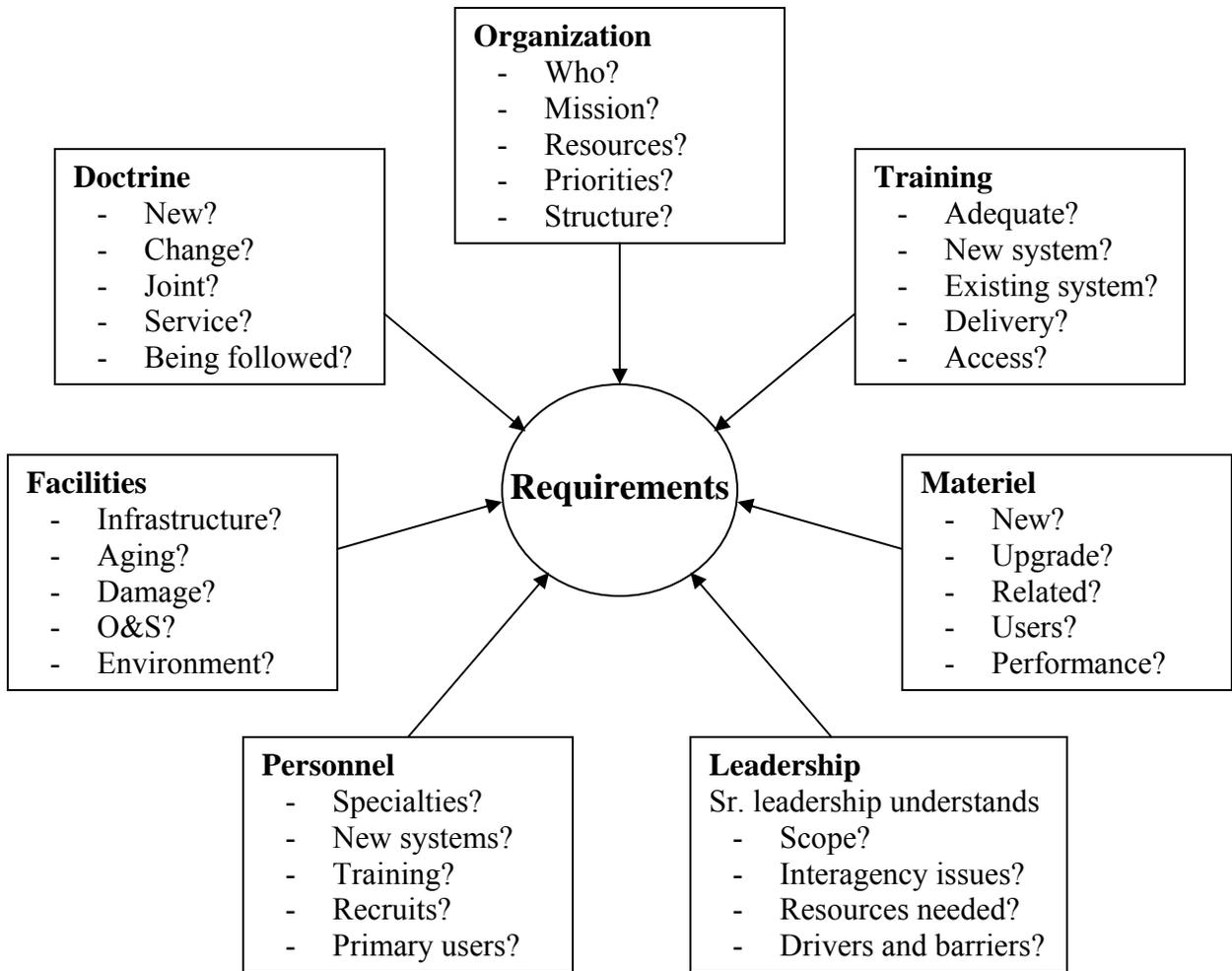


Figure 5: Answering DOTMLPF Questions Leads to Requirements

Doctrine includes publications, Tactics, Techniques and Procedures (TTP), operating procedures, regulations, checklists, and policies governing the way the military operates, such as MCRP 4-11-8A, Marine Corps Field Feeding Program. An ongoing issue is that there is no established doctrine for contractors, and doctrine for Marine provided FS is not rigorously followed. Food service doctrine will have to be revised regardless of the outcome of this study.

Organization refers to organizations needed to conduct an operation or business, organizational structure and characteristics, and opportunities and challenges facing them in the performance of operations. An example is the Food Service CSS Migration effort related to the FFSS fielding.

Training encompasses content and delivery of that content to its intended audience, enabling the performance and support of a mission. Training supports the DOTMLPF solution classes and must be adapted as the factors change. For example, Marine Corps Food Service personnel may require additional training in managing contractors.

Materiel includes hardware. Materiel solutions support the doctrinal and organizational solutions.

Leadership deals with management and implementation of change across the DOTMLPF spectrum.

Personnel refers to the manpower required to support a capability. This includes identification of the knowledge, skills, abilities, and competencies needed to perform a position, job, or task. It may involve creation of new occupational specialties to support new missions, threats, and technologies and revision of those specialties over a period of time. Over 500 Food Service Specialist billets were realigned within the Marine Corps when the FFSS was fielded, replacing outdated, manpower-intensive equipment.

Facilities include supplies, engineering support, and much of what is currently associated with logistics, including buildings, roads, runways, and infrastructure and the activities it takes to build and maintain them. Facilities requirements both in CONUS and in theater must be considered.

C. Data Analysis

The DOTMLPF construct dictates that the analysis is iterative, as changes to any of the pillars influence each of the others, and the ongoing influences need to be traced to a steady state model. The “as is” model is examined to determine if it is in a steady state, and its consequences are mapped out, which may indicate an unstable end-state. For example, lack of food-service duties while in CONUS leads to inadequate training opportunities, which leads to inability to perform food service duties while in OCONUS. Since it is not considered realistic to eliminate rotation between CONUS and OCONUS positions, this necessarily leads to an imbalance which must be corrected, either through further training, resorting to contracting, or accepting a lower quality of service. Analysis of alternatives may show that they also do not end in stable end-states, requiring additional analysis to arrive at more optimal solutions. **Figure 6** shows the process.

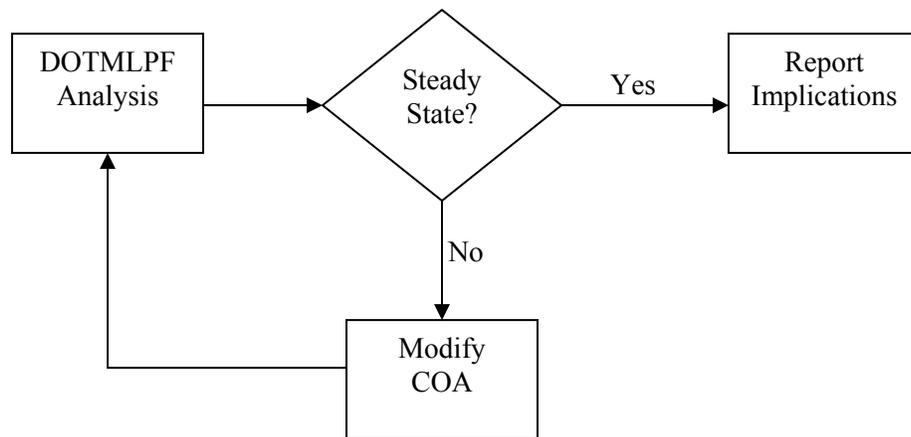


Figure 6: DOTMLPF Analysis is Iterative

D. Initial Courses of Action

The initial courses of action proposed for study turned out to be, upon further analysis, not the most fruitful paths to examine. The alternatives focused on the number of days the Marine Corps was willing to allow Marines to use MREs as the primary source of feeding as follows:

- 3-days – current practice, near the minimum feasible¹
- 7-10-days – intermediate solution
- 21-days – maximum without endangering health, according to Army Surgeon General²

These durations would then have been tested against notional operational scenarios:

- Short term Marine Corps operations (e.g. Haiti, Somalia)
- Extended joint operations (e.g. Iraq)
- Peacetime operations (e.g. Operation Cobra Gold, as exercised by III MEF)

However, during the course of the project it became clear that this study has no bearing on doctrine involving the health of consuming MREs for various durations. Furthermore, the contractor/Marine provide food service mixes weren't all realistic alternatives. This is a prime example of where the data collected forced a re-examination of potential courses of action.

New options were developed that were based upon our research, interviews, and surveys, such as:

- Maintaining the status quo;
- Returning to the *status quo ante* as a boundary condition, that is completely eliminating the RGFSC;
- Returning some portion of mess halls to Marine management;
- Assuming greater access to contracting in OCONUS, and thus reducing the level of organic equipment and the staffing that goes with it.

These options, as before, would be examined against various operational scenarios, and their impacts on the risk of extended feeding of MRE's assessed.

Furthermore, ancillary options related to equipment and rations, among others, were addressed, such as introducing an intermediary piece of equipment, such as the E-TRHS or CK/EFK.

E. Decision Framework

The final decision framework is not one product, one Excel spreadsheet or Access database, but a suite of tools, consisting of both electronic files and processes to analyze potential courses of action. The initial piece of the framework is the DOTMLPF gap analysis. It is supplemented by the PICCM model, and a spreadsheet capturing the survey data. All of these tools are then further refined such that the tool remains the same, but the process is revised to provide better information and analysis of the COAs. Finally, an Excel-based model provides a framework for determining the quantity of RGFSC positions that need to revert back to Marine Corps Food Service and the force structure needed to achieve experience and training goals.

A sanity check of the recommendations provided is performed by the study team and verified

¹ United States. United States Marine Corps. MCRP 4-11.8a Marine Corps Field Feeding Program. 24 June 2004.

² United States. Departments of the Army, Navy, and Air Force. Army Regulation 40-25, BUMEDINST 10110.6, AFI 44-141, Nutrition Standards and Education. Washington, DC. 15 June 2001

through review by I&L. If the results thus provided are not reasonable, it indicates that some portion of the decision framework may require re-examination, and either replacement or recalibration. Care needs to be taken that recalibration does not merely ensure the results that may have been expected in the first place, but reflects real adjustments needed to describe the situation accurately.

F. Recommended Courses of Action

The findings of the analysis provide a snapshot of the Marine Corps Field Food Service feeding system as it currently stands, and provide the inputs necessary for the selection of COAs to address gaps discovered in the gap analysis and priorities set by I&L and other food service personnel. Recommendations are based upon assumptions which may hold true today but which could be reversed through decisions made by senior officers at some point in the future. However, the provision of a roadmap showing the assumptions and models driving the recommendations will allow re-examination in light of new circumstances.

V. Project Activities

Data collection took up a large portion of the first four months of the 6-month project, encompassing site visits to Camp Lejeune, North Carolina, Camp Pendleton and 29 Palms, California, Okinawa, Japan, Fort Lee, Virginia, and the U.S. Army Soldier Systems Center in Natick, Massachusetts. At the Marine Corps Bases, surveys were distributed and collected, and interviews conducted. Food service equipment, facilities, and rations were seen at each Marine Corps location and at Natick, including new technologies under development. Documentation was gathered, primarily from I&L, but also during site visits, and from Natick.

Surveys were compiled and run through statistical analysis. Documentation was collected and analyzed. Interviews during site visits helped create a picture of the state of the current system for the provision of food service that could undergo a gap analysis informed by the DOTMLPF framework. Ideas were floated and tested, some of which percolated to contribute to alternatives for consideration as courses of action.

While the focus was on the primary question of what proportion, if any, of the contracted dining facilities in CONUS should revert to Marine management or give Marine cooks a greater share of food preparation, a host of other issues turned out to be relevant to this question. These include the possibility of introducing equipment intermediate between the existing Tray Ration Heater System (TRHS) and the FFSS to allow greater organic capabilities in more forward areas. This in turn offered up the possibility of changing the ration of choice from the UGR-B to the UGR-A, and the provision of meats and fresh supplements. Doctrine on training continually was raised as an option to providing a greater capability set for Marine Corps Food Service personnel.

A. Site Visits

The study team made site visits to the major Marine Corps installations throughout the world, and met with representatives of an Army team studying the Army's food service issues, along with the Army's Research and Development Command (RDECOM). Visits to Camp Lejeune, North Carolina, representing the east coast portion of the RGFSC, and Camp Pendleton, California, representing the west coast portion, provided two perspectives of the RGFSC and other food service issues. The visit to Camp Butler, in Okinawa, Japan, provided a stark contrast between OCONUS and CONUS operations, since Okinawa does not fall under the RGFSC. In particular,

that visit clearly demonstrated that the RGFSC has implications for OCONUS operations. Finally, the trip to RDECOM in Natick, Massachusetts, gave a glimpse into equipment and rations developments that the Marine Corps is investigating as alternatives to the current mix.

1. Site Visit – Camp Lejeune

The first site visit the study team made was to Camp Lejeune, North Carolina from 14-17 August 2006, meeting with senior food service officers/technicians, logisticians and operational commanders, in order to conduct interviews and administer the survey. This audience was selected to ensure a wide range of experiences and perspectives.

The study group had two sets of meetings at Camp Lejeune. The first meetings were with personnel from MCB Camp Lejeune:

- Col Forand, Chief of Staff, Marine Corps Installations-East (MCI-E)
- Mrs. Nancy Kalm, Director, Business, Logistics and Supply Division, Marine Corps Base (MCB), Camp LeJeune
- Capt T.O. Evans, Food Service Officer (FSO), MCI-E/MCB Camp Lejeune (former CO, Food Service Co, 2nd MLG)
- Mr. Charles Cone, RGFSC Regional Contracting Officer's Representative, MCI-E

Followed by two days of meetings with II MEF:

- LtCol J.J. Fahey, FSO, II MEF
- LtCol Petway, II MEF G-4 Ops Officer
- Maj Sullivan, 2d MAW Materiel Readiness Officer
- Capt J. Sportsman, S-4 Officer, 8th Marine Regiment
- Capt T.O. Evans, FSO, MCI-E/MCB Camp Lejeune
- Capt W. Tapscott, CO, Food Service Co, 2nd MLG
- CWO2 T. Banks-Brown, FSO, 2nd MLG
- CWO2 P. In, FSO, 2nd Marine Division
- CWO2 J. Fore, 2d MAW FSO
- CWO2 L. Wright, Food Svc Co, 2nd MLG
- MGySgt A. Lowery, Food Tech, 2nd MarDiv
- MGySgt V. Gaines, Food Tech, 2nd MAW
- MSgt K. Myer, Food Tech, MCAS New River
- MSgt L. Crooms, Food Tech, G-3, 2nd MLG
- SSgt M. Walker, II MEF Headquarters Group

Feedback clustered around several topics, including the RGFSC, training/training gap, equipment, organization, rations, and LOGCAP, the Army's vehicle for provision of logistics support in theater, including food service.

A. Regional Garrison Food Service Contract

- There is a mismatch between the regionalization implemented with the RGFSC in FY 2002 and the USMC regionalization model;
- Loss/reduction of funding for garrison programs (O&M/MC, PMC, MilCon) affects the RGFSC contractor's ability to perform required tasks, and can be used as justification for

- requests for equitable adjustment (REAs), ultimately costing the Government more than if the programs were funded;
- Funding and personnel structure for the RGFSC should fall in line with responsibilities. With LFS-4 as the Program Manager (PM), funding should remain at HQMC. However, if the regions are assigned as PMs, funding should be passed down.
 - Concern over a perceived loss of standards under the RGFSC. Mess halls have taken more of an “institutional feeding” format with the implementation of cook-chill;
 - Manpower impacts – will a structure increase be needed;
 - Should increase managerial responsibilities under the RGFSC;
 - Requirement for contractor backfills during major deployments, potentially detracting from an operational units’ mission while in garrison.

B. Training/Training Gap

- Units continue to transport food from garrison mess halls in support of lengthy local field training where use of TRHS/FFSS would be more appropriate. Doctrine and policy should dictate that transporting food from garrison mess halls in support of local training should be limited to no more than 3 days;
- Food Service Marines are not receiving the training they need, due to the lack of opportunity to work in and manage the garrison mess halls;
- Performing food service functions in garrison is directly applicable in a field environment (management, food preparation, forecasting, food safety, etc.);
- Supervision/surveillance of third-country nationals (TCNs) should become a core competency for Food Service;
- Under the M&MA format, many of the skill sets are not used.

C. Equipment

- Mixed reviews of the FFSS – it requires significant lift and logistical support, so commanders are reluctant to employ it, but it is a combat multiplier. So it is not trained on during exercises, but is deemed useful in theater;
- The E-TRHS will be a great gap-filler between the FFSS and the current TRHS;
- The Marine Corps should develop an appropriate mix of rations and equipment, adaptable to every scenario;
- More food service equipment needs to be moved to the War Reserve, leaving enough to train/deploy with.

D. Organization

- The roles and responsibilities of the FSO needs redefining in both the operating forces and the supporting establishment, due to RGFSC implications, and contract feeding in-theater;
- MOS 33XX was cut too deeply, causing a loss in management skills;
- Marines should feed Marines in combat, because contractors may not always be there;
- The process of when/how does the GCE/CE task the MLG for FFSS support needs to be formalized;
- Question on whether funding in place for the 100+ recommended military-civilian conversions (Intended to realign Food Service Marines to the operating forces to field an additional TRHS in each GCE battalion).

E. Rations

- During the early portions of OIF, over \$40M of operational rations were lost due to spoilage, theater-wide. The Marine Corps' portion was \$14M. This loss was due to rations being continually pushed to locations after LOGCAP dining facilities were established;
- The Marine Corps should leverage all available operational rations options - the UGR-A, UGR-B, UGR-H&S, UGR-E, FSR, etc.;
- With the Army serving as Executive Agent in most, if not all AORs, Marine Corps doctrine must complement theirs in order to be supported in-theater, specifically:
 - Adopt the UGR-A as the ration of choice for the FFSS and E-TRHS;
 - Include bottled water as Class I for policy and funding;
 - Include contracted Food Service support at some level;
 - Equipment and rations must be suitable for performing humanitarian relief operations.

F. LOGCAP

- Where feasible to employ, it works great, but is exorbitantly expensive. Where LOGCAP is unfeasible to employ, due to security/operational concerns, commanders and troops are unhappy with the perceived disparity between operational rations and LOGCAP dining facilities. The current LOGCAP cost estimates for Food Service are \$57 per person fed, per day (\$20 food/\$37 labor).³ Therefore, a conservative monthly estimate for currently deployed USMC forces is \$34.2M;
- Large-scale contracting on the battlefield is having a negative impact on the ability of Food Service Marines to perform their core functions;
- Contracting in-theater is a force multiplier, but it can't be relied upon. It can only be effective in a mature theater;
- During a recent deployment, LOGCAP dining facility (DFAC) support was excellent.
- One typical scenario related was initially one unit included approximately 200-250 personnel in locations forward of LOGCAP DFAC support. Once the theater matured, these Marines were delivered 2 hot meals per day from the closest DFAC (MRE for lunch);
- Many Food Service Marines were working either as Quality Assurance Engineers (QAEs) for the DFAC, or performing other related functions in the G-4;
- The Marine Corps has relied too much on contractors, and needs to continually train Food Service Marines at locations like 29 Palms.

G. Other

- Pre-Desert Storm, the U.S. Army conducted a huge reduction of their Food Service MOS (92G/76X), relying on MREs and tray rations for much of their capability. During Desert Storm, DLA was initially unable to provide sufficient quantities of tray rations to feed the forces, so Soldiers were forced to subsist on MREs for months on end. After the war, only portions of the structure reductions were replaced. Recommend that the Marine Corps not follow the Army's lead;

³ Interview with Lt.Col J.J. Fahey, FSO, II MEF, United States Marine Corps, 15 August 2006.

- The current rough-side out combat boots react poorly to water, grease and/or food substances. (Should be referred to the USMC uniform board; it is also a problem with fuelers and mechanics).

2. Site Visit – Fort Lee (U.S. Army AR-5-5 Study Team)

On 14 September 2006, the study team met with contractor representatives conducting the U.S. Army's Class I and Field Feeding Study. With the Army serving as Executive Agent in most, if not all AORs, USMC Food Service doctrine must complement theirs in order to be supported in-theater. The Army study team is tasked with preparing the JCIDS documents for the Army Field Feeding System (AFFS). The AFFS consists of three principal components; the Family of Operational Rations, the end items of field feeding equipment, and the food service personnel to plan and prepare the meals. In addition to the AFFS, the team is also studying Class I operations/distribution, and to a smaller extent, the garrison feeding program. To date, they've completed a draft for the Functional Area Analysis (FAA). Once approved, they will move on to the Functional Needs Analysis (FNA), leading to the Functional Solutions Analysis (FSA).

3. Site Visit – Camp Pendleton, Miramar Air Station, and 29 Palms, California

The study team visited Marine Corps facilities on the west coast from 19-22 September, including Camp Pendleton, 29 Palms, and Miramar Air Station, providing a rich array of new perspectives. Meetings included the following:

Food Service staff of Marine Corps Installations-West:

Maj J.D. McCoy, FSO, MCI-W/MCB Camp Pendleton
 Capt P.T. Grosso, FSO, MCRD San Diego
 GS-12 J. Cavadias, RGFSC-West Contracting Officer
 GS-12 D.L. Smith, RGFSC-West COR/Deputy FSO, MCB Camp Pendleton
 MGySgt J.A. Stewart, SNCOIC, West Coast Food Management Team
 MSgt E.B. Susu, RGFSC ACOR, MCRD San Diego
 GySgt G. Zillinger, Instructor, West Coast Food Management Team
 GySgt D. Sullivan, Instructor, West Coast Food Management Team
 GySgt D.A. Bouma, Food Service Operations Chief, MCB Camp Pendleton
 SSgt A.M. Jones, RGFSC QAE, Camp Pendleton
 Cpl M. Salazar, RGFSC QAE Clerk, Camp Pendleton

Senior I MEF Food Service Officers/Technicians:

CWO4 S.L. Gridley, FSO, 1st MarDiv
 CWO2 L. Juarez, CO, Food Svc Co, 1st MLG
 CWO2 J. Brown, FSO, G-4, 1st MLG
 MGySgt F. Gonzalez, Food Technician, 1st MarDiv
 MSgt C.T. Thomasson, Food Svc Operations Chief, I MEF
 MSgt R. Mazurek, Operations Chief, Food Svc Co, 1st MLG
 GySgt W. Weaver, Food Svc Operations Chief, G-4, 1st MLG

Senior 3d MAW Logisticians/Food Svc Technicians:

Col Broadmeadow, AC/S, G-4, 3d MAW
 Maj Fujimoto, S-4 Officer, MAG 37/38, 3d MAW

MGySgt Pennington, Food Technician, 3d MAW
MSgt Starks, Food Svc Operations Chief, 3d MAW

Food Service staff at MAGTF Training Command/7th Marine Regiment, Twentynine Palms

CWO2 C.E. Tidwell, Food Svc Operations Officer, MAGTFTC
MSgt M.L. Barnes, Food Technician, MAGTFTC
MSgt Rosado, Food Svc Chief, 7th Marine Regiment
GySgt A.S. Hewitt, Food Svc Rep, Exercise Support Division (ESB), MAGTFTC
GySgt D.C. Young, Food Svc Chief, CLB-7
GySgt J.L. Martin, RGFSC ACOR, MAGTFTC
GySgt W.H. Taylor, RGFSC QAE, MAGTFTC
SSgt P.N. Johnson, Food Svc Chief, 1st Bn, 7th Marine Regiment
SSgt J.A. West Jr., Subsistence Chief, MAGTFTC
Sgt A.M. Mosteller, Assistant Food Svc Rep, ESB, MAGTFTC
Sgt R.W. Krueger, Assistant Subsistence Chief, MAGTFTC

As with the meetings at Camp Lejeune, feedback centered around topics: including the RGFSC, training/training gap, equipment, organization, rations, and LOGCAP, though with some varying perspectives and reflecting more recent and ongoing deployments.

A. Regional Garrison Food Service Contract

- A comment was made that the geographic dispersion of units at Camp Pendleton would make it difficult to convert garrison mess halls to military management. Marine Corps Food Service cooks and managers may not be located ideally within the base for assignments to particular mess halls. However, to maintain managerial skill sets, some conversions are necessary;
- Operational tempo and deployments will continue to require contractor back-fills in garrison mess halls;
- The current extent of contracting has resulted in a loss of skill sets, particularly in the managerial expertise of SNCOs;
- Portions of Food Service support for the Mojave Viper exercises are contracted, outside the purview and oversight of the MAGTFTC Food Service Officer.

B. Training/Training Gap

- All acknowledged that a training gap exists. Formal school training alone is insufficient to maintain core competencies. Reliance on contractor support is a recipe for failure. Of note, during OIF-I, contracted food service support was not available until several months into the conflict;
- Should leverage local training opportunities to exercise organic food service capability. A recommendation was made to place limits on transporting meals from garrison mess halls, in order to use organic equipment and rations. Food Service leaders must continually inform commanders of their ability and responsibility to train his Food Service Marines;
- Use of contract feeding during training exercises should be strictly limited, if not eliminated;
- Preparing meals in garrison mess halls not only provides training for field use, it is also relevant training for shipboard operations, where Food Service Marines are still required;

- Standardized training packages should be developed for the Food Service companies and the MWSS. The mission of the Food Service companies should be reviewed and revised if necessary. SOPs should be developed to outline policies and procedures used to provide external Food Service support to the GCE and CE;
- Garrison mess hall contracting is the right thing to do, but SNCOs need management and quality assurance training. The contracts in certain garrison mess halls should be modified for a larger USMC managerial role, but not necessarily to the extent of a total transition to USMC management;
- Training on TRHS/FFSS maintenance needs to be incorporated into MOS schools for electricians and mechanics;
- Training on troubleshooting/maintenance of field feeding equipment needs to be continuous.

C. Equipment

- The Army's containerized kitchen (CK), modified for USMC use, would be an excellent replacement for the FFSS at the end of its life-cycle;
- The E-TRHS is an attractive option for the GCE, and a way to quickly move from the UGR-H&S to the UGR-B or UGR-A;
- The air conditioning unit in the FFSS, placed near the oven, is essentially useless in a desert environment. These units have broken down in every FFSS currently deployed in Iraq;
- The glass windows in the FFSS are often broken by Marines' rifle barrels (when bending over the serving line), and should be replaced with hardened Plexiglas;
- Current quantities of insulated food and beverage containers are insufficient;
- The power requirement for the FFSS is too large. If all of the MWSS' FFSS were in use, they would require nearly one-half of the MWSS' organic generator capability;
- Contracted Logistics Support (CLS) for the FFSS is insufficient. The 50-mile limit is inadequate, and the contractor is totally unfamiliar with USMC operations;
- Although it has shortcomings, the FFSS is a force multiplier in semi-static locations;
- If a tactical mobile refrigeration unit is reintroduced to the operating forces, it should be placed in the reserves;
- After the main pull south of Baghdad, the TRHS was used extensively. Troops grew weary of the UGR-H&S. This would have been a prime opportunity to use the E-TRHS (if fielded) to prepare the UGR-B or UGR-A;
- Expeditionary kitchens (E-TRHS/EFK) must have some form of sanitation capability.
- The perforated plate on the PMB sled needs improvement. Current models are susceptible to cracking, due to the intense heat.

D. Organization

- The recommendation was made to reconsider total migration of MEF Food Service capability to the CSSE, one of the courses of action originally recommended by the CSS Migration Working Group;
- The recommendation was made to create an MOS for Food Service equipment maintenance, due to its complexity. All Food Service Marines do not need this specialized training, but there needs to be resident expertise within the MSCs, particularly the MLG and MWSS.

E. Rations

- The UGR-H&S is inadequate in quality and variety to support Marines for extended periods. The UGR-A should be the ration of choice for combat feeding in sustained operations;
- Inadequate (outside) storage of rations, coupled with a shortage of veterinary support, were/are responsible for much of the loss of operational rations in-theater;
- Food Service units are constantly tasked with performing management of Class I. Therefore, doctrine should be changed to place management of Class I under the cognizance of Food Service, instead of Supply;
- Many of the spoiled rations became spoiled due to improper (outside) storage, not mishandling or non-use;
- Refrigeration will be a significant concern if the UGR-A is adopted by the Marine Corps.

F. LOGCAP

- LOGCAP only supports bases at fixed sites. An organic Food Service capability must be maintained;
- Box meals initially contracted for Camp Coyote, Kuwait were poor, but improved over time;
- The transition of the Food Service contract at Al-Taqaddum from the contingency contract with Eurest Support Services to LOGCAP was fairly smooth;
- Many Food Service Marines were/are employed in Quality Assurance (QA) functions at LOGCAP facilities.

G. Other

- A CMC White Letter should be issued to support the course of action taken as a result of this study.

4. Site Visit – Camp Butler / III MEF, Okinawa, Japan, October 23-27, 2006

From October 23-27, 2006, the study team visited Camp Butler and III MEF in Okinawa, Japan. The trip to Okinawa had not originally been planned, but additional funds were appropriated for the travel budget to ensure that valuable insight from this location would be gathered. Since the mess halls in Okinawa are entirely operated by Marines, and since the majority of training exercises that provide an opportunity for Food Service Marines to hone their skills in a field environment are run out of III MEF, this site visit provided a stark contrast to the CONUS locations where garrison mess halls are run by contractors and training opportunities are more limited. It also highlighted the difficulties Food Service Marines encounter when rotating from a CONUS location to Okinawa, not having had experience in running garrison mess halls in CONUS. The site visit to Okinawa proved invaluable for this reason.

The study team met with the Food Service staff of Marine Corps Base (MCB) Camp Butler, with III MEF, and various senior officers to gain the OCONUS perspective of the effects of the RGFSC and related food service issues. The meetings included:

Food Service staff of Marine Corps Base (MCB) Camp Butler:

Attendees:

Capt G. Spinelli, CO, Food Service Co, 3d MLG (former Food Service Operations Officer, MCB Camp Butler
WO D. Hunley, Food Service Operations Officer, MCB Camp Butler
MSgt D. Ray, Food Technician, MCB Camp Butler
GySgt S. Wheeler, SNCOIC, Cook-chill, MCB Camp Butler
GySgt J. Karger, Manager, Mess Hall 488, MCB Camp Butler
SSgt J. Borders, QAE, MCB Camp Butler
SSgt L. Villagas, QAE, MCB Camp Butler
Sgt K. Carrington, Food Service Office, MCB Camp Butler
Sgt D. Alonso, Food Service Office, MCB Camp Butler

Senior III MEF Food Service Officers/Technicians:

Maj J. Rogers, FSO, III MEF
Capt G. Spinelli, CO, Food Svc Co, 3d MLG
CWO3 K. Mohn, FSO, 3d Marine Division
CWO2 C. Reliford, FSO, 1st Marine Aircraft Wing
WO R. Johnson, Food Svc Co, 3d MLG
WO D. Nichols, Food Svc Co, 3d MLG
MGySgt Hurd, Food Technician, 1st Marine Aircraft Wing
MGySgt R. Fogarty, 3d Marine Division
MSgt D. Nelson, 3d Marine Division
MSgt Ewing, 3d MLG
GySgt R. Evans, III MEF
GySgt Rollins, III MEF

Senior Officers

The study team also met individually with the following officers for their more global perspective on food service issues:

Col. Vanetten, MCB G4 AC/S
Major Lyles, MCB G4
LtCol Ramsey, AC/S, G-4, 1st MAW:
Col Lamson, AC/S, G-4, 3d MLG
Col D. Lewis, AC/S, G-4, III MEF
LtCol Schachman, AC/S, G-4, 3d MarDiv

As with meetings at Camps Pendleton and Lejeune, many of the same thematic clusters were seen, but with some new views not seen during the other site visits.

A. Regional Garrison Food Service Contract/Other Contract Feeding

- Food Service Marines, to include SNCOs, often arrive on Okinawa ill-prepared to manage and operate garrison mess halls. This is clearly an outcome of over-reliance on contractor-provided support in both CONUS and OIF, limiting food service training opportunities;
- Concern that if contract feeding becomes the standard, food service operations in this AOR will continue to degrade. (An outcome of the COA of “maintain status-quo”.) Marines continue to arrive untrained and unprepared;

- Great confidence expressed by senior leaders in the capability of Food Service Marines to provide high quality food to Marines both in garrison and in the field, including training exercises and combat operations. Col. Vanetten noted that during his entire career he had never had a bad meal in a mess hall operated by Marines;
- There is a steep learning curve when Marines are expected to perform functions in mess halls that they have not encountered or have only seen in the Food Service school at Fort Lee.

B. Training/Training Gap

- 1st MAW recently contracted a portion of food service support for operation Cobra Gold, supporting approximately 600 personnel. Outside of that, all food service support in this AOR is organically provided;
- Of III MEF's annual subsistence budget of \$9 million, only about \$90,000 was used on contract feeding;
- Supervision/oversight of Third Country Nationals (TCNs) performing contract feeding functions should become a core competency of Food Service;
- Routinely training and exercising of food service capability in exercises such as Ulchi Focus Lens (UFL) in Korea, Talon Vision in the Philippines, and the annual Hill Award competition;
- According to Col. Lewis, the III MEF Commanding General, LtGen J.F. Weber, is concerned that the Marine Corps is relying too much on contractor-provided support and is not adequately exercising its food service capability;.

C. Equipment

- The CLS plan for the FFSS is inadequate for III MEF operations. The electrician and utilities occupation fields should be trained to assume FFSS and TRHS maintenance responsibilities;
- Adequate training for the Airtronic burner continues to be a problem. Continued reliance on unofficial experts within the 3381 community. Many 3381's do not possess the mechanical aptitude to be a duty expert on equipment maintenance. An idea was floated to revisit an earlier recommendation to institute a Food Service Equipment Repair MOS;
- 1st MAW has difficulty moving equipment around the Pacific Rim, due to limited strategic lift assets that compete with OIF. With its size and weight, embarking the FFSS will be a problem;
- LtCol Ramsey stated that given the choice between the FFSS and the TRHS, he prefers the TRHS, due to its mobility. He believes the FFSS is too large and not expeditionary in nature. The proposed intermediate systems (E-TRHS/EFK) will be of more use, due to their deployable, light configurations. Getting them to the fight will be much easier than the FFSS. In his words, "If equipment is not expeditionary, we don't need it";
- With III MEF's unique focus, organic food service support needs to be scaleable and adaptable;
- Col. Lamson supported the FFSS as a great piece of equipment which should be employed to the greatest possible extent. However, he expressed concern about its large water and electrical requirement, and the issues surrounding the poorly constructed CLS agreement;
- The Marine Corps needs to study FFSS lessons-learned from operations in OIF;

- Col. Lewis stated that the TRHS has been a force multiplier. The Marine Corps should pursue the Army's Containerized Kitchen (CK) as an intermediate feeding solution. As a joint-service item of equipment, repair and replacement parts will be readily available;
- LtCol. Shachman plans to request FFSS support, in the first test of the Food Service CSS Migration in III MEF.

D. Organization

- Marines with OEF/OIF experience are concerned that Food Service Marines are frequently used for other missions, at the expense of retaining food service core competencies;
- The 3381 structure may have been cut too deeply;
- Support for the CSS migration as it was implemented, but little support for a total migration. A periodic assessment of the Food Service CSS Migration should be conducted, with changes implemented as needed;
- For the GCE should be self-sufficient, and needs feeding capability beyond the TRHS.

E. Rations

- To effectively adopt the UGR-A, refrigeration must be addressed. A possible solution is to have the cost of refrigerated containers factored into the cost of the ration;
- The current ordering lead time of 90 days is excessive, due to the dynamic nature of operations in this AOR. DLA should be encouraged to reduce the lead time to 30 days;
- The Marine Corps should adopt the First Strike Ration (FSR) into the available family of rations.

F. LOGCAP

- In non-western regions, food sanitation and food safety standards are often not adequate. Having Marines subsist in contracted facilities in this AOR could potentially result in widespread food-borne illness;
- There is definitely a difference between food service support provided by the LOGCAP facilities and what is possible to provide organically due to the ability with supplemental funding to provide a greater level of support through LOGCAP. The quality of food service in Iraq and Kuwait rivals any CONUS garrison facility, but at an extremely high cost. This may not be sustainable long-term if funding is moved from supplementals to the regular budget.

G. Other

- Doctrine should not be re-written solely around current operations in OIF. III MEF operates under a different scenario, in the entire range of environmental and operational conditions.

5. U.S. Army Soldier Systems Center, Natick, MA

On 8 November 2006, the study team visited the Combat Feeding Directorate at the U.S. Army Natick Soldier Center in Natick, Massachusetts. The purpose of the visit was to view developments in combat feeding kitchens and rations. The activities at Natick range from basic research to testing prototypes nearly ready for fielding, along with modifications to existing

systems. While an Army facility, the Combat Feeding Directorate conducts studies for any of the services requesting them provided sufficient funding is available. Of particular interest for this study were discussions of the Enhanced Tray Ration Heater System (E-TRHS), the Containerized Kitchen (CK), the Containerized Kitchen – Thermal Fluid (CKTF), and rations, including the UGR-A, UGR-B, UGR-H&S, and the First Strike Ration (FSR).

A. Equipment

Enhanced Tray Ration Heater System (E-TRHS)

The Enhanced Tray Ration Heater System is in the late stages of development, with expected availability by FY08.⁴ The primary difference between it and the existing Tray Ration Heater System (TRHS) is that the Quadcon container has had a refrigeration condenser added to it to provide the capability of preparing foods that require refrigeration. The new container is being called a “QuadCold.”



Figure 7: QuadCold Container for E-TRHS

This would enable a transition to UGR-A rations which include frozen meats and fresh produce, and thus provide a higher quality meal than currently possible with the TRHS. The condenser and extra insulation take up about one third of the space, but sufficient space is maintained for transporting an upgraded TRHS, including a pair of M-59 ranges retrofitted with airtronic burners to maintain the same burner for all elements of the system. Site visits to all major Marine Corps facilities have highlighted a desire by many to adopt the UGR-A as the ration of choice. The E-TRHS would allow this capability in forward areas that currently could only provide UGR-B and UGR-H&S rations.

⁴ US Army Natick Soldier Research, Development & Engineering Center, <http://nsc.natick.army.mil/media/fact/food/E-TRHS.pdf>



Figure 8: Tray Ration Heater System

Containerized Kitchen/Expeditionary Field Kitchen

One of the issues the study team has encountered at all Marine Corps locations is the reluctance on the part of commanders to commit the lift capability required to move the Field Food Service System (FFSS) for major training exercises. In addition to the weight of the system itself, generation capability of 198 KwH is required.⁵ A more mobile system would allow the preparation of UGR-A rations at more forward positions than is currently possible.



Figure 9: Field Food Service System – Interior View



Figure 10: Field Food Service System – Exterior View

⁵ United States Marine Corp. Food Service Reference, MCRP 4-11.8A. September 1999

The Army's Containerized Kitchen (CK) provides the prospect of just such a system, capable of being moved by a 5-ton or 7-ton truck, such as the Medium Tactical Vehicle Replacement (MTVR). The Marine Corps has asked the Combat Feeding Directorate to test a modified Containerized Kitchen, which would be called the Expeditionary Field Kitchen (EFK). The EFK would be modified to allow the use of airtronic burners to reduce the logistics footprint by maintaining a single burner throughout Marine Corps cooking equipment, including the EFK and TRHS/E-TRHS.



Figure 11: Containerized Kitchen / Expeditionary Field Kitchen

The CK has a successful track record with the Army, though not without some drawbacks. The main problem is that it gets significantly hotter than the FFSS, with air conditioning units which cannot keep up with the heating capacity of the burners. Efforts are underway to address this problem. On the other hand, the power requirements of the CK/EFK are significantly less, at 10 Kwh.



Figure 12: RTCH and MTVR, Movers for the FFSS and CK

Containerized Kitchen-Thermal Fluid

A modification of the Containerized Kitchen would significantly cut down on wasted heat and lower the temperature is the Containerized Kitchen-Thermal Fluid (CKTF). This system cuts the number of burners in the system from six to one. Fluid is heated by the burner and forced throughout all of the heating elements in a single cycle, providing more uniform heat and using

less energy. The study team saw a prototype using water. The future version will use an oil that will allow use of the CKTF at temperatures well below freezing. The burner used is not an airtronic burner. Natick personnel questioned the Marine Corps' commitment to the single burner concept, noting it might not always be possible with future developments in the CK. While it is not a question that needs answering in the near-term, the single burner concept will come up again as technological changes progress. The EFK modification of the CK replaces the Beckett burners with Airtronic Burners.

B. Rations

A variety of improvements to menus and packaging were demonstrated that don't directly impact the study. The First Strike Ration (FSR) is being developed as a potential replacement of MREs. While MREs are issued for each meal, one FSR would be used for a full day's worth of meals. The daily calories are reduced by a third from a set of three MREs. Weight and cost is reduced by almost half.⁶ Great attention has been paid to optimizing nutrition. In field testing in Afghanistan, warfighters preferred the FSR over field stripped MREs and strongly indicated that the FSR was more convenient. Of note, during the study teams visits to Marine Corps locations, support for the idea of something like the FSR was independently asserted on several occasions without prompting from the study team.



Figure 13: MRE and First Strike Ration (FSR)

Of more direct relevance to this study, staff at the Combat Feeding Study provided cost data for the entire range of available rations. This data will be part of the analysis of the potential COA of adopting the UGR-A as a replacement or supplement to the UGR-B, simultaneous with the introduction of field feeding equipment, such as the E-TRHS and the EFK, that will allow for the preparation of the UGR-A.

B. Surveys

To assess the current Food Service model, a survey instrument was developed to collect data from stakeholders in each element of the MAGTF under garrison, exercise, deployment, and combat operating conditions, covering such issues as the number of Marines fed by Marine Corps food service personnel and contractors, use of Marine Corps food service personnel for non-MOS 33XX tasks, use and rotation of equipment and rations, spoilage of unused rations, and costs of both Marine Corps-provided and contractor-provided food service. This survey instrument was submitted to and approved by the Government on 14 August 2006. Minor modifications were made to the survey as a result of feedback during the site visit to Camp Lejeune in August and

⁶ United States. United States Army Soldier R&D Center. First Strike Rations. <http://nsc.natick.army.mil/media/fact/food/FSR.PDF>. January 3, 2007

follow-on meetings. Survey results are discussed in more detail in Section VI, and the survey and survey data are included in Appendix I.

C. Document Review

The following documents were provided by the Government, for their relevance to this study. Some of the documents were provided by the Program Office, others by the II MEF and MCI-E Food Service Officers:

- Briefing of Family of Combat Field Feeding Equipment, 18 Mar 2006
- Intermediate-level Supply Chain Management Study, 22 May 2006
- MPF Food Service Equipment and Rations
- UNS for a Mobile Field Feeding System, 31 May 2006
- Statement of Need (SON) for the Enhanced Tray Ration Heater System (E-TRHS), 21 June 2006
- Maj Weeks' E-mail of 21 Jul 2006 from Natick Soldier Systems Center regarding the Army Class I Study briefing
- MCRP 4-11.8a, Marine Corps Field Feeding Program
- MCO P10110.14L, SOP for Food Service
- Solution Planning Directive, MAGTF Logistics Functional Concept
- 1994 Mission Area Analysis for Food Service
- 1997 MCCDC Food Service Quick Response Study, with supporting documentation
- Cost of the Regional Garrison Food Service Contract (RGFSC)
- Costs of any contingency contracts funded by the Marine Corps
- Fiscal Year 2007 Food Service Tables of Organization and Equipment (T/O&E)
- MCI-E Information Paper dtd 19 Jul 06; Subj: Realignment of Food Service Specialist, MOS 3381
- Discussion topics from II MEF FSO, relating to Food Service Support for OIF 04-06
- LtCol Fahey's e-mail of 27 June 06 regarding DLA support
- Philadelphia Enquirer article dtd 20 Jan 03; "Kuwait: Iraqi Spy Was To Use Poison"
- Food Service Lessons Learned from OIF 04-06 (II MEF, 2nd MarDiv, 2nd MLG)
- MSgt Jackson's e-mail of 14 July 2004 regarding MAGTF-8 Haiti After-action
- Draft EFCAT assessments of Food Service and Contingency Contract Operations for CJTF-Haiti
- EFCAT Initial Observations Report on LogCap and MAGTF Contingency Contract Operations, OIF II-1 (FOUO)

Much of the picture of the state of the Marine Corps Food Service before the implementation of the RGFSC and the introduction of the FFSS was provided by 1997 MCCDC Quick Response Study. The e-mail communications between 1997 and 2002/2003 most frequently cite that study and its recommendations as the motivations behind those two changes, along with the CSS migration. The 1997 study makes many of the same recommendations as the 1994 Mission Area Analysis for the Marine Corps Food Service. The 2007 Tables of Organization was invaluable for determining current staffing and as inputs into the PICCM manpower model discussed elsewhere.

MCRP 4-11.8a, "Marine Corps Field Feeding Program," provided the basis for understanding the family of equipment and rations used in the Marine Corps. While the document is considerably broader than that, its relevance to this study hinges on those two items.

In addition, the U.S. Army Research and Development Command (RDECOM), Combat Feeding Directorate (CFD) at the Natick Soldier Center in Natick, Massachusetts, provide these additional documents:

- “Department of Defense Combat Feeding: Food Service Equipment and Field Feeding Systems,” 1st Edition, January 2004.
- “Capability Gaps Relevant to the Combat Feeding Mission Area,” June 2006, DoD Combat Feeding Directorate, Natick, MA.
- “PEO CS&CSS and DoD Combat Feeding Partnership Management Agreement.”
- DoD Directive 3235.2E, 21 May 2004, “DoD Combat Feeding Research and Engineering Program, DoD Combat Feeding Research and Engineering Board, and DoD Nutrition Committee.”
- “Operational Rations of the Department of Defense,” 7th Edition, September 2006, Combat Feeding Directorate, Natick, MA.
- DoD Combat Feeding Research and Engineering Program 2006, Technical Presentation, 1-2 November 2006, Natick, MA.
- “Updated Army Cook Staffing Model to Reflect Workloads Generated by Current Field Feeding Operations, Group Rations, and Kitchens,” Harry J. Kirejczyk, March 2006, RDECOM, Natick, MA.
- “Army Field Kitchen Workloads and Fuel Consumption,” Harry Kirejczyk and Roger Schleper, December 2004, RDECOM, Natick, MA

The documents provided by RDECOM gave an extremely detailed picture of the feeding equipment needs across the Marine Corps and other services, and progress towards development of new items of equipment and enhancements to existing items to meet those needs. Since feeding equipment and rations are inextricably related, these documents also give a comprehensive view of the current family of rations and the development of new rations, such as the First Strike Ration. Since equipment was specifically requested for inclusion in this study as a supplement to the analysis of the effects of the RGFSC, this material proved valuable in understanding and evaluating equipment alternatives.

These documents gave Team MCR an excellent overview of the post-Desert Storm evolution of Marine Corps Food Service, and provided the basic framework for the “as-is” processes.

VI. Survey Data

There were a grand total of 89 surveys returned. Many surveys had large numbers of unanswered questions, resulting in the largely disparate numbers of responses by question. This is partially due to the fact that not every question was applicable to every respondent. In addition, interviews during the site visits indicated that while some of the questions may have been applicable, the answers may not have been clear to all, or too nuanced to fit into a multiple choice response. The “comments” section was meant to take this into account, but is much less amenable to statistical analysis. Comments were given for a large number of questions, however, and are given as anecdotal support and/or counterpoint to the statistical analysis where appropriate.

It should be emphasized that the quantity and completeness of the surveys returned was not sufficient to provide concrete evidence in favor of or against any of the proposed courses of action. However, the study team is convinced that in conjunction with the interviews conducted during site visits and the other analysis performed, that the survey results contribute to the

understanding of the issues facing the Marine Corps Food Service, and are consistent with the conclusions drawn in Section IX of this study. The results are summarized below.

Responses are broken out by categorizing the respondent as MOS 3381 or non 3381 as seen in the charts below.

The significance of the survey responses can be evaluated in terms of how representative the responses are compared with the total population being sampled. First consider the survey questions for which quantitative responses were requested. In a very few instances the responses could only be interpreted as a misunderstanding of the responder. Only two questions were so affected, a total of three responses. These responses were treated as outliers and discarded. (They implied a total number of units larger than that known to exist, for instance.)

Consider first the estimate of the variance in of the quantitative responses. Statistical sampling theory states that the expectation value of the sample variance, written $E(S^2)$, is given by:

$$E(S^2) = \frac{N}{N-1} \frac{n-1}{n} \sigma^2$$

Here N is the population size, n is the sample size, and σ^2 is the variance. N is very large (essentially the full population of Food Service Marines). Also when the respondents are not broken down into the classes of 3381s versus non-3381s, n is on the order of 40-50. Therefore it is a good approximation that:

$$E(S^2) \cong \sigma^2$$

Even when the classes are broken down, correction to the variance is no more than 10% since the number of non-3381s is never less than 12. So given the i -th response, X_i , and the sample mean, $\langle X \rangle$, our estimate of the variance can be taken as a close approximation of the true variance:

$$S^2 = \frac{1}{n} \sum_i (X_i - \langle X \rangle)^2 \cong \sigma^2$$

The only other question to be dealt with is how good the sample mean is in estimating the population mean. The variance can be considered to be known by the above reasoning. However since the variance is not estimated to better than 90% based on the smallest sample sizes involved, the criterion for estimation is set to an 80% confidence level.

Thus we have 80% confidence that the true population mean, μ_x , lies in an interval around the estimated mean $\langle X \rangle$ given by:

$$\left[\langle X \rangle - \left(\frac{S}{\sqrt{n}} \right) t(\alpha/2, n-1) \right] < \mu_x \leq \left[\langle X \rangle + \left(\frac{S}{\sqrt{n}} \right) t(\alpha/2, n-1) \right]$$

Here t is the t-distribution, $\alpha=0.8$ the confidence level, n is the sample size and $n-1$ the number of degrees of freedom of the distribution and a two-tailed evaluation of the distribution is performed.

In the following tables for questions 1-6 we notice a pattern in which the 80% confidence interval for estimating the mean is small compared with the size of the standard deviation. This is not really a paradox since the histograms reveal that there is generally a strong central trend for the distributions. The large standard deviations are an artifact caused by the few responses that deviate strongly from the central trends.

Question 1 asked “During your recent/current deployment or exercise, what number and percentage of Marines were/are supported by Marine Corps-provided food service operations, using organic equipment?” Frequency histograms of the number of Marines and the percentage of Marines supported summarize the responses.

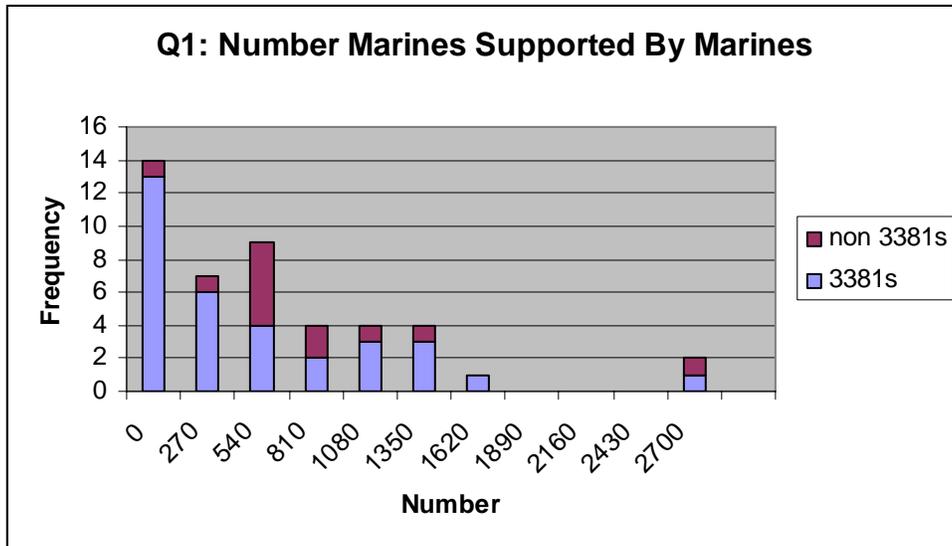


Figure 14: Question 1 - Marines Supported by Marines, Number

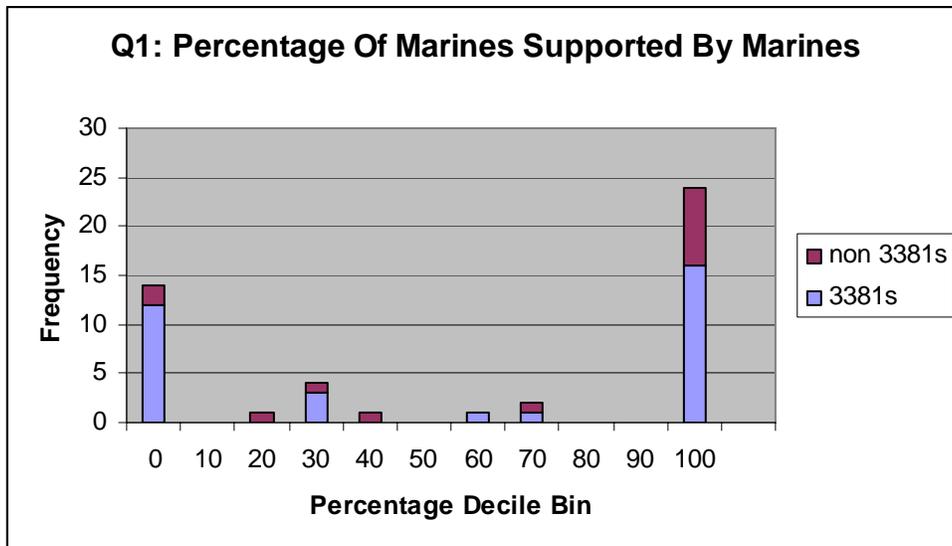


Figure 15: Question 1 - Marines Supported by Marines, Percent

Using the methodology outlined above, the parameters of the distributions can be estimated:

Question 1	Mean	Plus or minus mean (80%)	Standard Deviation
Number of Marines supported by Marines	484	66	644
Percentage of Marines Supported by Marines	58	5	45

Table 1: Question 1 – Distribution of Marines Supported by Marines

Question 2 asked “During your recent/current deployment or exercise, what number and percentage of Marines were/are supported by contractor-provided food service operations?” The responses are again summarized by histograms:

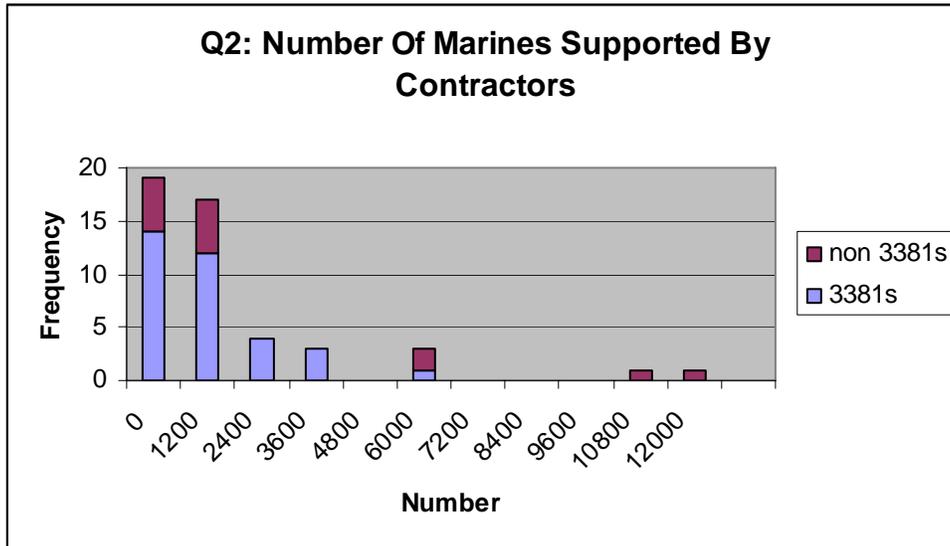


Figure 16: Question 2 – Marines Supported by Contractors, Number

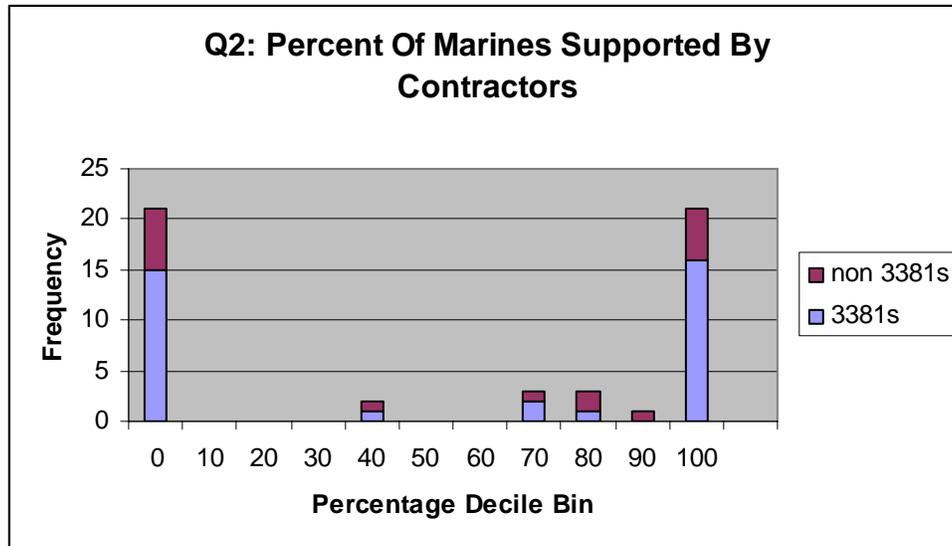


Figure 17: Question 2 – Marines Supported by Contractors, Percent

Using the methodology outlined above, the parameters of the distributions can be estimated:

Question 2	Mean	Plus or minus mean (80%)	Standard Deviation
Number of Marines supported by Contractors	1245	246	246
Percentage of Marines Supported by Contractors	52	5	46

Table 2: Question 2 – Distribution of Marines Supported by Contractors

Questions 1 and 2 together simply reflect the fact that, for the sample respondents, it is in larger deployments that contractor provided food service is prevalent. The distributions in the histograms for “Q1 percents” and “Q2 percents” are similar, seemingly implying that no strong conclusion can be drawn. However by examining and comparing the scales in the charts “Q1 number” and “Q2 number” it is clear that the populations are quite different. The scale for “Q1 number” (which refers to Marines supported by Marines Food Service Operations) ranges from 0 to 2700. The scale for “Q2 number” (which refers to Marines supported by contractor food service operations) ranges from 0 to 12,000. This comparison indicates that for the sample of responders, deployments involving large numbers Marines are served by contracted food service.

What is interesting is that the percentage of Marines supported in these larger deployments is by contractors is frequently 0% at an incidence of roughly 40% of the time. Only at about another 40% of the time is contractor food service support provided to 100% of the force. Intermediate levels of support constitute the remaining 20%. This indicates that even in an environment with a high degree of contracting, a significant portion of Marine Corps units are required to fully utilize their organic food service capacity.

Food Service Provider Distribution	Percentage
100% Contracted	41%
Contractor/Organic Mix	18%
100% Organic	41%

Table 3: Distribution of Contractor vs. Organic Provided Food Service

Question 3 asked “During your recent/current deployment or exercise, what number and percentage of Food Service Marines were/are performing in a food service capacity, either providing contractor quality assurance, or preparing meals using organic equipment?”

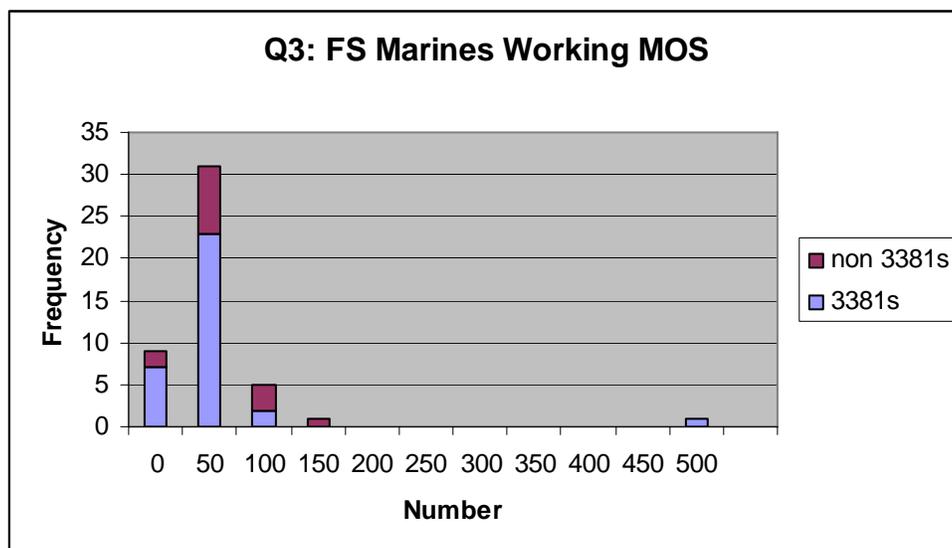


Figure 18: Question 3 – FS Marines Working in MOS, Number

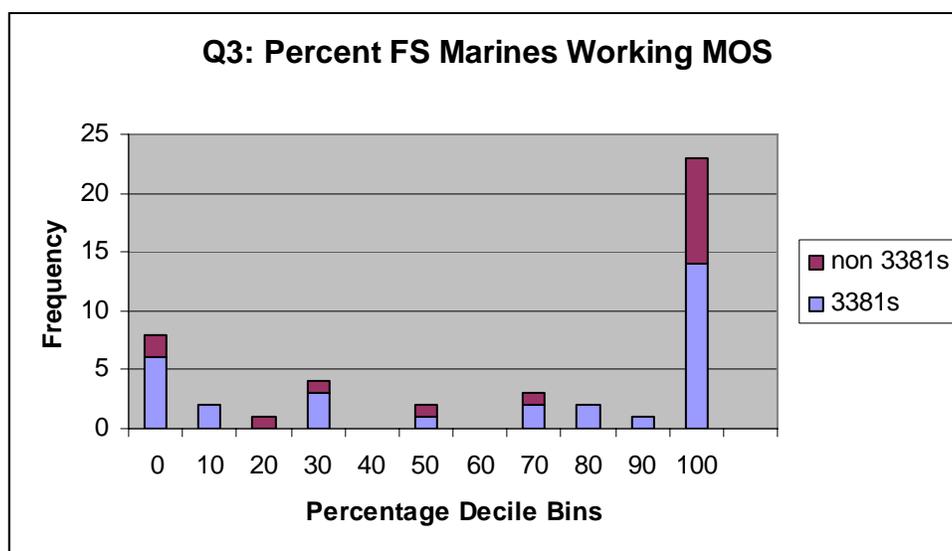


Figure 19: Question 3 – FS Marines Working in MOS, Percent

Using the methodology outlined above, the parameters of the distributions can be estimated:

Question 3	Mean	Plus or minus mean (80%)	Standard Deviation
Number of Marines working MOS	28	7	73
Percentage of Marines working MOS	64	4	42

Table 4: Question 3 – Distribution of FS Marines Working in MOS

The main conclusion that can be drawn is that the existing supply of Food Service Marines tends to be fully utilized with 100% utilization in the experience of about 50% of the respondents. This suggests that there is substantial demand for Food Service Marines. Food Service Marines are not utilized in the experience of only 15% of the respondents.

Questions 4 and 5 each had two parts. Question 4 asked “During your recent/current deployment or exercise, what quantity and percentage of deployed field food service equipment was/is not employed?”

For the FFSS equipment the results were:

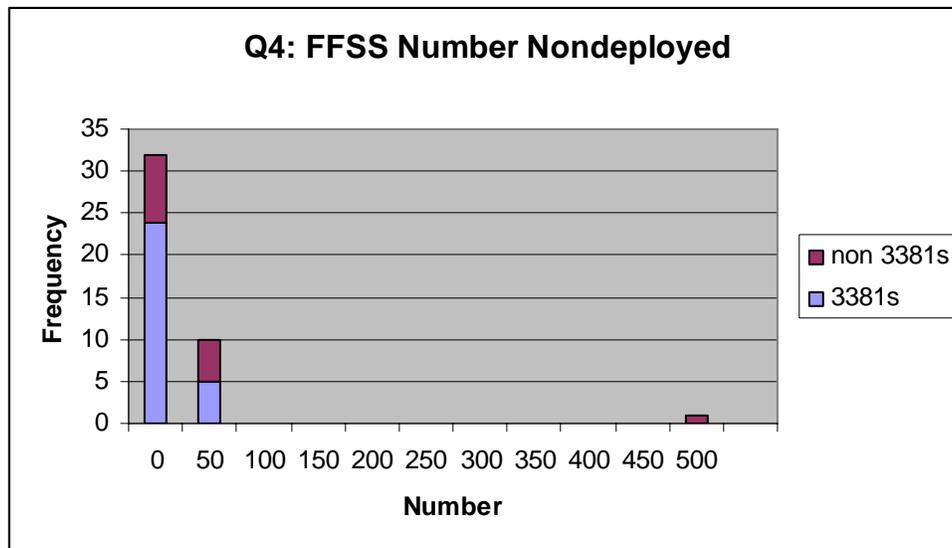


Figure 20: Question 4 - FFSS Deployment, Number

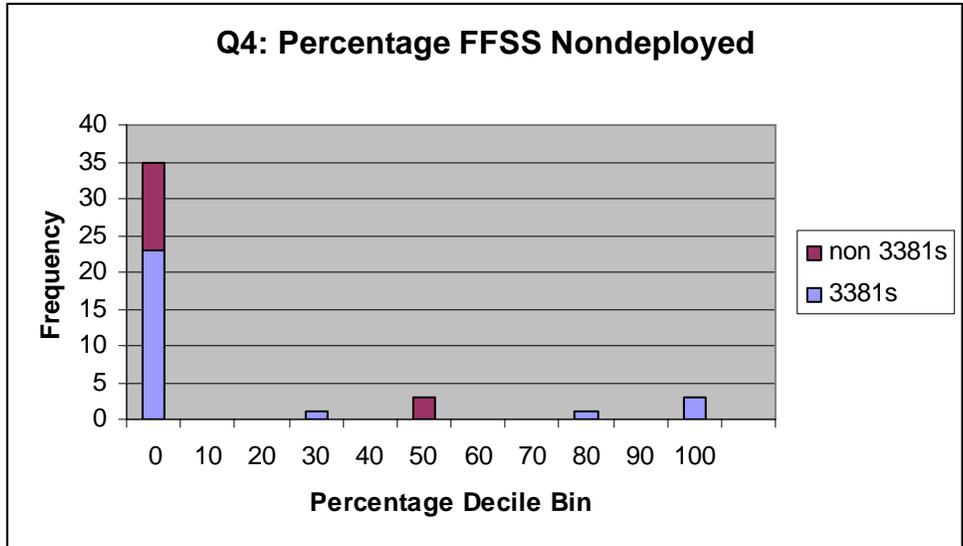


Figure 21: Question 4 - FFSS Deployment, Percent

Question 4 - FFSS	Mean	Plus or minus mean (80%)	Standard Deviation
FFSS Number Nondeployed	0.8	0.2	2.3
FFSS Percentage Nondeployed	12	3	29

Table 5: Question 4 – Distribution of FFSS Deployment

For the TRHS equipment the results were:

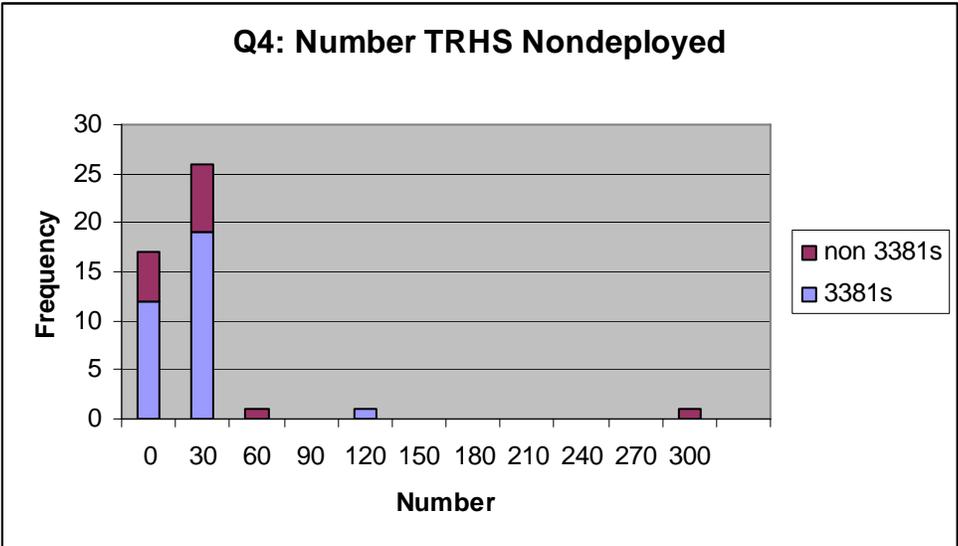


Figure 22: Question 4 – TRHS Deployed, Number

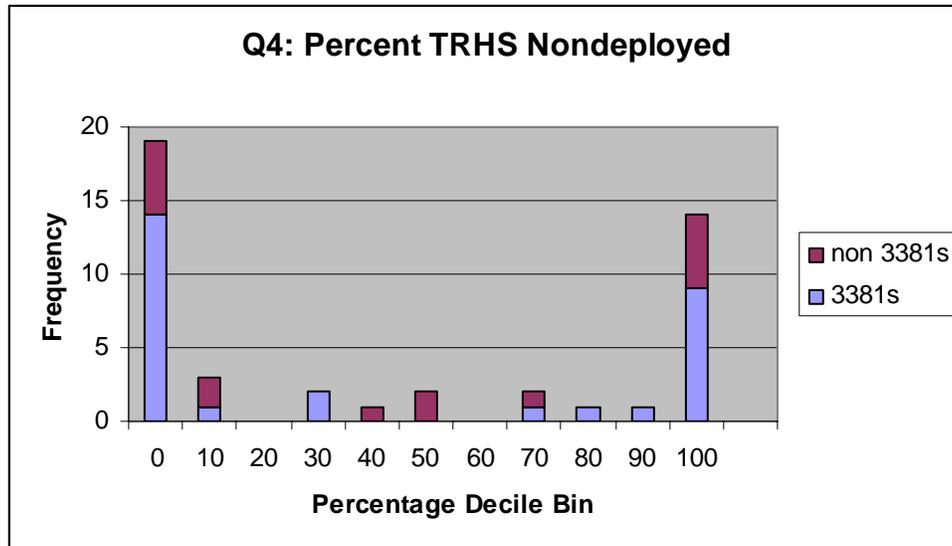


Figure 23: Question 4 – TRHS Deployed, Percent

This indicates that FFSS equipment is rarely unused. Only about 20% of the time is it left unemployed. TRHS equipment is left unused nearly 60% of the time. This makes sense that given the logistical footprint of the FFSS, it would be make little sense to bring it and not use it. However the TRHS is much easier to deploy and the units it is with may have access to either an FFSS or contracted food service support.

Question 4 - TRHS	Mean	Plus or minus mean (80%)	Standard Deviation
TRHS Number Nondeployed	4	0.7	7
TRHS Percentage Nondeployed	40	5	45

Table 6: Question 4 – Distribution of TRHS Deployment

Question 5 also had two parts. It asked “During your recent/current deployment or exercise, what quantity and percentage of field food service equipment remained behind, where units relied on contractor support?”

For FFSS equipment the results were:

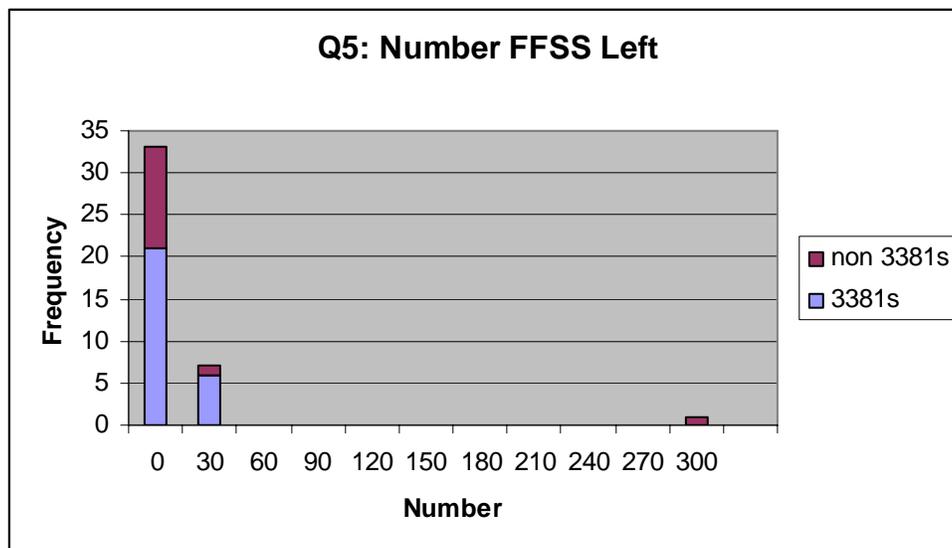


Figure 24: Question 5 – FFSS Left Behind, Number

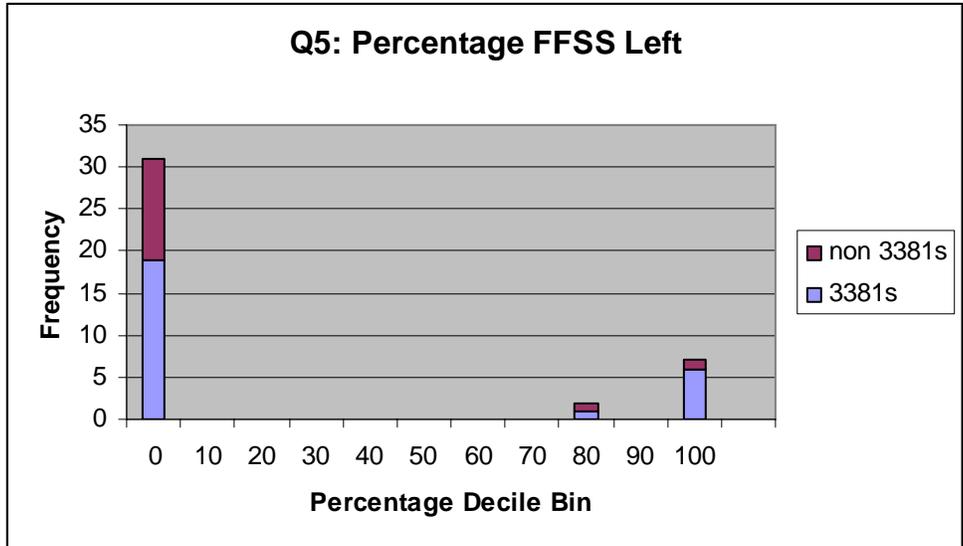


Figure 25: Question 5 – FFSS Left Behind, Percent

Question 5 - FFSS	Mean	Plus or minus mean (80%)	Standard Deviation
FFSS Number Left	0.85	0.3	3
FFSS Percentage Left	20	4	4

Table 7: Question 5 – FFSS Left Behind, Distribution

For TRHS equipment the results were:

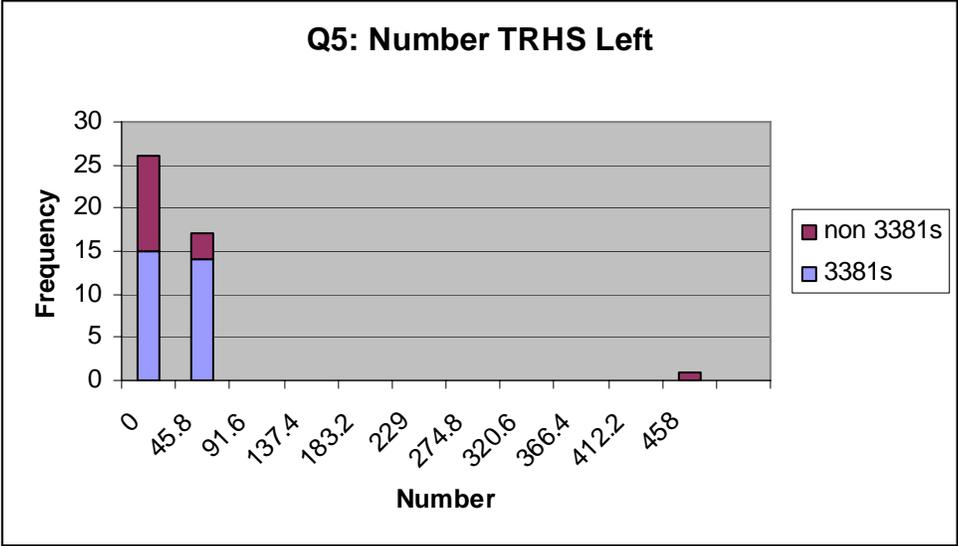


Figure 26: Question 5 – TRHS Left Behind, Number

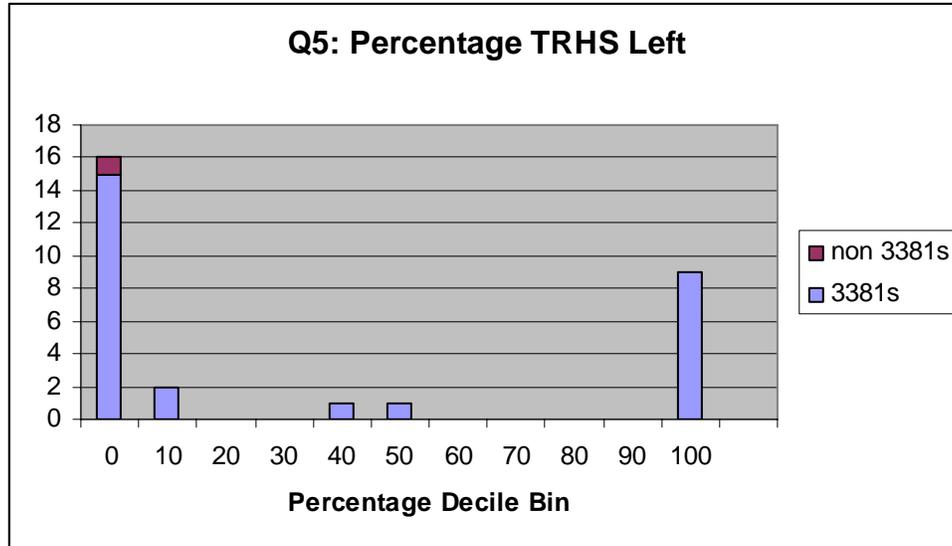


Figure 27: Question 5 – TRHS Left Behind, Percent

Question 5 - TRHS	Mean	Plus or minus mean (80%)	Standard Deviation
TRHS Number Left	2.3	0.4	4
TRHS Percentage Left	28	5	43

Table 8: Question 5 – TRHS Left Behind, Distribution

As to be expected TRHS equipment was regarded as more expendable. The FFSS was left behind only about 20% of the time while TRHS equipment was left behind approximately 40% of the time. This result was not anticipated, as the difficulty moving the FFSS might have made it a candidate for leaving to incoming units.

Question 6 asked “During your recent/current deployment or exercise, did you experience situations where operational rations spoiled due to non-use? If so, please comment below on the quantities and circumstances.” This question was posed as an open ended one. There were no multiple choices presented. Rather the question prompted anecdotal reporting. Hence a histogram is not meaningful.

Of the 33 respondents that specifically answered this question, 11 reported experiencing spoilage due to non-use, heat, incompetence, and/or combat. The remainder of the specific respondents, consisting of 22 respondents, did not report spoilage for any cause. For the sample of specifically reporting respondents, the maximum incidence of spoilage is 33%. However those who experienced no spoilage could also simply make no response to this question. On that basis the reporting of spoilage becomes a more modest 12% incidence.

Questions 7 through 13 were multiple choice items. Question 7 asked for the impact of contract feeding on the knowledge of Food Service Marines and their capabilities. The histogram summarizes the responses:

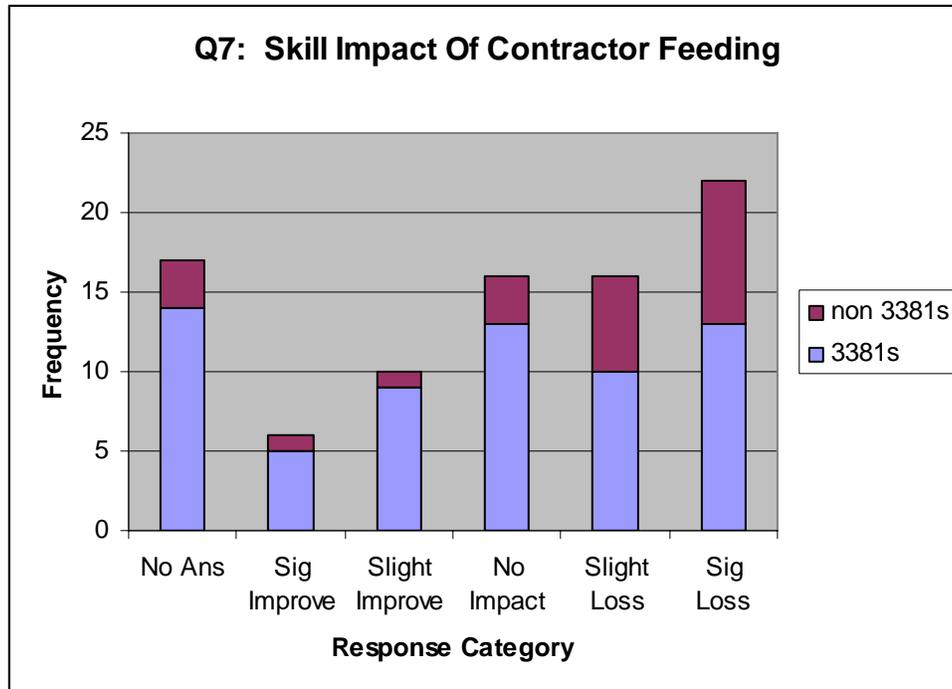


Figure 28: Question 7 – Impact of Contract Feeding on Skills

It is clear that respondents reporting a loss of skills outnumber those reporting an improvement by over 2 to 1. As such, this supports the hypothesis of contract feeding having a negative impact on the abilities of Food Service Marines to practice and maintain their skills. The comments also indicate that by utilizing the food contractors the Marines are not receiving their full MOS Training. Discounting the non responders and those responding that there was no impact we can form two groups reporting “loss” or “improvement”. Applying a binomial test using a normal distribution approximation, we find that the “loss” result is significant at the 98.5% level.

Question 8 asked about the effect of contract feeding on the ability of Food Service Marines to operate and manage facilities in OCONUS.

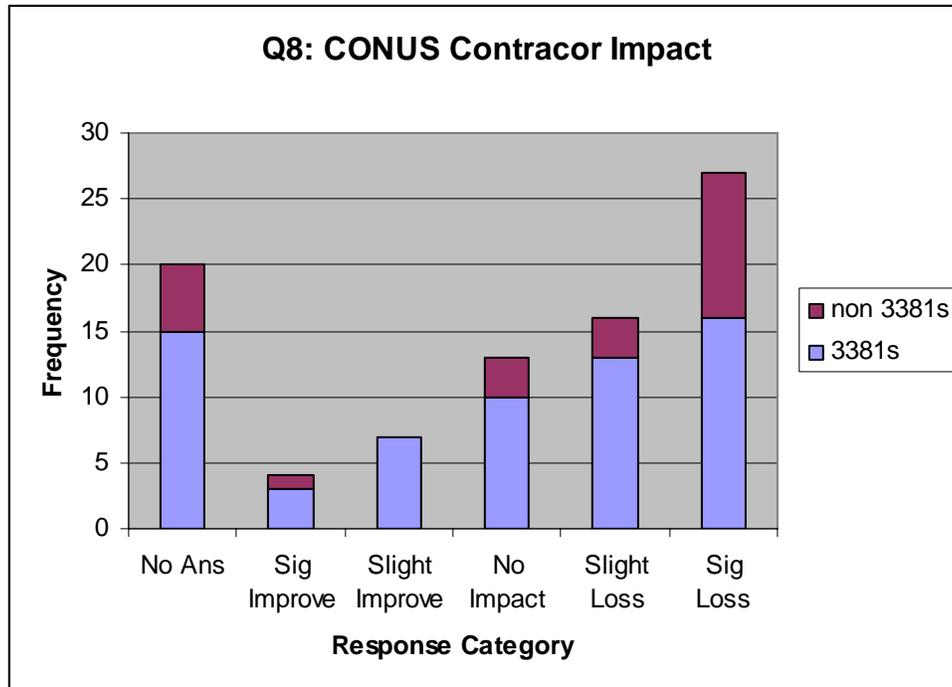


Figure 29: Impact of Contract Feeding on OCONUS Mess Halls

The answers to this question indicate an even greater disparity between those reporting a loss of capability on those reporting a gain, by a factor of about 4 to 1. The distribution supports a significant loss in capability for the specialty. The comments made indicate that contract feeding has caused food service Marines to not be properly trained in mess hall management while in CONUS. According to the accompanying anecdotal comments, the improper training causes mess hall cost overruns and improper forecasting, leading to shortages and spoilage in OCONUS. Discounting the non responders and those responding that there was no impact we can form two groups reporting “loss” or improvement. Applying a binomial test using a normal distribution approximation, we find that the “loss” result is significant at the 99.9% level.

Question 9 addressed the issue capability to deliver service during major exercises and AORs less conducive to contractor support:

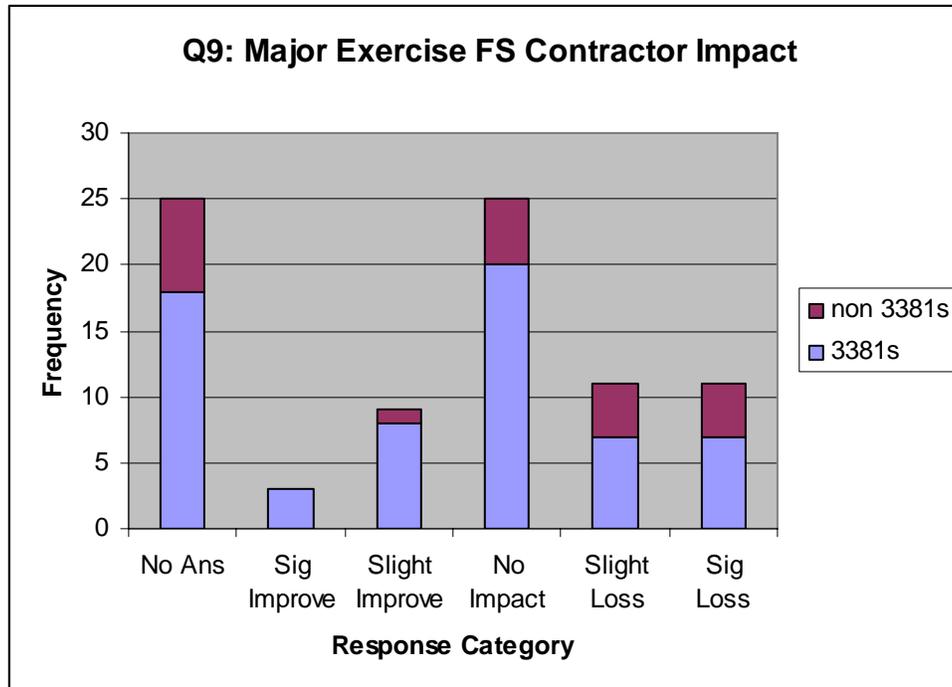


Figure 30: Impact of Contract Feeding on FS Ability, Major Exercises

The trend is less clear for this case than the previous questions but supports the hypothesis of a loss of capability. The comments made here point out that the contractors are not as easily and readily deployable as the Marines. Discounting the non responders and those responding that there was no impact we can form two groups reporting “loss” or “improvement”. Applying a binomial test using a normal distribution approximation, we find that the “loss” result is significant at the 89.0% level.

Question 10 was designed to assess the additional flexibility was obtained through using contract feeding.

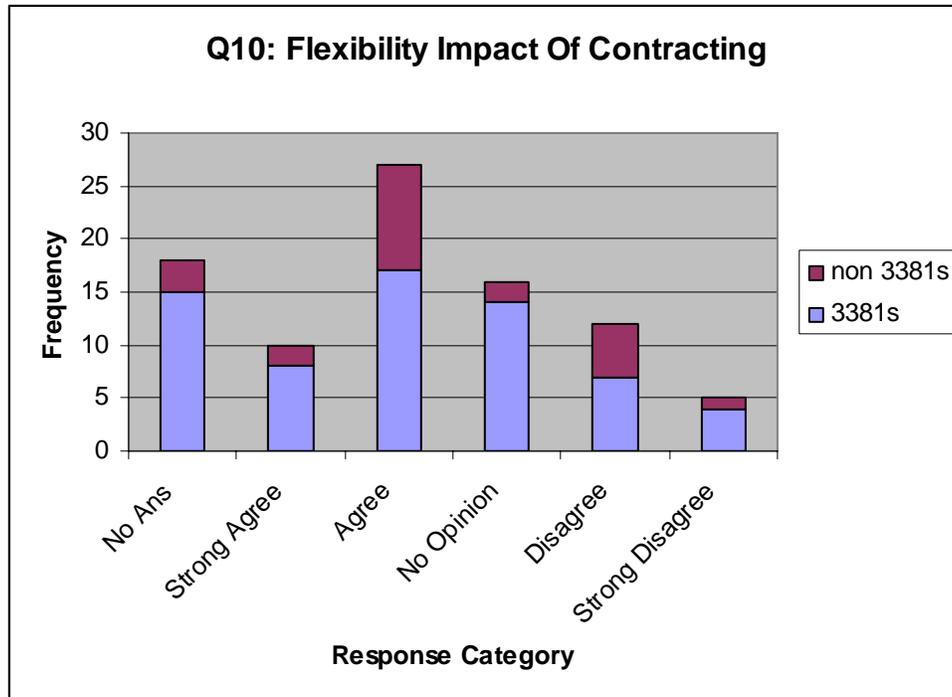


Figure 31: Question 10 - Impact of Contract Feeding on Flexibility

It should be noted that although there is agreement that additional flexibility is provided the accompanying comments provide additional insight. Some comments that agree that there is additional flexibility using contractor services but add that there should be reserve in resorting to that option. The dissenting view is that mess hall hours are inflexible and additional costs are incurred when the hours must be modified. Discounting the non responders and those responding with no opinion, we can form two groups reporting “agree” or “disagree”. Applying a binomial test using a normal distribution approximation, we find that the “loss” result is significant at the 97.5% level.

Question 11 asked about agreement that contract feeding improved the quality and effectiveness of service delivery.

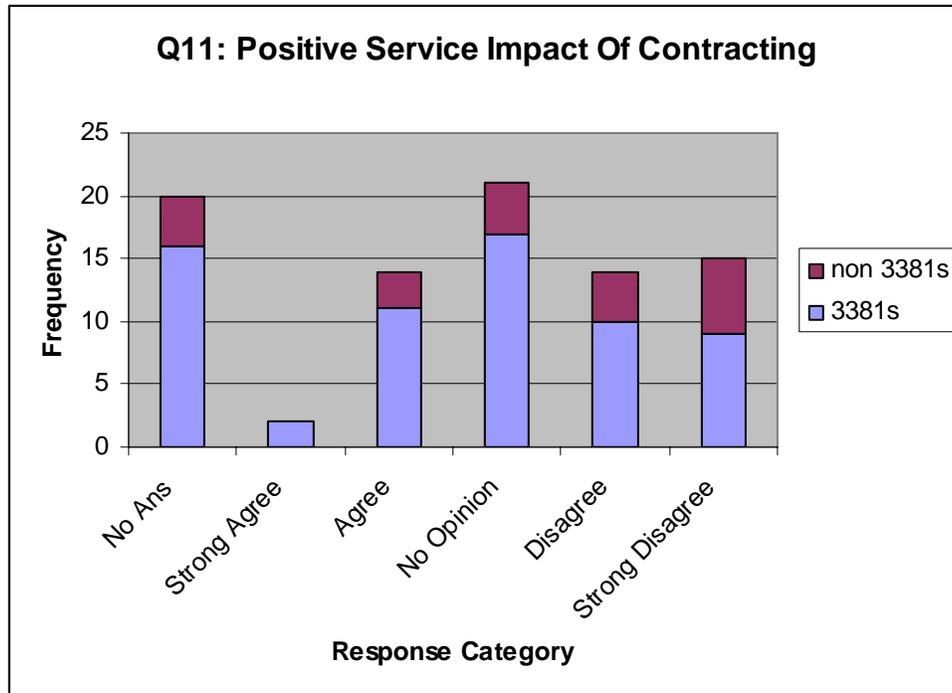


Figure 32: Question 11 – Contract Feeding and Quality

The clear trend is that there is disagreement that contract feeding provides superior service. “A” rations are always preferred to operational rations, however there is little difference in who makes the food. Given that a large portion of the respondents were Marine Corps Food Service personnel, the results of this question could be skewed by the self-interest of the respondent. Discounting the non responders and those responding with no opinion, we can form two groups reporting “agree” or “disagree”. Applying a binomial test using a normal distribution approximation, we find that the “loss” result is significant at the 91.8% level.

Question 12 asked about the value of retaining contract feeding at some level.

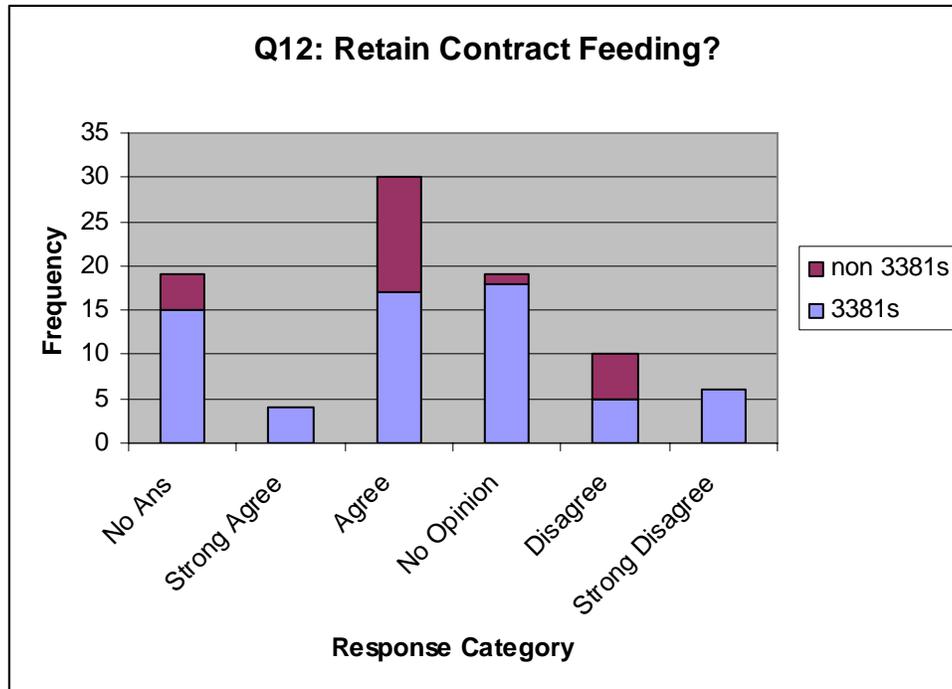


Figure 33: Question 12 – Retain Contract Feeding at Some Level?

While there is a trend toward agreement, comments reveal that some of those agreeing feel that it should be as a deprecated or last option. The agreement is contingent on the fact that training needs to be more thorough and comprehensive. Discounting the non responders and those responding with no opinion, we can form two groups reporting “agree” or “disagree”. Applying a binomial test using a normal distribution approximation, we find that the “loss” result is significant at the 96.6% level.

Question 13 asked for a recommended percentage of non-deployed Food Service Marines that should work in garrison mess halls to maintain proficiency.

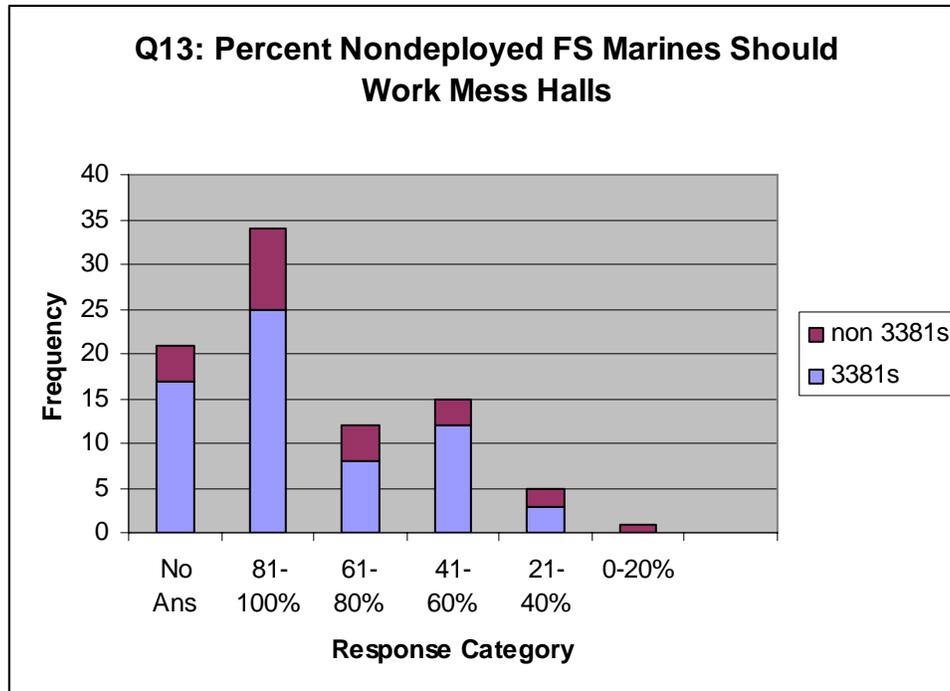


Figure 34: Question 13 - % Non-Deployed FS Need to Work in Mess Halls

Overwhelmingly the response is that a very high percentage should be so employed. The comments generated here state that it is important to have Marines do the work as much as possible so that they can be properly trained. Discounting the non responders and those responding in the middle at 41-60% we can form two groups reporting “high percentage” or “low percentage”. Applying a binomial test using a normal distribution approximation, we find that the “loss” result is significant at the 99.999% level.

Questions 7 through 13 were multiple choice items. A different methodology is required to analyze responses to these questions since the resulting distributions are partitions into classes of answer and are not quantitative responses. To assess the confidence level represented by the response distributions, the approach was to compare the observed distributions with a uniform distribution, which represents “no tendency” among responses. By comparing the observed with a theoretical “no tendency” distribution there is an additional constraint compared with the usual problem of comparing two distributions which may have different total populations. To take this additional constraint into account it is necessary to evaluate the number of degrees of freedom in the chi-squared distribution. With six classes and two distributions (observed and theoretical) we have only 4 degrees of freedom and the value of chi-square for significance at 95% confidence is approximately 9.5. The following table gives calculated values of the chi-squared statistic for each question:

Question Tested	Chi-squared Test value	Binomial Test Confidence %
Q7	99	98.5
Q8	114	99.9
Q9	114	90.0
Q10	108	97.5
Q11	109	91.8
Q12	121	96.6
Q13	140	99.999

Table 9: Significance Tests for Survey Questions 7-13

Since all the values calculated for chi-squared are much larger than 9.5, there is high confidence that the survey responses are significant at the 95% confidence level or higher.

VII. Gap Analysis

Data gathered through surveys, interviews, site visits, and existing documentation provide a picture of the “as is” environment for the provision of food service in the Marine Corps. A systematic examination across the DOTMLPF spectrum will reveal areas where the current system is not performing adequately and provide the first clues towards developing alternatives that will address those needs.

First, it is necessary to define the “as is” state. The primary question this study seeks to address is the level of organic feeding necessary in CONUS to maintain food service proficiency when deployed to OCONUS. Hence, “as is” is defined by the Regional Garrison Food Service Contract as currently configured, with a large majority of dining facilities completely operated by contractors, and a small minority operated by contractors with Marine Corps cooks. All facilities have Marine Corps personnel as quality assurance officers.

Furthermore, as equipment was specifically addressed in the SOW for this study, “as is” is defined by Tray Ration Heater Systems for feeding on the move, Field Food Service Systems for feeding at Forward Operating Bases (FOB), and no intermediate-level equipment in between, such as the Army’s Containerized Kitchen. In addition, in conflicts in a joint operating environment, the Logistics Civil Augmentation Program (LOGCAP) administered by the Army provides for contract feeding in the operating theater as far as the FOBs. In operations where the Army is not the executive agency for the provision of food service, LOGCAP will not be available, though there may be opportunities for contracted feeding support.

A. Doctrine

For the “as is” state, doctrine is not very clear, and even when it is understood, not necessarily followed. Marine Corps Doctrinal Publication 1-0, “Marine Corps Operations,” provides the executive and legislative direction establishing the Marine Corps’ roles and responsibilities.⁷ Some of the roles clearly set the Marine Corps apart from the other services, such as providing the amphibious capability of a landing force. Other roles overlap with the other services. The Marine Corps is not restricted to quick-strike missions of shorter duration, as can be seen in Operation Iraqi Freedom (OIF). Nevertheless, the concept of employment listed in the Marine

⁷ Marine Corps Doctrinal Publication 1-0, “Marine Corps Operations,” 27 September 2001.

Corps Field Feeding Program sets a duration of 60 days before handing off food service operations to a service command in theater (theoretically the Marine Corps, in practice usually the Army).⁸ This has very real consequences for the provision of food service. It implies that the Marine Corps must be capable of providing organic food service capability for the first 60 days of operations without the aid of contract feeding. The concept of the Marine Air-Ground Task Force (MAGTF) posits a unity of combat elements working in concert to provide a standalone capability when necessary. There is anecdotal evidence of Marine Corps resistance to surrendering Air Combat Element (ACE) resources to the Air Force, since it would remove an integral part of the MAGTF.

LOGCAP

- LOGCAP frees Marine Corps Food Service for other duties
- LOGCAP masks loss of core competencies



Figure 35: LOGCAP Masks Loss of Core Competencies

This implies that the Marine Corps may in the future find itself in situations where it is engaged in multiple locations around the world in forward areas where it is more difficult to rely on contractors, and where it will be difficult to recruit food service support among the local population, primarily as a security concern. In Iraq, the training gap identified elsewhere in this document has not been a major issue because of the existence of LOGCAP. During the early parts of the war, such as the March to Baghdad, contract feeding was not an option, but neither was a Marine Corps provided dining facility. But consider an engagement in Somalia, for example, that does not involve joint forces. Contract feeding may be more difficult because of the inability to find contractors that can be trusted. There may be bases where Marine-operated mess halls could be set up. In this case, training and equipment become issues. Food service personnel in Okinawa underscored the significant training gap for CONUS personnel rotating into Okinawa in the ability to run a mess hall. In addition, the lack of an intermediate piece of equipment between the TRHS and the FFSS means that personnel located in forward areas are limited to MREs, UGR-H&S and UGR-B meals for extended periods of time.

⁸ United States Marine Corps MCRP 4-11.8a, “Marine Corps Field Feeding Program,” 24 June 2004, page 1-1.

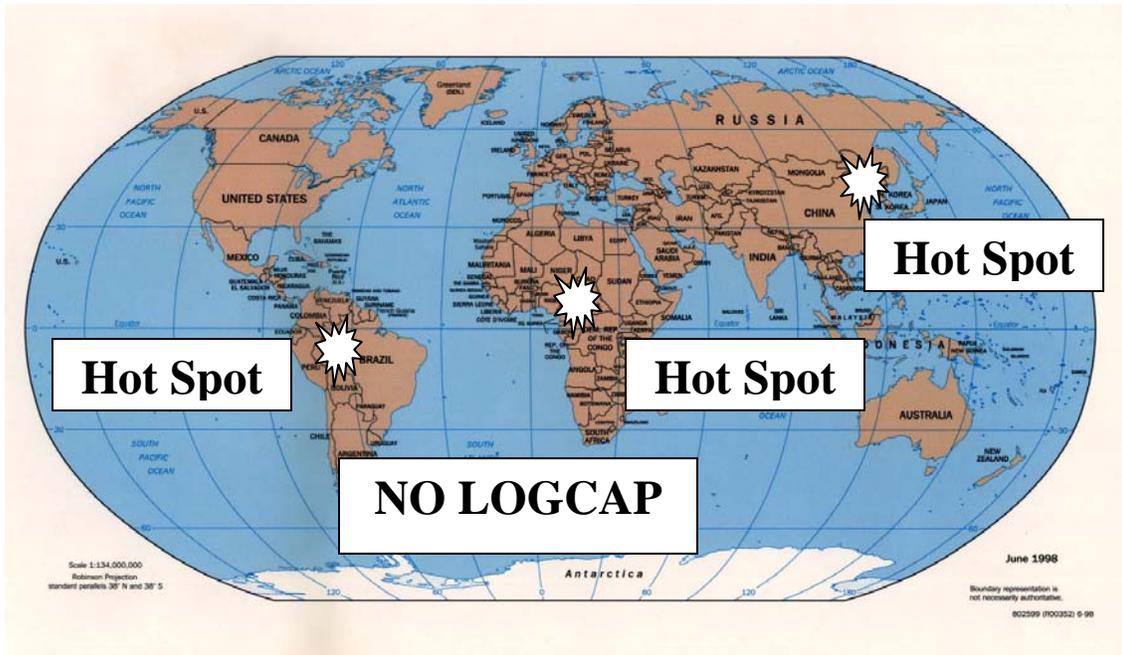


Figure 36: LOGCAP Not Available in Every Situation

The blurring of the lines between Marine Corps and the Army mission has made it more difficult to set Marine Corps doctrine across the board, including for food service operations. Assuming that the Marine Corps keeps its identity as primarily an expeditionary force, then the “as is” scenario has implications for “materiel” and “training”. The doctrine gap identified is that the war in Iraq has exposed the lack of a clear role for the Marine Corps as a part of a joint force distinct from that of the Army, contrary to the unique mission the Marine Corps has historically identified for itself as an expeditionary, self-contained force within the MAGTF, with implications for the provision of food service.

One further note is that if a reserve capacity for organic provision of food service is significantly reduced, and then a situation arises where that reserve is needed, then doctrinal issues surrounding the length of time the surgeon general has deemed safe for the health of Marines for the consumption of MREs come into play. Marines may very well find themselves subsisting on MREs for significantly longer periods than they were designed to support.

B. Organization

The “as is” state consists of about half of all food service personnel residing in the Marine Logistics Groups (MLG) and about half remain integrated within company commands. At Camp Pendleton the study team heard one idea floated to substantially increase the level of food service personnel in the MLGs, giving commanders the option to use contracted food service when available, and to rely on MLG resources when not. By concentrating food services resources within one location, there theoretically might be greater opportunities to maintain core competencies, and commanders would not need to carry extra resources that they did not always need. However, having food service not integral to the company command would make it difficult to integrate within the command when needed. Overall, there did not seem to be much support for this idea. In general, there were few complaints about the current structure, other than some felt that the food service had been cut too far, both with the introduction of the RGFSC and

the FFSS. While there does not appear to be a “gap” within organization, an argument could be made that if the “as is” situation were allowed to continue, there would be little use maintaining a large cadre of under-trained food service personnel, which would argue for a further reduction within the MOS. The question would then be where to make the cuts – within the company commands or in the MLG.

The one place where a question of organization did come up was the area of maintenance for both the TRHS and the FFSS. For the TRHS, many cooks are not able to adequately maintain the equipment and conduct basic maintenance. It is not surprising – mechanical and culinary skills are not necessarily compatible. But when the TRHS is passed on to maintenance personnel, most have never seen the equipment and also have difficulties making repairs. One idea floated was to create a new MOS of food service repair. Another was to provide more training for maintenance personnel so they would be familiar with the TRHS.

For the FFSS, maintenance is contracted out, and there are difficulties with the contract that make it very difficult to conduct maintenance in remote locations or during non-standard working hours. However, this is a problem of a poorly written contract, and does not have implications for organization.

C. Training

The training gap is the most documented issue with the “as is” system. A large proportion of CONUS mess halls are fully contracted, with the bulk of the rest M&MA facilities, as shown in **Table 10**:

Type of Facility under RGFSC	Number
Full Food Service (FFS)	36
Management and Mess Attendant (M&MA)	14
Management and Food Preparation (temporary)	3
Total	53

Table 10: CONUS Mess Halls by Type in the RGFSC⁹

This means food service personnel in CONUS have virtually no hands on mess hall management experience. Furthermore, few cooks have the opportunity to prepare food day in and day out in a mess hall. It can easily be surmised that if these personnel are placed in situations where they would need these skills, either in the field or in III MEF in Okinawa, they will be ill-prepared to meet this challenge. The study team’s site visit to Okinawa reinforced this image, which in a sharp contrast to meetings at Camps Pendleton and Lejeune, complained forcefully about the lack of training of food service personnel rotated in from CONUS. One mess hall in Okinawa actually had to fire an incoming mess hall manager who was not able to do the job, not through lack of trying, but through complete inexperience with the required tasks. It is clearly not sustainable to regularly send personnel to positions they have not been adequately trained for.

The primary solution to address this gap is to open up positions in the garrison mess halls for food service personnel to gain experience. Clearly it is not possible or even desirable to eliminate the RGFSC. It efficiently provides food service in CONUS mess halls and has freed up 594

⁹ Background paper prepared by ret. Major Rick Bedford, USMC, for this study

positions for Marines to perform other functions.¹⁰ While a return to the *status quo ante* is not particularly feasible, in order to provide more training opportunities, it would be necessary to open up more positions for Marine Corps Food Service personnel within CONUS mess halls to exercise their core competencies. To calculate the number of positions that would need to be opened up, it is first necessary to assess the number of hours required per person for hands on training in order to maintain core competencies. Then enough positions in the contract could then be opened up to account for that number of hours per person. **Table 11** provides the current breakdown of Marine Corps Food Service personnel by location, based upon the 2007 staffing goals.

Location	FS Personnel
MEF I	647
MEF II	636
MEF III	381
Sup. Est. and Reserves	446
Total	2110

Table 11: Marine Corps Food Service, by Location¹¹

Given a percentage of time desired in the mess hall as a training platform, it is then possible to calculate the number of mess hall positions required to fill that need. Assuming 240 working days a year, accounting for leave and holidays, every 24 days accounts for 10% of the time in the mess hall. Multiply the number of days by the number of personnel shown for MEF I and MEF II in **Table 11** and divide by 365 days in a year provides the number of Marines that would need to be working in a mess hall per day, as shown in **Table 12**.

Mess Hall Requirement	Number of Days	MEF I + MEF II	Total Days	Mess Hall Positions for Marines	Marines per Day
10%	24	1283	30,792	128	84
20%	48	1283	61,584	257	169
30%	72	1283	92,376	385	253
40%	96	1283	123,168	513	337

Table 12: CONUS Mess Hall Positions Required Based on Training Requirement

Section VIII of this study provides a more detailed analysis of the CONUS mess hall positions that would be required under various courses of action, taking into account the pre-RGFSC force structure of the Marine Corps Food Service to estimate the requirement for time spent in the mess hall. However, **Table 12** provides a simple model for estimating the number of Food Service Marines that would need to work in CONUS mess halls at any time given a desired level of experience. For example, with a 20% requirement, I MEF would need $647 * 20\% = 129$ mess hall positions available for Marines. For any given year, the 20% requirement could mean 20% of Food Service Marines work the full-year in the mess hall, 40% work half a year, or 100% work 20% of a year.

¹⁰ “The Regional Garrison Food Service Contract,” by Major J. J. Fahey, Director, Food Service Program, United States Marine Corps, undated, c. 2002.

¹¹ Derived from 2007 Tables of Organization, authorized positions only, compiled by ret. Major Rick Bedford.

While the focus of this study is on providing mess hall experience within the rubric of the RGFSC, Food Service Marines would need similar experience on field equipment. During OIF, field training exercises have largely disappeared in CONUS.

In summary, increased reliance on contracting, both in CONUS and in theater, has had the following implications for training, as shown in **Table 13**:

	Issues	Solutions
RGFSC	Reduced opportunities for training, loss of core competencies, increased need for contract supervision skills and quality assurance	Return some mess hall positions back to the Marine Corps Food Service, ensure as many opportunities to train during exercises are possible; add contracting courses to schoolhouse training
LOGCAP, other contracting in theater and exercises	Need for contract supervision and quality assurance, supervision of third country nationals, sanitation standards	Contracting courses, maintenance of enough qualified personnel for QA function

Table 13: Training Implications of RGFSC and LOGCAP

Courses

The Marine Corps Food Service offers a highly developed curriculum¹², albeit one that was largely developed before the implementation of the RGFSC. Major gaps are not indicated, but supplements to the curriculum are recommended at the end of this section.

Basic Food Service Course (42 days)

An introduction to sanitation, cooking, baking, garrison mess hall operations, and field feeding. During the sanitation phase, the student is introduced to both civilian and military sanitation standards, and performs a knowledge-based test to confirm retention. In the Small Quantity Cooking labs the student is introduced to the Armed Forces Recipe Card Service, knife skills, weighing and measuring, production methods, presentation standards and garnishing techniques. Next the student goes to the Small Quantity Baking labs. During this phase, the student is provided with the basic baking knowledge. This includes weighing and measuring, production of products, knowledge of preparing cookies, cakes, pies, quick breads, and yeast-raised products. Next, the student will go into the garrison operation phase. There are two sections within this annex. The first will introduce them to shift work as it will similarly occur in the fleet. The second portion of this annex, teaches Marine specific terms, processes and procedures. Finally, the student will be trained in the current field feeding procedures of the Marine Corps. During this evolution, they will be trained on all the different field food service equipment in the Marine Corps arsenal. Upon graduation from this course, the student will obtain the MOS of 3381. No contract-related training is conducted during this course, due to its focus on entry-level Marines.

NCO Food Service Course (39 days)

¹² Marine Corps Food Service School website, Fort Lee, Virginia, <http://www.lee.army.mil/marines/FDSservice.htm>

Corporal or Sergeant with at least one year in the MOS 3381.
Must have attended the Basic Food Service Course

The Non-commissioned Officers course provides formal training to the Food Service intermediate supervisor in a garrison and field mess environment. It is designed to provide a working knowledge of advanced techniques of food preparation and baking, both in garrison and the field, and Advanced Culinary Arts & Skills Training. Instruction also focuses on an understanding of food service administration and accounting. The Marine Corps Food management Information System is taught as the automated subsistence accounting system. The students will receive Serve Safe and HACCP certification upon completion of this course. Other Food Service periods of instruction within this course include (but are not limited to): MCFMIS, QAE training (specifically dealing with the RGFSC), duties as a Chief Cook, table service, plate presentation, all facets of food preparation, operational rations, Airtronic Burner operation and 2nd echelon maintenance, and set-up, tear-down and food preparation with the FFSS. Other non Food Service periods of instruction include: fundamentals of naval correspondence, MIMMS and embarkation.

SNCO Food Service Course (31 days)

The Food Service Staff Non-commissioned Officer's Course is designed to cover the fundamentals and principles of the Marine Corps Food Service System. It provides a working knowledge of those skills necessary to manage a garrison or field mess. The instruction will develop managerial skills required to prepare the SNCO for the duties of a Food Service Technician in a Consolidated Food Service System. Contracting Officer's Representative (COR), and ServSafe/HACCP training with Certification is taught to oversee Contractor managed facilities. In addition, training is provided on the Marine Corps Food management Information System (MCFMIS) as it relates to managerial tasks at the Mess Hall and Food Service Office levels.

Senior Food Service Course (20 days)

The Senior Course provides company grade officers, senior noncommissioned officers and selected civilians employees with knowledge and skills necessary to apply the principles, procedures, and responsibilities of Marine Corps Food Service Management. Instructions focus on command and staff functions. Lessons discuss planning, decision making, financial management, menu planning and multiple responsibilities relative to an individual or consolidated food service system in the field or garrison. Contracting Officer's Representative (COR), and ServSafe/HACCP training with Certification is taught to oversee Contractor managed facilities. In addition, training will be provided on the Marine Corps Food Management Information System (MCFMIS) at the Food Service Office and Mess Hall Management level.

Food Services COR/ACOR/QAE (web-based)

The purpose of this interactive course is to provide Marine assistant contracting officer representatives and quality assurance evaluators the training required to conduct their duties associated with the inspection of mess halls on their local base or station. The web-based course is an alternative to the resident training offered by the Marine Corps Food Service Course (MCFSC) at Ft Lee, VA. This course was designed for Marines in the food service field who serve as assistant contracting officer representatives and quality assurance evaluators for the RGFSC at their garrison mess halls.

Suggested Changes to Curriculum

The increase in contracted feeding, both in CONUS and in theater, has created a need within the food service for broader application of quality assurance and contract management training. This need is recognized in the curriculum for interaction with the contractor for the RGFSC. However, quality assurance in a contracted environment in theater does not appear to be addressed. The study recommends that an introduction to contract supervision be added to the Basic course, adding 1-2 days to the training, and a 4-5 day module on contract supervision be added to the NCO course. The recommendations are based on feedback during site visits on the need for more quality assurance training in a contracted environment earlier on in the Food Service career, and a perusal of contracts-related courses offered by the Marine Corps, with specific modules within a larger curriculum typically lasting one week.

D. Materiel

The second largest gap identified within the “as is” environment is the lack of an intermediate system between the TRHS and the FFSS. Both are good pieces of equipment that do what they were designed to do. The TRHS provides forward feeding for Marines off the back of a HMMWV, feeding 250 Marines two hot meals a day.¹³ The FFSS is a field kitchen designed to feed 850 Marines twice a day.¹⁴ The problem is that this piece of equipment requires about 10 times the power output of the Army’s field kitchen, which feeds 300 soldiers, and takes many more resources to move, including strategic air lift. The Army’s Containerized Kitchen (CK) can be towed behind a 5-ton or 7-ton vehicle, providing expeditionary capability for feeding 300, or 700 when two CK systems are used in tandem.¹⁵ The original FFSS order was 79, which was further reduced to 52, and eventually stopped at 42 shipped. The Marine Corps is investigating minor changes to the Containerized Kitchen to be called the Expeditionary Field Kitchen (EFK), and making initial purchases with the authorization for the remaining FFSS units.

¹³ United States Marine Corp. Food Service Reference, MCRP 4-11.8A. September 1999

¹⁴ United States Marine Corp System Command. “Combat Equipment Support Systems”. <http://www.marcorsyscom.usmc.mil/sites/pmice/SFFSS.asp>.

¹⁵ United States Marine Corp. Food Service Reference, MCRP 4-11.8A. September 1999

System	Feeds	Weight	Size	Manpower	Water	Electricity
TRHS	250, twice/day	260 lbs	Fits in the back of a HMMWV	Three Marine food service specialists, and one driver, per TRHS	10 gallons	120 VAC, 60 Hz source, or can be run off the HMMWV
FFSS	850 twice /day	Total weight per system is in excess of 42,000 pounds	Three 8'X8'X20' compartments	Sixteen Marine food service specialists	1,200 gallons per 850 personnel meal	198 kW (does not include refrigeration)
CK (Army)	300/700 twice/day	14,000 lbs (not including trailer)	One 8'x8'x20' container	Seven cooks	40 gallons a day	10kW generator on board ¹⁶

Table 14: Comparison of Feeding Systems

The study team saw not only the EFK and other energy efficient kitchens during the visit to Natick, but a new “Enhanced Tray Ration Heater System” (E-TRHS), for which the primary change from the TRHS is the refrigerated QuadCon (or “QuadCold”) container it comes in, allowing the introduction of UGR-A rations with the same footprint. The consequence of this is the ability to greatly increase the quality of rations for Marines without significant additional risk.

As such, it is this study’s recommendation to not purchase any new FFSS systems, but to replace them with the more mobile EFKs and adopt E-TRHS systems as replacements for the TRHS as they reach the end of their life-cycles. The Marine Corps can then adopt the UGR-A as the ration of choice, providing two main benefits – fresher, better quality food for Marines, and greater uniformity of rations with the other services, making logistics easier in a joint environment. While operations and maintenance (O&M) costs are not calculated and similar life-cycles are assumed, procurement costs of the CK/EFK and the FFSS are comparable per Marine served, as shown in **Table 15**, and the presumption is that the larger footprint of the FFSS would lead to larger O&M costs. A much more detailed Analysis of Alternatives (AoA) would be needed to account for differences in the systems.

Item	Procurement Cost	Fed per Meal	Cost per Marine Fed
FFSS	\$336,729.60	850	\$396
TRHS	\$ 15,756.89	250	\$63
CK	\$150,000.00	300-350	\$429-\$500

Table 15: Relative Costs of Field Feeding Systems per Marine Fed

¹⁶ United States Army. U.S. Army Natick Soldier RD&E Center “Containerized Kitchen Pre Planned Product Improvement”. <http://www.natick.army.mil/soldier/media/fact/index.htm>

E. Leadership

There are no significant issues with leadership for the “as is” environment. In order to institute one of the other alternatives, leadership buy-in to the changes will be essential, which means leadership understanding of the problems with the “as is” solution.

F. Personnel (Manpower)

Marine Corps Food Service Manpower has been based on the idea that the Marine Corps must be able to feed itself with organic capability as a worst case contingency. Even with this thought the Marine Corps was able to reduce the number of Marines in Food Service roles by using simplified food preparation processes and replacing food service Marines with sophisticated equipment and prepackaged foods to provide nutritious and appealing food to Marines. The introduction of the FFSS permitted the reduction of 506 Marines and the consolidation of a food service company in the Marine Logistics Group (MLG) in each MEF.

A more fundamental change has occurred with OIF. In Iraq the Army has chosen to use LOGCAP to provide a large percentage of the food in theater. Marine commanders have chosen to use this alternative rather than depend upon their organic food service capability. The implications in theater are:

- More food has been transported from Contractor facilities to Marines deployed elsewhere;
- The cost of food service support in total has gone up significantly (not borne by the tactical commanders);
- Food Service personnel are not fully utilized in their primary MOS;
- Food Service personnel are using secondary skills of contractor management rather than primary food preparation skills.

The determination to use contractor support for food service during contingency operations is one that is a major decision with significant implications. This is not a decision that can be made unilaterally by the Marine Corps. Contractor food service support will exist in mature, and perhaps maturing theaters, based on Army decisions that are independent of the Marine Corps. Marine Corps commanders will have the opportunity to use this support without incurring the full cost of those decisions. From the Commanders’ perspective the use of contractor facilities is a win-win situation where the Marines get potentially better food and the Commander takes less responsibility, and invests less manpower in food service support. At a minimum this implies that food service NCOs must have a core competency of being able to use and supervise contractor mess facilities. This is an additional training task that is not currently recognized.

Furthermore the general consensus in the Marine Corps, as demonstrated by interviews and surveys conducted by the study team, is that it must maintain the organic capability to feed all deployed Marines. The alternative is that Marine Corps leadership accept the risk that Marines would have to rely excessively (longer than deemed healthy) on MREs to support forces when contractors are not available. While the ability of contractors to deploy and support maturing theaters has been impressive to date, as shown in OIF and OEF, the nature of the Marine Corps as an expeditionary force capable of deploying in any contingency advises against taking such a risk. An alternative mitigating strategy against the risk of insufficient food service support would be contingency support by cross leveling food service support across the three MEFs and the reserves, a strategy partially undertaken with the CSS migration. However, this strategy would

not account for the risk of all three MEFs being simultaneously employed. This report examines one COA that includes a small personnel reduction based on accepting some risk in this area.

G. Facilities

No facilities issues have been identified for the “as is” environment.

VIII. Analysis

The decision framework begins with the DOTMLPF gap analysis, described in detail in Sections IV and VII. It is supplemented here with quantitative analysis from the Personnel Inventory Cost and Compensation Model (PICCM). In addition, we have developed an Excel model of the level of CONUS mess hall experience gained pre-RGFSC and today, with sliding scales for addressing training gaps dependent upon preferences for making alterations to the RGFSC that are either neutral in terms of force structure, or may require an increase in force structure.

Personnel

The study team has developed three alternatives to address the appropriate mix of contracted vs. Marine Corps provided food service:

- **Current** – Maintain the billets outlined in Fiscal Year 2007’s Table of Organization with no modification;
- **Decrease** - reduce personnel by 200 billets due to the increase of contract feeding in theater
- **Increase** – Increase personnel by approximately 150 billets in order revert some mess hall positions in the RGFSC back to Marine Corps Food Service.

The selection of 200 billets for the “decrease” option and 150 billets for the “increase” option are based on the analysis presented below of the FY 2002 and FY 2007 Tables of Organization for MOS 3381. That analysis estimates a range of possible options to increase structure from 0 to 457, and a range of options to decrease structure from 0 to 329. The levels selected are meant to display choices that could reasonably be taken at the low and high ends rather than depicting the extreme cases.

In order to model the three alternatives, it was necessary to manipulate the promotion rates in order to mitigate the downward trend in E1-E3 retention levels shown in all runs of the PICCM model. The model’s tendency is to reduce E1-E3 manpower levels while maintaining steadier levels for the higher pay grades. In order to mitigate the decline in E1-E3 pay grades, it was necessary to reduced the default promotion rates significantly for E1-E3 pay grades as well as the other higher pay grades. The E1 – E4 pay grades promotion rate declined relatively more than the other pay grades. The PICCM model’s objective is to maintain the overall manpower level, not necessarily maintain a particularly staffing profile. The model will, however, add more new recruits when current staffing levels decline due to low retention. The PICCM model will add more E1-E3 recruits when retention is very low in order to achieve the specified manpower levels.

Current Marine Corps Food Staffing Levels

Based on Fiscal 2007 authorized staffing requirements, there are 2,110 food service billets. 1,612

billets are being filled by Marines in pay grades of E5 and below. One concern that has been voiced in the survey is that Marines in the lower pay grades are not gaining enough experience. As a result, there is a sharp decline in Marine Corps utilization in food service supervisory and managerial roles. **Table 16** illustrates this data.

	E3/2/1	E4	E5	E6	E7	E8	E9	Officers	Total
Operating Forces Totals:	662	422	306	156	57	38	12	22	1675
Supporting Establishment Totals:	62	73	87	60	93	29	11	20	435
Total	724	495	393	216	150	67	23	42	2110

Table 16: Marine Corps FY07 Authorized Staffing Requirements for Food Service

Table 16 shows the food service staffing levels by pay grade, with all officers being grouped together. This data represents both CONUS and OCONUS staffing requirements. Staffing levels are further divided into those assigned to the operating forces and those assigned to supporting establishments. A more detailed breakdown of these manpower figures can be found in the Appendix III. Based on our survey we have found that people would like to see a greater proportion of Marines in managerial and supervisory positions. All the alternatives address the different ways in which this redistribution can be achieved.

Table 17 shows the expected changes to the staffing profile over time, even without any changes to the force structure level. It shows some graduation into higher pay grades over time.

FY End	E1-3	E4	E5	E6	E7	E8	E9	Total
2007	719	497	390	209	149	63	23	2050
2008	751	434	441	204	142	72	23	2067
2009	776	423	416	213	154	62	26	2070
2010	702	467	426	233	152	62	26	2068
2011	650	495	446	236	139	77	23	2066
2012	637	478	478	217	160	75	23	2068
2013	652	459	464	229	169	71	23	2067
2014	615	476	475	240	166	73	23	2068
2015	581	492	494	228	173	76	23	2067
2016	582	492	477	243	182	67	23	2066

Table 17: Yearly Staffing Profile, Current Structure

Decrease

One alternative is to further reduce Marine Corps food service staffing by approximately 200 billets. This reduction implies that food service staff is currently underutilized. Survey data indicates that approximately 85% of deployed Food Service Marines were working in their MOS. While this might argue that there is a 15% under-utilization, it comes from a limited sample of respondents to a very specific operating environment with a mature battle space lending itself to contracting. In a less mature theater, or in multiple less mature theaters, this under-utilization, if

in fact present, may disappear entirely. Hence, it is the judgment of the study team that the Decrease alternative is not the preferred choice.

Table 18 shows how this alternative would reduce E1-E5 operating forces billets by 200, decrease E6 operating forces by 20 billets, increase E7 supporting establishment billets by 10, and E8 operating forced billets by 10. The preponderance of cuts coming from lower pay grades is due to the reduction coming largely through decreased recruiting. The impact on the shape of the grade profile could be reduced through greater incentives for the higher grades to switch MOS's.

	E3/2/1	E4	E5	E6	E7	E8	E9	Officers	Total
Operating Forces	552	372	266	136	57	48	12	22	1465
Supporting Establishment	62	73	87	60	103	29	11	20	445
Total	614	445	353	196	160	77	23	42	1910

Table 18: Target Staffing Profile to Decrease by 200

Table 19 illustrates that any significant changes to force structure take time to be implemented solely through recruiting, promotion, and retirement.

FY End	E1-3	E4	E5	E6	E7	E8	E9	Total
2007	719	497	390	209	149	63	23	2050
2008	713	325	403	177	144	82	23	1867
2009	771	266	353	197	172	84	23	1866
2010	774	209	393	222	176	69	26	1869
2011	741	194	437	219	167	87	23	1868
2012	758	164	442	215	182	85	23	1869
2013	729	167	454	233	176	85	23	1867
2014	707	167	474	226	187	85	23	1869
2015	690	174	469	244	182	87	23	1869
2016	682	162	483	242	187	89	23	1868

Table 19: Yearly Staffing Profile to Decrease Food Service by 200

The target for this scenario is 1,868 E1-E9 billets. The PICCM model starts with 2007 manpower levels and adjusts to the target for the years 2008 through 2016. The steep decline in E1-E3 billets is mitigated by manipulating default promotion rates. As a result, however, there is a steep decline in E4 manpower levels. Further manipulation may be required to create less volatility among the pay grades while maintaining an overall manpower level of 1,868.

Increase

The alternative to increase structure assumes that would be difficult to return mess hall positions back to the Marine Corps without returning some of the billets eliminated with the implementation of the RGFSC. The selection of 150 billets is based upon partially filling positions with new Marine Corps Food Service personnel, and partially increasing the mess hall requirement for existing Food Service Marines. The objective is for Marines to replace some of the contractors at CONUS facilities to increase training opportunities. Increasing senior

instructors and managers will ensure the quality of the food service staff. **Table 20** illustrates this alternative. This table shows increasing E1 – E4 food service operating forces by 75 billets, increasing E1-E3 supporting establishments staffing by 25 billets, and increasing E6 supporting establishment staffing and E7 operating forces staffing by 25 billets each. This redistribution increases experience and training for cooks in the E1-E3 pay grade, while reducing cooks in the higher grades so as to train and promote senior staff.

	E3/2/1	E4	E5	E6	E7	E8	E9	Officers	Total
Operating Forces Totals:	712	447	306	156	82	38	12	22	1775
Supporting Establishment Totals:	87	73	87	85	93	29	11	20	485
Total	799	520	393	241	175	67	23	42	2260

Table 20: Target Staffing Profile, Increase Food Service by 150

Table 21 indicates that this scenario is the least disruptive to accomplish through recruiting, promotion, and retirement, most closely matching the target staffing profile.

FY End	E1-3	E4	E5	E6	E7	E8	E9	Total
2007	719	497	390	209	149	63	23	2050
2008	906	427	430	225	135	72	23	2218
2009	921	398	451	204	157	64	23	2218
2010	853	481	409	227	158	68	23	2219
2011	677	593	462	229	166	59	30	2216
2012	726	527	480	227	153	75	29	2217
2013	762	501	474	206	180	72	23	2218
2014	755	512	443	243	175	68	23	2219
2015	692	553	460	255	159	74	23	2216
2016	713	535	471	236	168	72	23	2218

Table 21: Yearly Staffing Profile to Increase Food Service by 150

Table 22 summarizes all three scenarios.

	E3/2/1	E4	E5	E6	E7	E8	E9	Officers	Total
Current	724	495	393	216	150	67	23	42	2110
Minimal	614	445	353	196	160	77	23	42	1910
Increase	799	520	393	241	175	67	23	42	2260

Table 22: Manpower Summary of Three Scenarios

These three different scenarios are used in the Personnel Inventory Cost and Compensation Model (PICCM) to determine an estimate of the cost to the Marine Corps to maintain these staffing levels over the period 2007 through 2015. The PICCM model uses manpower data and economic indicators developed by the Defense Acquisition University (DAU). The DAU uses historical data from the Marine Corps to develop assumptions about base pay, pay increases, inflation, unemployment, health, retirement, and social security contributions, bonuses and

miscellaneous compensation, retention rates, and promotion rates. These are just a few of the variables used to simulate the factors that affect the Marine Corps workforce and cost structure. The PICCM model uses the manpower numbers specified in **Tables 17, 19, and 21** for each pay grade and simulates personnel changes and workforce costs for the period 2007 through 2015. Costs are reported in FY 2005 base year dollars, in millions.

Results of the PICCM Model

The following tables report our findings after running each scenario through the PICCM model. As previously stated, this model simulates and predicts estimated costs for maintaining the staffing levels specified in each scenario over a period of nine years, from 2007 through 2015. The PICCM model breaks down costs into the following categories: 1.) Base Pay, 2.) Basic Allowance for Housing, 3.) Basic Allowance for Subsistence, 4.) Other Compensation, 5.) Retirement Accrual, 6.) Social Security Contributions, and 7.) Medicare Contributions.

Total for All Ranks	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total
Base Pay	52.26	53.03	53.46	54.63	55.37	56.42	57.61	58.65	59.64	501.05
BAH	14.33	14.80	15.11	15.71	16.15	16.62	17.13	17.65	18.16	145.66
BAS	4.74	4.75	4.73	4.77	4.77	4.78	4.79	4.80	4.81	42.95
Other Compensation	7.34	7.25	7.06	6.98	6.85	6.75	6.64	6.52	6.40	61.80
Retirement Accrual	13.85	14.05	14.11	14.42	14.62	14.90	15.21	15.48	15.69	132.32
SS Contribution	3.24	3.29	3.31	3.39	3.43	3.50	3.57	3.64	3.70	31.07
Medicare Contribution	0.76	0.77	0.78	0.79	0.80	0.82	0.84	0.85	0.86	7.27
ALL Pay Categories	96.52	97.94	98.55	100.68	101.99	103.79	105.79	107.59	109.26	922.11

Table 23: Costs to Maintain Current Staffing Levels

Total for All Ranks	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total
Base Pay	50.27	49.05	49.39	50.63	51.74	52.84	53.74	54.80	55.66	468.12
BAH	13.71	13.49	13.79	14.43	14.92	15.40	15.86	16.40	16.86	134.86
BAS	4.52	4.29	4.26	4.31	4.33	4.33	4.35	4.37	4.36	39.10
Other Compensation	7.03	6.62	6.46	6.43	6.35	6.23	6.11	6.02	5.92	57.18
Retirement Accrual	13.32	13.00	13.04	13.37	13.66	13.95	14.19	14.47	14.64	123.63
SS Contribution	3.12	3.04	3.06	3.14	3.21	3.28	3.33	3.40	3.45	29.02
Medicare Contribution	0.73	0.71	0.72	0.73	0.75	0.77	0.78	0.79	0.81	6.79
ALL Pay Categories	92.69	90.19	90.71	93.04	94.95	96.80	98.36	100.25	101.69	858.70

Table 24: Cost to Reduce Structure by 200

Total for All Ranks	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total
Base Pay	52.98	54.68	55.63	57.32	58.80	59.27	60.12	61.35	62.40	522.55
BAH	14.47	15.14	15.55	16.38	17.18	17.43	17.78	18.38	18.94	151.23
BAS	4.86	4.98	4.98	5.06	5.12	5.07	5.05	5.08	5.10	45.30
Other Compensation	7.52	7.59	7.44	7.38	7.34	7.14	6.96	6.87	6.76	65.01
Retirement Accrual	14.04	14.49	14.69	15.13	15.52	15.65	15.87	16.20	16.41	138.00
SS Contribution	3.29	3.39	3.45	3.55	3.65	3.67	3.73	3.80	3.87	32.40
Medicare Contribution	0.77	0.79	0.81	0.83	0.85	0.86	0.87	0.89	0.90	7.58
ALL Pay Categories	97.93	101.07	102.55	105.65	108.45	109.09	110.38	112.55	114.38	962.07

Table 25: Cost to Increase Structure by 150

Total for All Ranks	Current	Decrease	Increase
Base Pay	501.05	468.12	522.55
BAH	145.66	134.86	151.23
BAS	42.95	39.10	45.30
Other Compensation	61.80	57.18	65.01
Retirement Accrual	132.32	123.63	138.00
SS Contribution	31.07	29.02	32.40
Medicare Contribution	7.27	6.79	7.58
ALL Pay Categories	922.11	858.70	962.07

Table 26: Summary of All Three Scenarios – Cost Data for 2008 - 2016

Note that this cost data only addresses costs incurred by the Marine Corps in order to support its own workforce. It does not include the cost of contractors.

RGFSC Model

Another approach to determine the preferred number of mess hall positions to revert to the Marine Corps Food Service in the next RGFSC is to analyze the before and after Tables of Organization (T/O) for MOS 3381. The main assumption to this approach is that before the implementation of the RGFSC, Marine Corps Food Service personnel were receiving adequate training to operate and manage mess halls when they worked in garrison mess halls in CONUS. By determining the proportion of Marine Corps Food Service working in mess halls in FY 2002 and comparing it to FY 2007, the approximate “training gap” should be apparent, and several strategies for addressing that gap can be put forward.

The major challenge to this approach is that the data required to perform the analysis was not readily available to the study team, and the data that was available had to undergo significant manipulation. However, sufficient information was available to piece together an estimate for a range of solutions to the training gap identified in this study.

The study team was provided a 2007 T/O through its subject matter expert. It then went to the Total Force Structure Division of the Marine Corps Capabilities Development Command (MCCDC) for the FY 2002 T/O. However, T/O’s are typically higher than the authorized staffing requirements (ASR). For 2007, both T/O and ASR were available to the team, and since ASR represents actual staffing, it was used for the PICCM runs. But since ASR was not included with the FY 2002 T/O data, the team decided to compare the T/O data only for FY 2002 and FY 2007, as shown in **Table 27**. Hence, the basis for FY 2007 will differ from that shown in the previous section.

Year	T/O
FY 2002	3500
FY 2007	2554
Difference	946

Table 27: T/O for FY 2002 and FY 2007

The difference in T/O of 946 spaces in the active forces makes sense given that the RGFSC reduced 594 structure spaces and the FFSS reduced 506, for a total of 1100. Some of those changes may have taken place in the reserve forces, accounting for some of the difference.

The next step is to determine the number of Marines working in mess halls. The T/O is not sufficient for this task, as many of the positions listed would be applicable to both mess hall and non-mess hall duties. However, approximations can be pieced together knowing that 594 billets were eliminated, 36 FFS facilities created within the RGFSC, 14 M&MA facilities, and 3 Management and Food Preparation facilities, a ratio of one mess hall manager to three food service specialists (determined through an examination of the T/O), and current distribution of Marine Corps Food Service among I MEF, II MEF, and III MEF.

The first set of assumptions is that the reductions due to the RGFSC applied equally to I MEF and II MEF, but didn't affect III MEF at all. The next assumption is that reduction due to the FFSS were distributed proportionately throughout the three MEF's. All other changes to structure were also assumed to be proportionate. These assumptions are shown in **Table 28**.

	I MEF	II MEF	III MEF	Total
RGFSC	297	297	0	594
FFSS	195	195	116	506
Other	-60	-60	-34	-154
Total	432	432	82	946

Table 28: Assumed Distribution of Force Reduction FY 2002 to FY 2007

An examination of the ASR for the current force structure reveals that I MEF and II MEF are of approximately equal size and III MEF is about 60% of the size of I MEF and II MEF. Extrapolating this to the T/O and applying the changes assumed to have taken place since FY 2002, reveals the approximate distribution of the Marine Corps Food Service among the three MEF's in FY 2002 and FY 2007, as shown in **Table 29**.

	FY 2002	FY 2007	Difference
MEF I	1415	983	432
MEF II	1415	983	432
MEF III	670	588	82
Total	3500	2554	946

Table 29: Estimated Distribution of Marine Corps Food Service, FY 2002 and FY 2007

In order to determine the proportion of Marine Corps Food Service working in mess halls, data from Table 10 was combined with the observed ratio of three food service specialists per mess hall manager. If 36 mess halls were converted to FFS facilities, 14 to M&MA, and three to Management of Food Preparation (M&FP), the overall ratio of positions transferred to contractors is about four to one, as shown in **Table 30**.

Type	No.	Per Facility		Total	
		Marine	Contract	Marine	Contract
FFS	36	0	4	0	144
M&MA	14	3	1	42	14
M&FP	3	0	4	0	12
Total	53			42	170

Table 30: Distribution of Position by Mess Hall Type

The total in **Table 30** represents the proportion of Marines to Contractors in the RGFSC, not the sum total. This can be derived by taking one fourth of the positions given up to contracting (594) as the FY 2007 CONUS mess hall total for Marines, equal to 148. To arrive at the total for FY 2002, simply add 594. The FY 2002 total for III MEF is taken as the proportion of FY 2002 III MEF Food Service to the I MEF and II MEF totals. The total of Marines working in mess halls for each fiscal year is then divided into the total for Marine Corps Food Service for the respective years to arrive at the proportion of time Marines on average worked in mess halls, as shown in **Table 31**.

	FY 2002	FY 2007	Difference
MC Food Service	3500	2554	946
CONUS Mess halls	742	148	594
MEF III Mess halls	195	195	0
Total mess hall	937	343	594
Proportion mess hall	0.267714	0.134299	0.501651

Table 31: Proportion of Marines Working in Mess Halls

The relative proportions indicate that Food Service Marines today spend about half as much time working in mess halls compared to before the implementation of the RGFSC. A lot of assumptions went into the buildup of these proportions, but even if the assumptions were to be off by hundreds of positions, the model would still demonstrate a significant loss of time in mess halls, which is the result one would expect.

In the next section, this analysis will form the basis of potential courses of action.

IX. Courses of Action

Three primary courses of action present themselves for moving forward to the Marine Corps Food Service of the future:

- COA 1. Maintain the status quo
- COA 2. Reduction of structure to reflect the new reality of increased contracting
- COA 3. Increased opportunities for Marine Corps Food Service to exercise its core competencies within the structure of the RGFSC

In addition to these COAs, a number of actions can be taken independent of the primary COA taken, involving equipment, rations, and training, as described below.

COA 1: Maintain the status quo. If changes are not made, the training gap will widen. Reliance on contract feeding in both CONUS garrison and in Operation Iraqi Freedom will produce an

entire generation of Food Service SNCOs and Officers that have had little to no hands-on experience in their primary MOS. This will also have an adverse impact on OCONUS garrison operations, where Marines are still required to operate and manage mess halls. COA 1 is examined in more detail in Section VII.

The status quo is untenable. Food service personnel are not being used in food preparation in CONUS to the extent necessary to prepare them for performance of duties when stationed in OCONUS. Furthermore food service personnel are unprepared and untrained to function as contract managers in contractor facilities in theater. To compound these training issues there is survey data suggesting that food service personnel are not sufficiently prepared to maintain food service equipment as well. While the food service population is theoretically sufficient to feed the entire Marine Corps with organic capability, the training gap was consistently cited during all site visits and in the surveys, suggesting a loss of core competencies to provide adequate quality food service organically, and quality control in a contracted environment.

Training consists of both formal training at the MOS school and unit level training. The need for contract management institutional training at the NCO level has already been identified. Unit training failures appear even more prevalent. Survey data demonstrates that the existing CONUS employment of food service personnel does not provide sufficient food preparation experience for personnel to be successful when deployed to OCONUS. This food preparation experience includes both field training and facility preparation. From the site visit interviews, it is clear that contractor food service support is used for many training exercises. Marine Corps Food Service personnel are not given sufficient experience in the field supporting training exercises. This study recommends that food service personnel have mandatory skill usage requirements that support the sustainment of food preparation skills. The program would be similar to aviator flying hours. Food service personnel in the grades of E-1 to E-5 would be required to have at least 48 days per year of food service preparation, with at least 16 days of that experience being in a field environment. **Table 31** indicates that the average time spent working in the mess hall for Marine Corps Food Service is currently about 13%, or 31 days. A requirement of 32 days would set the current average as the floor and create internal pressure for more training opportunities. This would guarantee a minimum level of continuing competence with food preparation equipment and processes.

The requirement of food service preparation would require the ability to work in a mess facility, while the field requirement would encourage food service units to demand the opportunity to train within existing training deployments.

COA	Pros	Cons	Mitigating Strategies
Maintain Status Quo	Minimal disruption, Marines freed for other duties	Lack of CONUS training opportunities and day-to-day exercise of skills leads to erosion of core competencies to manage and maintain an overseas mess hall.	Make contractor supervision a core competency, increase field exercises, prepare for greater reliance on contracted support in theater and exercises. Ensure enough qualified staff to fill QA function.

Table 32: Pros and Cons of “Maintain Status Quo”

Survey data and interviews show that Marines are not well prepared to manage contractor facilities. NCOs in grades E-6 and E-7 should be required to manage a minimum number of days

in a mess facility in order to maintain proficiency and be promoted. Such management opportunities would have to be created in order to impose these standards.

COA 2: Reduction in Food Service structure to reflect the reality of increased contracting. In order to maintain an organic food service capability, it must be trained and exercised. If contract feeding becomes the standard, then the Marine Corps places itself in the undesirable position of relying on it in every potential AOR. In those locations not conducive to contractor support, Marines will be forced to subsist for greater durations on MREs, UGR-H&S, and UGR-Bs.. The U.S. Army Surgeon General has determined that MREs as a sole diet be limited to periods of 21 days or less, due to its impact on physiology, and potential reduction on personnel readiness.

The risks of increasing dependence on contractor support in theater can pay off in a decrease in the requirement for trained food service personnel. However, when Marines deploy to areas where contractor support is unavailable, they will be left without the ability to reliably feed themselves in a healthy, safe manner. In this case the first alternative is to cross level Marines into the deploying units. The assumption is that not all Marine Corps units will deploy into such an environment simultaneously. If all units were so deployed then the result would be an over-dependence on MREs rather than a certain mission failure. While the risk is not entirely unbearable the study team has made the assumption that the Marine Corps leadership is not willing to accept this contingency.

Regardless of the previous assessment the study will address some of the effects of accepting greater reliance on contractor food service support. The primary effect is one that is inevitable even if only some theaters have contractor support, a case that is almost certainly true. Marine Corps Food Service NCOs must be able to manage contractor food service support in theater. NCOs must be trained in food service management and management of contracts and civilians in order to be able to support the 21st century Marine Corps. They must also be comfortable with the concept of feeding remote locations by using centralized contractor facilities. These skills are facts of life. The assessment is that they require a minimum of one week of training equivalent to contracting 101 in the NCO Basic Course and an additional week of contract management in the NCO Advanced Course. The supporting establishment will require an additional instructor year to support this case.¹⁷

The overall food service may also be reduced slightly to accommodate the reduced level of food preparation. Survey results indicated a mean of 64% of those deployed to OIF were not working in their MOS. Even assuming about half of that excess capacity could be redistributed to other functions, say 15%, would imply that as many as 383 structure spaces could be given up, as shown in **Table 33**. Given the small sample size and single scenario, this study does not recommend any force reduction on that basis.

¹⁷ Assessment of ret. Major Richard Bedford, former Director of the Food Service School at Fort Lee, Virginia.

3381 Utilization	Excess Capacity	Total in Mess Halls	Proportion in Mess Halls
0.99	26	369	0.144479
0.95	128	471	0.184417
0.9	255	598	0.234143
0.866	341	684	0.267714
0.85	383	726	0.28426

Table 33: Potential Excess Capacity for MOS 3381

Allocation of contractor food service support will be unevenly distributed across deployed units. Those units nearer the major lines of communication and large fixed facilities will receive significant support while more remote forces will still be dependent upon organic food preparation capabilities. This argues for more centralization of food service capability so that it can be sent to the units that require it while contractor dependent forces retain only Marine food service oversight capability. Under this COA food service capabilities would be further centralized at the MLG level along the lines of the CSS migration, where they would be provided as direct support to the MAGTF units needing internal feeding capability.

COA	Pros	Cons	Mitigating Strategies
Reduce Structure	Frees billets for other functions; opportunity for equipment reductions	Reduced ability to organically feed when contractor support not available. Cross-leveling implies less integration with commanding unit.	Greater centralization, a.k.a CSS migration; more training, particularly in contract management and supervision of Third Country Nationals.

Table 34: Pros and Cons of COA “Reduce Structure”

COA 3: Increasing Opportunities for Marine Corps Food Service personnel to exercise their core competencies within the framework of the RGFSC.

While a return to the *status quo ante* prior to the RGFSC is unrealistic, this COA contemplates a partial move in that direction, reversing some of its unintended consequences. To study the implications of this COA, it is necessary to look at them under the range of operational scenarios. These scenarios are divided into three basic categories; garrison operations, field training exercises (local and non-local), and deployment/wartime.

1. Garrison operations:

Increased use of garrison mess halls as a training platform is critical to mitigating the training gap, particularly at the Staff Sergeant to Master Sergeant levels. This would involve increasing the USMC managerial role in the M&MA mess halls, or potentially converting some or all of them to USMC management. Those facilities are listed below:

- MCB Camp Lejeune – Mess Halls 122, FC-420, FC-303 (currently under renovation) and AS-4012
- MCAS Beaufort – Mess Hall 442
- MCAS Cherry Point – Mess Hall 3451
- MCB Camp Pendleton – Mess Halls 14036, 43402 and 62402

MWTC Bridgeport – Mess Hall 3006
MAGTFTC Twentynine Palms – Mess Hall 1460
MCAS Yuma – Mess Halls 710 and 3224
MCAS Miramar – Mess Hall 5500

DOTMLPF Implications:

Doctrine – Although the Regional Garrison Food Service Contract (RGFSC) is not doctrine, it is the principal document that will require modification. With the complexity of the current RGFSC, it is not recommended that a change of this magnitude be implemented under the current contract. The current RGFSC is in its final base year, with the potential for up to three option years. The study recommends that a new category of service, Mess Attendant (MA), be added to the categories of Full Food Service (FFS) and Management and Mess Attendant (M&MA) for the next RGFSC. The Management and Food Preparation (M&FP) category will be obsolete, once the correctional facilities are realigned under the Base Closure and Realignment Commission (BRAC) directive. MCO P10110.14M (Draft) will require modifications to outline policy for USMC-managed mess halls under the RGFSC. Portions of this order relative to OCONUS garrison mess halls should apply to RGFSC MA mess halls. Additionally, local SOPs will require modification to incorporate this new category of service.

Organization – To provide flexibility in assignments, and to ensure proper rotation of personnel in the MA mess halls, the study recommends that all Food Service Marines in operating force commands be consolidated under the respective Major Supported Commands (MSCs). A possible option is to affect a total migration of all Food Service personnel to the Combat Service Support (CSS) element. This would resolve all command and control issues, and ensure food service support is coordinated throughout the MEF. However, commanders are usually reluctant to relinquish personnel and/or capability.

Training – Additional mess hall management training at the Formal School at Fort Lee, Virginia may be required, particularly in the Staff Non-commissioned Officers' and Senior Food Service Courses. This will likely require modifications to the lengths of these courses, and potentially require additional resources to conduct the training. Also, the CONUS-based Food Management Teams may be tasked with providing just-in-time training during the implementation of the MA mess hall format.

Materiel – There are no presumed tactical materiel impacts on this COA.

Leadership – Recommend a CMC White Letter be issued, outlining the need to maintain an organic food service capability, and the reasons why these steps are being taken. This will ensure buy-in throughout the Marine Corps, and leave no doubt as to the position of the Marine Corps leadership on this issue.

Personnel – Potentially, a modest structure increase may be required to adequately manage and operate these mess halls. With the implementation of the original RGFSC, 594 Food Service structure spaces were realigned. It is then logical that a portion of these spaces will need to be restored. The total number will depend upon which mess halls are converted.

Facilities – There is no projected facilities impact on this COA. Mess hall structure and equipment requirements do not differ between contractor or USMC management.

2. Training exercises (local and non-local):

Training exercises should employ organic feeding whenever possible. This is the only way that Food Service Marines can exercise their skills in a tactical environment. It will also ensure that tactical Food Service equipment is used and maintained. Further, it will facilitate rotation of operational rations from the War Reserve.

Particularly in a local training setting, it is very easy for commanders to take the path of least resistance, e.g., transporting hot meals from garrison mess halls. However, this method does nothing to ensure the readiness of the command's Food Service element. It is recommended that field support from garrison mess halls be strictly limited, if not eliminated, for exercises in excess of three days, or supporting more than 100 personnel. These scenarios are better suited for organic support by the Tray Ration Heater System (TRHS) or the Field Food Service System (FFSS). In non-local training settings, contract feeding should also be strictly limited. This study recommends that the approval authority for use of MPMC Subsistence funds for contract feeding, in support of training exercises, reside only at Headquarters, Marine Corps (LFS-4), in order to closely monitor this process.

The FFSS is a technically sound piece of equipment, and a force multiplier in certain scenarios. However, it is very large and cumbersome, requiring movement by a crane or a Rough Terrain Cargo Handler (RTCH), and has a large electrical power requirement. Further, with all the flexibility and mobility of the TRHS, it can only provide the Unitized Group Ration-Heat and Serve (UGR H&S) in its current configuration. This gap between the two systems has exacerbated the problems mentioned above. An intermediate feeding solution is needed to provide commanders the flexibility to exercise their Food Service capability across the spectrum of operational scenarios. Planned enhancements to the TRHS will mitigate much of this gap. However, for forward deployed units larger in size than a company (rein), the gap will still exist. Therefore, an additional solution is needed, in the form of an expeditionary field kitchen (EFK). The U.S. Army's Containerized Kitchen (CK), slightly modified for Marine Corps use, would be an excellent fit for this, and would fully complement the Marine Corps' Family of Combat Feeding Systems. Commanders would then have the capability and flexibility to provide the entire family of operational rations in a scaleable format.

DOTMLPF Implications:

Doctrine – Changes to MCO P10110.14M (Draft) and MCRP 4-11.8A are required to incorporate these changes. The RGFSC will require modification to incorporate the change in policy regarding transporting meals from the mess hall. Further, local SOPs will require modification.

Organization – With the proposed fielding of new equipment, changes within the organization of the Food Service Companies and the Food Service element of the MWSS may be required. It is unlikely that equipment beyond the E-TRHS would be fielded to the GCE or the CE, so no impact to their organization is expected.

Training – Additional training in the Formal School will be required to incorporate the new equipment, particularly in the Non-commissioned Officers', Staff Non-commissioned Officers' and Senior Food Service Courses. This will likely require modifications to the lengths of these courses, and potentially require additional resources to conduct the training.

Materiel – With limits placed on contractor support to encourage tactical Food Service training, it is likely that current equipment will receive more use. This could result in a higher usage rate of

parts and consumables, however, equipment life cycles should not be affected. The E-TRHS and EFK (if fielded) have obvious materiel impact. Further, increased tactical feeding will result in a higher use of operational rations, particularly the UGR-B and possibly the UGR-A. However, increased use of the UGR-B is desirable, because it serves to rotate the rations in the War Reserve.

Leadership – See comments in Item 1 above. The proposed CMC White Letter would also address this issue, since it involves an enterprise-level policy change, and requires corporate buy-in to be successful.

Personnel – Potentially, a modest structure increase could be required to adequately operate the new equipment, unless a commensurate reduction is made in the number of TRHS and/or FFSS. However, it is unlikely that a units' entire T/E of Food Service equipment will be simultaneously employed, so a structure increase or reduction of TRHS/FFSS may not be necessary. Fielding of the E-TRHS and EFK without reducing the TRHS/FFSS will provide commanders additional flexibility to leverage the family of operational rations across the entire spectrum of operations.

Facilities – No impact on facilities is expected.

3. Deployment / Wartime:

Due to the Marine Corps' expeditionary nature, organic feeding should be expected exclusively during the first 60 days of deployment, when transition to contractor-provided support can take place through the Theater Executive Agent, as stipulated in the Marine Corps Field Feeding Program, MCRP 4-11.8A.¹⁸ The Army is currently moving in the direction of increased dependence upon contract feeding, particularly under larger LOGCAP contracts. Again, due to the Marine Corps' expeditionary nature, it is not recommended that it follow suit to the same extent. Contract feeding is ill-suited for forward-deployed locations. Contract feeding, LOGCAP in particular, is best suited in reasonably secure main operating bases where larger populations of forces are located, as is Army doctrine. Marine Corps dependence on contract feeding would result in indefinite subsistence on MREs as the sole diet. Hence, a functioning, scaleable Food Service capability must be maintained and exercised.

DOTMLPF Implications:

Doctrine – Current Food Service doctrine (MCO P10110.14M (Draft) and MCRP 4-11.8A) adequately addresses maintenance of an organic Food Service capability. However, if the E-TRHS and/or EFK are fielded, these documents will require modification.

Organization – Current Food Service structure is adequate to provide organic Food Service support, except as outlined in Items 1 and 2 above.

Training – Training provided by the Formal School, the Food Management Teams and local unit training should continue.

Materiel – As outlined above, the E-TRHS and EFK (if fielded) have obvious materiel impact. Again, increased tactical feeding will result in a higher use of operational rations, particularly the

¹⁸ United States Marine Corps MCRP 4-11.8a, "Marine Corps Field Feeding Program," 24 June 2004.

UGR-B and possibly the UGR-A. However, increased use of the UGR-B is desirable, because it serves to rotate the rations in the War Reserve.

Leadership – The proposed CMC White Letter would adequately address this issue, since it involves an enterprise-level policy change, and requires corporate buy-in to be successful.

COA 3 addresses the possibility of decreasing the contractor support in mess facilities in CONUS. This would increase the availability of food preparation billets in CONUS, alleviating some of the training issues shown in COA 2. This COA assumes that Marines would serve as both management and food preparers in a number of facilities that are currently contractor managed. There would be a minimal increase in the uniformed food service population to support this COA.

The obvious benefit of this COA would be the increase in the experience of uniformed personnel in food preparation. NCOs would similarly get increased facility management experience. While Marines would perform much of the food preparation, they would be supplemented with contractor cooks and with contractor mess attendants, thus providing contract management experience. In order to gain additional field food service experience Marines would be encouraged to participate in training exercises. This could be accomplished by limiting the ability of the commander to use facility mess support during training or by requiring field food service currency as discussed in COA 2.

Marines would also have to support training exercises from their mess facilities. Contractors would have to provide backfill for the Marines when they are on training deployment (or contingency operations). Contractor backfill would also be required for Marines to maintain equipment used for field food preparation. This would leave Marines better able to prepare food in both OCONUS and in contingency operations and it would leave NCOs better able to manage contractor mess operations. It would not improve food service logistics experience or equipment maintenance experience.

The PICCM model for this COA included an increase of 150 billets. However, the RGFSC model developed by the study team indicates a range of possibilities from maintaining current structure to an increase of 457 spaces, as outlined below.

Table 35 shows the structure spaces that would be needed to achieve the indicated proportion of time spent working in mess halls. The new mess hall positions are the quantity required if no new structure positions are added.

Time in Mess Hall	Structure needed	New MH positions
0.3	766	423
0.275	702	359
0.267714	684	341
0.25	639	296
0.225	575	232
0.2	511	168
0.175	447	104
0.134299	343	0

Table 35: New Mess Hall Position Needed, No New Structure

Table 36 shows the number of new mess hall positions that would be needed if they were filled exclusively with new structure. An argument can be made that the transition to the RGFSC entailed taking away structure space, which implies that returning mess hall positions necessitates returning structure space. However, **Table 36** clearly indicates that filling the new positions through new structure space is less efficient than using existing structure in achieving the goal of greater training through mess hall experience. However, given that no equipment would be eliminated in order to increase time spent in the mess hall, and manpower is predicated upon equipment levels, it is very hard to justify reverting mess hall positions within the RGFSC back to Marines without increasing structure.

Time in Mess Hall	New positions
0.3	605
0.275	496
0.267714	465
0.25	394
0.225	299
0.2	210
0.175	126
0.134299	0

Table 36: New Mess Hall Positions Needed, with New Structure

It is possible to fill new mess hall positions through a combination of existing structure and new structure, as shown in **Table 37**. Each cell shows the number of new structure positions needed depending on the proportion of time working in mess halls that is desired and the excess capacity that is really available within the MOS.

Time in Mess Halls	Utilization of Marine Corps Food Service				
	0.99	0.95	0.9	0.866	0.85
0.3	567	422	240	117	0
0.275	460	319	144	25	0
0.268	430	291	117	0	0
0.25	359	223	54	0	0
0.225	265	134	0	0	0
0.2	177	50	0	0	0
0.175	94	0	0	0	0
0.134	0	0	0	0	0

Table 37: New Structure Needed for Desired Experience and Existing Utilization

Facilities – No impact on facilities is expected.

Other recommendations provided as discovered during the data collection process:

Equipment:

Refrigeration in tactical environments continues to be an issue. The “Quad-cold” concept of the E-TRHS will mitigate much of the refrigeration problems. However, when the FFSS and EFK (if

fielded) are employed, refrigeration assets are needed. Even with the UGR-B, refrigeration for enhancements and supplements are required. It is not recommended that the Marine Corps reinstitute a tactical mobile refrigeration capability, due to the availability of contracted assets in locations where the FFSS and EFK are likely to be used.

Additional equipment recommendations include:

- The current FFSS warranty, A/C and windows
- Additional Food and Beverage containers
- Maintenance of equipment to be trained in the respective electrician/mechanic Formal Schools, or develop a primary MOS under 33XX as equipment maintenance
- FFSS CLS and parts
- PMB Sled plate

Rations:

- Leverage entire family of rations
- Place responsibility for Class I management under 33XX, not 30XX

Doctrine:

- Redefine FSO roles under RGFSC and CSS Migration
- Responsibilities of supporting and supported units under CSS Migration
- Incorporate bottled water into Class I budgeting
- Publish a CMC White Letter approving and implementing the COA taken

Contracting:

- Supervision of Third-country Nationals (TCNs) is a core competency under contract feeding scenarios.
- LOGCAP Food Service support is exorbitantly expensive (currently \$57 per Marine fed, per day).
- RGFSC is perceived as non-responsive and cumbersome by commanders.

In summary, the pros and cons of the various scenarios are:

COA/Scenario:	Pros	Cons	Mitigating Strategies
Increase MC Food Service in CONUS mess halls			
Garrison operations	Core competencies developed, maintained	Transition needed, backfills needed during deployments; new structure may be needed	Structure new RGFSC so that backfills available during deployments
Field training exercises	Core competencies developed, maintained	Lose out on ease of use of contracting	None
Deployment/wartime	Core competencies developed, maintained	FS personnel may be less available for other duties	Plan appropriately for FS personnel fulfilling their roles.

Table 38: Pros and Cons of “Increase MC Food Service in CONUS Mess Halls”

The only course of action which addresses the main concern leading to this study, the deterioration of the core competencies of the Marine Corps Food Service, is to restructure the RGFSC to revert a number of mess hall positions back to Marines. This study has presented a number of options for converting mess hall positions to Marines, both without adding structure to MOS 3381 and with adding structure. Filling mess hall positions without adding structure would accomplish the goal of increasing training and experience at a quicker rate than doing it while adding structure. However, since structure spaces are generally tied to equipment, which is not anticipated to change under any of the primary options, some structure increases are likely to be necessary. **Table 39** summarizes the pros and cons of each of the three primary courses of action considered.

COA	Pros	Cons	Mitigating Strategies
Maintain Status Quo	Minimal disruption, Marines freed for other duties	Lack of CONUS training opportunities and day-to-day exercise of skills leads to erosion of core competencies to manage and maintain an overseas mess hall.	Make contractor supervision a core competency, increase field exercises, prepare for greater reliance on contracted support in theater and exercises. Ensure enough qualified staff to fill QA function.
Reduce Structure	Frees billets for other functions; opportunity for equipment reductions	Reduced ability to organically feed when contractor support not available. Cross-leveling implies less integration with commanding unit.	Greater centralization, a.k.a CSS migration; more training, particularly in contract management and supervision of Third Country Nationals.
Increase MC Food Service positions in CONUS mess halls	Core competencies developed, maintained	Transition needed, backfills needed during deployments; new structure may be needed	Structure new RGFSC so that backfills available during deployments; Plan appropriately for FS personnel fulfilling their roles

Table 39: Pros and Cons of Primary COAs

IX. Recommendations and Conclusions

The study team made site visits to Marine Corps installations in CONUS and OCONUS, surveyed Marine Corps Food Service, logisticians, and senior officers, studied literature related to the Marine Corps Food Service, and reviewed developments in equipment and rations technology in order to develop a decision framework to act as a basis for recommendations to the Service Branch (LFS), Installations and Logistics Department (I&L), Headquarters Marine Corps (HQMC) on the future of the Marine Corps Food Service. The analysis contained herein is based upon certain assumptions that to the best of the study team’s knowledge, based on the research performed for this report, hold true today. However, it is understood, that conditions can change. It is the hope of the team that the decision framework is robust enough to be able to incorporate revised assumptions should that become necessary.

With that in mind, the study team made the following set of assumptions based upon its interviews, survey results, and documentation read that constitutes the best guess of the desires of

the Marine Corps in terms of the capabilities it wants to support within the Marine Corps Food Service:

- The Marine Corps will remain an expeditionary force;
- While contract feeding will continue to be the norm in many AOR's, there will remain situations, especially in locations where an expeditionary force would be expected to play a primary role, where contract feeding will be either impossible or impractical.

If these two assumptions are maintained, then the "as is" situation is untenable long-term, and a reduction in food service personnel acknowledging their current underutilization in CONUS would deny the Marine Corps the capacity to provide hot meals organically, and would mean that Marines would be forced to subsist on MRE's for durations significantly beyond the recommended 21-day limit when contract feeding is unavailable.

Therefore, this study recommends and has shown that given the above two assumptions, that the preferred primary course of action is to convert some Full Food Service (FFS) contracts in the RGFSC to M&MA facilities and convert some M&MA facilities to a new category of "MA" only facilities to provide training opportunities for food service personnel for mess hall management and food preparation, as well as preparing them for QA roles in overseeing contracted facilities.

This study has provided the quantities of mess hall positions needed, both with and without adding force structure, if the same level of mess hall experience is desired as was available before the implementation of the RGFSC. It has also provided a sliding scale of incremental increases in mess hall experience between the current level and the pre-RGFSC level. The study makes no policy recommendation on how far along the scale of mess hall experience the Marine Corps should go to ensure that its Food Service maintains its core competencies. The team merely notes that some incremental loss of ability will take place with each reduction of mess hall time.

Other recommendations include that food service personnel need to be prepared to oversee contractors, both in CONUS and in theater, necessitating approximately three weeks of contracting courses for every food service member, including several days during the Basic Course, one week at the NCO course, and one week at the SNCO course.

In addition, in order to maintain core competencies with equipment, in food preparation, and mess hall management, food service personnel should be required to spend approximately 16 days per year in field exercises with their equipment. An annual floor of 32 days per year with hands on food preparation and mess hall management duties should be set for Marine Corp Food Service Personnel.

On the equipment side, the Marine Corps should not purchase any new FFSS systems, and use cost savings to purchase EFKs and E-TRHS systems, providing the capability to use higher quality rations in more forward areas, and reducing the logistics footprint.

Finally, the equipment recommendations allow the Marine Corps to adopt the UGR-A as the ration of choice, in common with the Army.

In summary, this Field Food Service Feeding Study makes the following recommendations:

- Increase the number of positions available in CONUS mess halls for Marines;

- Address new requirement in mess halls through a combination of existing structure and new structure;
- Keep OCONUS mess halls as Marine managed;
- Institute minimum annual mess hall and field training requirements for Marines to maintain Food Service certification;
- As FFSS systems reach the end of their lifecycle, replace them with systems with a smaller footprint, such as the CK/EFK;
- Move forward with the introduction of the E-TRHS;
- Introduce contractor supervision to the Food Service curriculum offered at Fort Lee.

These changes will ensure a more highly trained cadre of Marine Corps Food Service personnel, capable of fulfilling all mess hall requirements in theater, during training exercises, and in garrison mess halls, both in CONUS and OCONUS.

Acronyms

AFFS	Army Field Food Service
AOR	Area of Responsibility
ASR	Authorized Strength Report/Authorized Staffing Requirement
BRAC	Base Closure and Realignment Commission
CK	Containerized Kitchen
CKTF	Containerized Kitchen-Thermal Fluid
CLS	Contractor Logistics Support
COA	Courses of Action
CONUS	Continental United States
CSS	Combat Service Support
CSSE	Combat Service Support Element
DFAC	Dining Facility
DOTMLPF	Doctrine, Organization, Training, Materiel, Logistics, Personnel, Facilities
EFK	Expeditionary Field Kitchen
E-TRHS	Enhanced Tray Ration Heater System
FAA	Functional Area Analysis
FFS	Full Food Service
FFSS	Field Food Service System
FNA	Functional Needs Analysis
FOB	Forward Operating Base
FOC	Full Operational Capability
FSA	Functional Systems Analysis
FSO	Food Service Officer
FSR	First Strike Ration
GCE	Ground Combat Element
HQMC	Headquarters Marine Corps
I&L	Installations & Logistic
IOC	Initial Operational Capability
LFS	Food Service Branch, I&L, HQMC
LOGCAP	Logistics Civil Augmentation Program
MA	Mess Attendant
MAGTF	Marine Air-Ground Task Force
MAW	Marine Air Wing
MCAS	Marine Corps Air Station
MCB	Marine Corps Base
MCI-E	Marine Corps Installations - East
MCI-W	Marine Corps Installations - West
MEF	Marine Expeditionary Force
MEU	Marine Expeditionary Unit
MLG	Marine Logistics Group
M&MA	Management & Mess Attendant
MOS	Military Occupational Specialty
MRE	Meal Ready to Eat
MTVR	Medium Tactical Vehicle Replacement
NCO	Non-Commissioned Officer
OCONUS	Outside the Continental United States
OEF	Operation Enduring Freedom
OIF	Operational Iraqi Freedom

PICCM	Personnel Inventory Cost and Compensation Model
QAE	Quality Assurance Engineer
RDECOM	Research and Development Command (Army)
RGFSC	Regional Garrison Food Service Contract
RTCH	Rough Terrain Container Handler
SNCO	Senior Non-Commissioned Officer
SOP	Standard Operating Procedures
TCN	Third Country National
T/O	Table of Organization
TRHS	Tray Ration Heater System
TTP	Tactics, Techniques and Procedures
UGR-A	Unitized Group Ration - A
UGR-B	Unitized Group Ration - B
UGR-H&S	Unitized Group Ration – Heat & Serve

Bibliography

1. Briefing of Family of Combat Field Feeding Equipment, 18 Mar 2006
2. Brown, Drew. "Kuwait: Iraqi Spy Was to Use Poison." Philadelphia Inquirer 20 Jan. 2003. <<http://nl.newsbank.com/nlsearch.asp>>.
3. Cost of the Regional Garrison Food Service Contract (RGFSC)
4. Discussion topics from II MEF FSO, relating to Food Service Support for OIF 04-06
5. DoD Combat Feeding Research and Engineering Program 2006, Technical Presentation, 1-2 November 2006, Natick, MA.
6. Draft EFCAT assessments of Food Service and Contingency Contract Operations for CJTF-Haiti
7. EFCAT Initial Observations Report on LogCap and MAGTF Contingency Contract Operations, OIF II-1 (FOUO)
8. Fiscal Year 2007 Food Service Tables of Organization and Equipment
9. Food Service Lessons Learned from OIF 04-06 (II MEF, 2nd MarDiv, 2nd MLG)
10. Intermediate-level Supply Chain Management Study, 22 May 2006
11. Kirejczyk, Harry J., and Roger Schleper. United States. RDECOM. Department of Defense. Army Field Kitchen Workloads and Fuel Consumption. 2004.
12. Kirejczyk, Harry J. United States. United States Army. Department of Defense. Updated Army Cook Staffing Model to Reflect Workloads Generated by Current Field Feeding Operations, Group Rations, and Kitchens. 2006.
13. LtCol Fahey's e-mail of 27 June 06 regarding DLA support
14. Maj Weeks' E-mail of 21 Jul 2006 from Natick Soldier Systems Center regarding the Army Class I Study briefing
15. MCCDC Food Service Quick Response Study 1997
16. MCI-E Information Paper; Realignment of Food Service Specialist, MOS 3381. July 2006
17. MPF Food Service Equipment and Rations
18. MSgt Jackson's e-mail of 14 July 2004 regarding MAGTF-8 Haiti After-action
19. PEO CS&CSS and DoD Combat Feeding Partnership Management Agreement
20. Solution Planning Directive, MAGTF Logistics Functional Concept
21. Statement of Need (SON) for the Enhanced Tray Ration Heating System (E-TRHS), 21 June 2006
22. United States. Air-Ground Task Force. United States Marine Corp. 1994 Mission Area Analysis for Food Service. 1994.
23. United States. Department of Defense. DoD Combat Feeding Research and Engineering Program, DoD Combat Feeding Research and Engineering Board, and DoD Nutrition Committee. 2004.
24. United States. DoD Combat Feeding Directorate. Department of Defense. Capability Gaps Relevant to the Combat Feeding Mission Area. 2006.
25. United States. DoD Combat Feeding Directorate. Department of Defense. Department of Defense Combat Feeding: Food Service Equipment and Field Feeding Systems. 2004.
26. United States. DoD Combat Feeding Directorate. Department of Defense. Operational Rations of the Department of Defense. 2006.
27. United States. United States Marine Corps. MCRP 4-11.8a Marine Corps Field Feeding Program. 24 June 2004.
28. United States. United States Marine Corps. MCO P10110.14L SOP for Food Service.
29. UNS for a Mobile Field Feeding System, 31 May 2006

Appendix I: Survey
US Marine Corps Field Food Service Study
Data Collection and Survey

U.S. MARINE CORPS FIELD FOOD SERVICE STUDY
DATA COLLECTION AND SURVEY

The following survey is part of the data collection phase of the USMC Field Food Service Study, which will assess the current field food service model and develop a baseline for migrating to the next generation, examining current doctrine and processes for field food service and garrison operations.

Data will be collected from stakeholders in each element of the MAGTF under garrison, exercise, deployment, and combat operating conditions, covering such issues as the number of Marines fed by Marine Corps food service personnel and contractors, use of Marine Corps food service personnel for non-MOS 33XX tasks, use and rotation of equipment and rations, spoilage of unused rations, and costs of both Marine Corps-provided and contractor-provided food service support.

We request that senior MOS 33XX and select logisticians/operational commanders participate in this process, in order to obtain a wide range of experiences and perspectives.

Several survey questions ask for information relative to numbers and percentages. Where possible, please cite the source from which those numbers or percentages were derived, in the comment block below each question.

U.S. MARINE CORPS FIELD FOOD SERVICE STUDY - DATA COLLECTION AND SURVEY

1. During your recent/current deployment or exercise, what number and percentage of Marines were/are supported by **Marine Corps-provided** food service operations, using organic equipment?

Number	Percentage
<input type="text"/>	<input type="text"/>

Comments:

2. During your recent/current deployment or exercise, what number and percentage of Marines were/are supported by **contractor-provided** food service operations?

Number	Percentage
<input type="text"/>	<input type="text"/>

Comments:

3. During your recent/current deployment or exercise, what number and percentage of Food Service Marines were/are performing in a food service capacity, either providing contractor quality assurance, or preparing meals using organic equipment?

Number	Percentage
<input type="text"/>	<input type="text"/>

Comments:

--

U.S. MARINE CORPS FIELD FOOD SERVICE STUDY - DATA COLLECTION AND SURVEY

4. During your recent/current deployment or exercise, what quantity and percentage of **deployed** field food service equipment was/is not employed?

	Number	Percentage
FFSS	<input type="text"/>	<input type="text"/>
TRHS	<input type="text"/>	<input type="text"/>

Comments:

5. During your recent/current deployment or exercise, what quantity and percentage of field food service equipment remained behind, where units relied on contractor support?

	Number	Percentage
FFSS	<input type="text"/>	<input type="text"/>
TRHS	<input type="text"/>	<input type="text"/>

Comments:

6. During your recent/current deployment or exercise, did you experience situations where operational rations spoiled due to non-use? If so, please comment below on the quantities and circumstances:

Comments:

U.S. MARINE CORPS FIELD FOOD SERVICE STUDY - DATA COLLECTION AND SURVEY

7. Indicate your assessment of the impact of contract feeding (garrison and/or field) on Food Service Marines' knowledge of food service operations and their ability to perform their tasks:

A	B	C	D	E
Significant Improvement	Slight Improvement	No Impact	Slight Loss of Knowledge / Abilities	Significant Loss of Knowledge / Abilities
<input style="width: 100%;" type="text"/>				

Comments:

8. To what extent has the proliferation of contract feeding (garrison and field) impacted Food Service Marines' ability to operate and manage mess halls in OCONUS?

A	B	C	D	E
Significant Improvement	Slight Improvement	No Impact	Slight Loss of Ability	Significant Loss of Ability
<input style="width: 100%;" type="text"/>				

Comments:

9. To what extent has the proliferation of contract feeding (garrison and field) impacted the ability

to feed Marines during major training exercises, and potentially in other AORs less conducive to contractor support?

A	B	C	D	E
Significant Improvement	Slight Improvement	No Impact	Slight Loss of Ability	Significant Loss of Ability
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Comments:

U.S. MARINE CORPS FIELD FOOD SERVICE STUDY - DATA COLLECTION AND SURVEY

Please indicate your level of agreement to the following statements:

10. Contract feeding gives operational commanders additional flexibility when deployed.

A	B	C	D	E
Strongly Agree	Agree	No Opinion	Disagree	Strongly Disagree
<input type="text"/>				

Comments:

11. Contract feeding improves the quality of food and effectiveness of food service operations, both in garrison and in the field.

A	B	C	D	E
Strongly Agree	Agree	No Opinion	Disagree	Strongly Disagree
<input type="text"/>				

Comments:

12. Contract feeding is a key element of food service operations, and should be retained at some level.

A	B	C	D	E
Strongly Agree	Agree	No Opinion	Disagree	Strongly Disagree
<input type="text"/>				

Comments:

U.S. MARINE CORPS FIELD FOOD SERVICE STUDY - DATA COLLECTION AND SURVEY

13. What percentage of non-deployed Food Service Marines should manage and work in garrison mess halls on a daily basis to maintain food preparation and mess hall management proficiency?

A	B	C	D	E
81-100%	61-80%	41-60%	21-40%	0-20 %
<input type="text"/>				

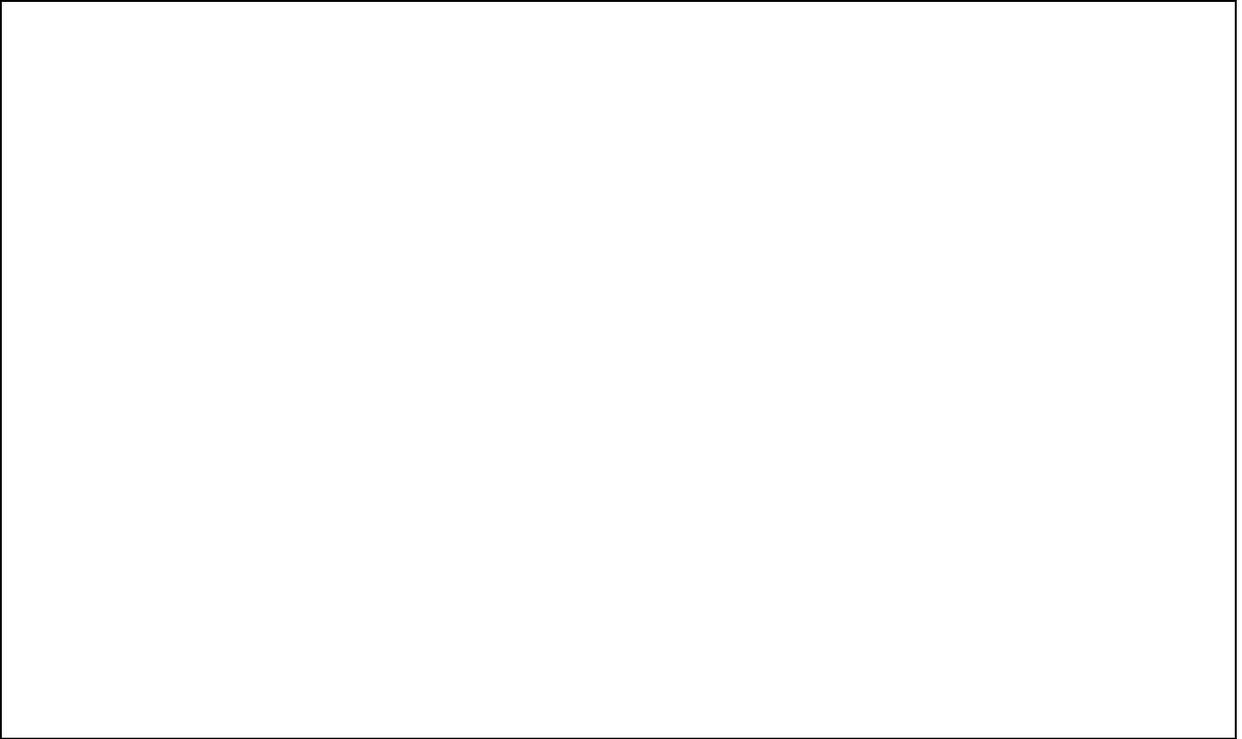
Comments:

Rank/Name/MOS: _____

Organization/Billet: _____

Recent deployments/exercises - Dates: _____

Other comments as desired:



Appendix II: PICCM Model Documentation

The following narrative was copied verbatim from the PICCM user guide. The tables were created by MCR. These tables summarize the assumptions used to drive the simulation used for the Food Service Study.

What is PICCM?

PICCM is a comprehensive, stand-alone, military personnel inventory projection model. The model is written in VisualBasic to run on a PC under Windows95 or later or NT 4.0 or later. It is designed for OSD analysts to assist them in studying military personnel policies and their implications for force structure and cost. There are two unique aspects of PICCM that distinguish it from earlier inventory, cost, and compensation models. First, it is the first inventory model to include all DoD active duty military personnel (enlisted, commissioned, and warrant officers) from all four services. Second, it is the first model of its type designed specifically to operate in a Windows environment. As such, it has an extensive graphical user interface to assist analysts in setting up, running, and examining the results of studies.

PICCM is a deterministic, cell-based model that uses annual transition rates to 'age' the inventory from cell to cell on a fiscal year cycle. Inventory counts and rates are maintained in the model by service, personnel community, occupation, gender, race, quality level (enlisted only), years of commissioned service (officer only), grade, and total years of military service.

The basic building blocks in the model are scenarios. Each scenario is defined as the combination of a service and personnel community (e.g., Army enlisted), with a corresponding set of parameter files that specify future assumptions about compensation, gains, losses, promotions, and strengths for that service/community. Scenarios can be combined into studies with a common set of run parameters, costing assumptions, and output reports. A study may consist of up to 11 scenarios -- four services times three personnel communities, except Air Force warrant officers, which do not exist. The

model is initialized with default values for all parameters based on the most recently completed fiscal year (the baseline period). The baseline data are derived from files maintained at the Defense Manpower Data Center (DMDC) in Monterey, California. A second baseline database is also included with the model; in this database the DMDC inventory and pay data have been adjusted to match the totals provided by the Services to Congress in their budget justification books.

PICCM Data

A second baseline database is now included with the model. It contains FY2003 inventory and pay data that have been adjusted from the DMDC baseline to match the totals provided by the Services to Congress in their FY2005 budget justification books. The default economic assumptions have also been updated using information provided by OSD (PA&E).

2.1 Adjust Continuation Rates for Pay and Unemployment

The user has the following three continuation rate options: (1) use the single-year baseline continuation rates throughout the projection run, (2) use three-year average continuation rates throughout the projection run (the rates are the average of the most recent baseline year and the two preceding years), or (3) dynamically adjust the single-year baseline rates for projected changes in military and civilian pay and unemployment.

Changes in military compensation, retirement benefits, and civilian labor market conditions impact the attractiveness of military service as a career option. For example, a substantial increase in the civilian unemployment rate would make leaving the military a less advantageous choice. To account for such effects, PICCM provides the capability to compute adjustments to the baseline continuation rates based on user-defined assumptions regarding future military and civilian pay increases, retirement system changes, and civilian unemployment shifts. To use the retention-adjustment feature, click the 'Run Retention Adjustments' check box under Projection Options.

Econometric studies have developed estimates of the effects of pay and unemployment on retention. The results in these studies are expressed in terms of elasticities, or the percentage change in retention associated with a one-percent change in pay or unemployment. The user can edit the elasticities in PICCM using the ‘Compensation Assumptions’ screen. The defaults in the model are based on the results of the most recent applicable research.

Calculating retention changes based on unemployment elasticities is relatively straightforward. However, determining the impact of compensation factors on stay-leave decisions is a complex process that must give appropriate consideration to an individual’s military earnings, potential civilian earnings, and future retirement benefits. Moreover, the analysis must consider how these factors are expected to change over different time horizons—a one-time comparison of these parameters is insufficient. PICCM uses an econometric technique called the Annualized Cost of Leaving (ACOL) methodology to integrate the relevant compensation factors into a metric that can be tracked from year to year. At the beginning of a model run, PICCM calculates the baseline cost of leaving for each cell in the model. Then, using the user-supplied changes to military compensation, civilian earnings, and retirement systems, PICCM recalculates the cost of leaving for each projection year. The difference in the cost of leaving between the baseline and projection year is then converted into a retention adjustment using the pay elasticities in the model.

Table 1

Marines – Enlisted and Warrant		
Elasticity of Continuation Rates with Respect to Pay and the Unemployment Rate		
(Values Shown in Percent)		
YOS	Pay	Unemployment
1	0	0.06
2	1.9	0.06
3	1.9	0.06
4	1.9	0.06
5	1.3	0.06
6	1.3	0.06
7	1.3	0.06
8	1.3	0.06
9	0.4	0.06

Marines – Enlisted and Warrant		
Elasticity of Continuation Rates with Respect to Pay and the Unemployment Rate		
(Values Shown in Percent)		
YOS	Pay	Unemployment
10	0.4	0.06
11	0.4	0.06
12	0.4	0.06
13	0.4	0.06
14	0.4	0.06
15	0.4	0.06
16	0.4	0.06
17	0.4	0.06
18	0.4	0.06
19	0.4	0.06
20	0.4	0.06
21	0.4	0.06
22	0.4	0.06
23	0.4	0.06
24	0.4	0.06
25	0.4	0.06
26	0.4	0.06
27	0.4	0.06
28	0.4	0.06
29	0.4	0.06
30	0.4	0.06
31	0.4	0.06

Table 2

Marines – Officer		
Elasticity of Continuation Rates with Respect to Pay and the Unemployment Rate		
(Values Shown in Percent)		
YOS	Pay	Unemployment
1	0	0.06
2	0	0.06
3	0	0.06
4	0.5	0.06
5	0.5	0.06
6	0.5	0.06
7	0.5	0.06
8	0.5	0.06
9	0.5	0.06
10	0.5	0.06
11	0.5	0.06

Marines – Officer Elasticity of Continuation Rates with Respect to Pay and the Unemployment Rate (Values Shown in Percent)		
YOS	Pay	Unemployment
12	0.5	0.06
13	0.2	0.06
14	0.2	0.06
15	0.2	0.06
16	0.2	0.06
17	0.2	0.06
18	0.2	0.06
19	0.2	0.06
20	0.2	0.06
21	0.2	0.06
22	0.2	0.06
23	0.2	0.06
24	0.2	0.06
25	0.2	0.06
26	0.2	0.06
27	0.2	0.06
28	0.2	0.06
29	0.2	0.06
30	0.2	0.06
31	0.2	0.06

Because retirement income influences retention behavior, PICCM allows the user to create new retirement systems and change the year groups to which the new and current retirement systems apply. This is done by clicking on the “Edit Cost and Compensation Assumptions” button on the Projection Options panel, and then selecting the “Retirement Systems” tab.

2.2 Apply Continuation Rates

For each inventory cell (a combination of occupation, gender, race, quality (enlisted), grade, years of commissioned service (officers and warrants), and years of military service), the model multiplies the starting inventory by the appropriate continuation rate to determine the continuing population.

Table 3

Marines – Enlisted							
Continuation Rates for the Supply and Handling Occupation							
Population: White, Male, High Quality							
YOS	E1-3	E4	E5	E6	E7	E8	E9
1	0.9289	0.9324	0.9324	0.9324	0.9324	0.9324	0.9324
2	0.9598	0.9677	0.949	0.949	0.949	0.949	0.949
3	0.9425	0.9832	0.9188	0.9419	0.9419	0.9419	0.9419
4	0.2674	0.3225	0.4694	0.4259	0.4259	0.4259	0.4259
5	0.3333	0.732	0.8667	0.9565	0.6181	0.6181	0.6181
6	0.4286	1	0.9621	0.9583	0.9112	0.9112	0.9112
7	0.5	0.8095	0.9315	0.96	0.9213	0.9213	0.9213
8	0.4857	0.5667	0.7609	0.8966	0.743	0.743	0.743
9	0.5714	0.5946	0.9535	0.8136	0.866	0.866	0.866
10	0.7541	0.7931	0.9535	0.962	1	0.9147	0.9147
11	0.7708	0.8696	0.9	0.9333	0.9106	0.9226	0.9226
12	0.5581	0.9143	0.8462	0.9659	0.9384	0.9143	0.9143
13	0.65	0.9026	0.3214	0.9412	1	0.9026	0.9026
14	0.6429	0.9539	0.7778	0.9792	1	0.9539	0.9539
15	0.5238	0.9666	0.9666	1	0.9667	0.9666	0.9666
16	0.8065	0.9738	0.9738	0.9565	1	0.9677	0.9738
17	0.5238	0.9769	0.9769	0.95	0.9833	1	0.9769
18	0.7	0.9803	0.9803	0.9615	1	1	0.9803
19	0.9921	0.9921	0.9921	1	1	1	0.9921
20	0.8696	0.5463	0.5463	0.0526	0.6	0.8015	0.5463
21	0.6458	0.6458	0.6458	0	0.6282	0.7872	1
22	0.6724	0.6724	0.6724	0.6724	0.3069	0.7222	0.8261
23	0.7556	0.7556	0.7556	0.7556	0.2381	0.8	0.7949
24	0.9	0.7746	0.7746	0.7746	0.7746	0.7556	0.8814
25	0.8152	0.8152	0.8152	0.8152	0.8152	0.8485	0.8589
26	0.7727	0.8127	0.8127	0.8127	0.8127	0.65	0.881
27	0.7662	0.7662	0.7662	0.7662	0.7662	0.28	0.8653
28	0.8271	0.8271	0.8271	0.8271	0.8271	0.8271	0.8359
29	0.7885	0.7885	0.7885	0.7885	0.7885	0.7885	0.7815
30	0.1746	0.1746	0.1746	0.1746	0.1746	0.1746	0.1333
31	1	0.8919	0.8919	0.8919	0.8919	0.8919	0.8919

Table 4

Marines – Enlisted							
Continuation Rates for the Supply and Handling Occupation							
Population: Non-White, Male, High Quality							
YOS	E1-3	E4	E5	E6	E7	E8	E9
1	0.9420	0.9324	0.9324	0.9324	0.9324	0.9324	0.9324
2	0.9296	0.9744	0.9490	0.9490	0.9490	0.9490	0.9490
3	0.9462	0.9848	0.9188	0.9419	0.9419	0.9419	0.9419

Marines – Enlisted							
Continuation Rates for the Supply and Handling Occupation							
Population: Non-White, Male, High Quality							
YOS	E1-3	E4	E5	E6	E7	E8	E9
4	0.3485	0.4070	0.4615	0.4259	0.4259	0.4259	0.4259
5	0.3396	0.8588	0.8537	0.9565	0.6181	0.6181	0.6181
6	0.4286	0.9677	0.9661	0.9583	0.9112	0.9112	0.9112
7	0.5000	0.8095	0.8594	0.9600	0.9213	0.9213	0.9213
8	0.4857	0.5667	0.7368	0.9118	0.7430	0.7430	0.7430
9	0.5714	0.5946	0.8529	0.8095	0.8660	0.8660	0.8660
10	0.7541	0.7931	0.9565	0.9063	1.0000	0.9147	0.9147
11	0.7708	0.8696	0.9333	0.9655	0.9106	0.9226	0.9226
12	0.5581	0.9143	0.8462	0.9375	0.9384	0.9143	0.9143
13	0.6500	0.9026	0.3214	0.9630	1.0000	0.9026	0.9026
14	0.6429	0.9539	0.7778	1.0000	1.0000	0.9539	0.9539
15	0.5238	0.9666	0.9666	1.0000	0.9556	0.9666	0.9666
16	0.8065	0.9738	0.9738	0.9667	1.0000	0.9677	0.9738
17	0.5238	0.9769	0.9769	0.9500	1.0000	1.0000	0.9769
18	0.7000	0.9803	0.9803	0.9615	1.0000	1.0000	0.9803
19	0.9921	0.9921	0.9921	1.0000	1.0000	1.0000	0.9921
20	0.8696	0.5463	0.5463	0.0526	0.6000	0.8015	0.5463
21	0.6458	0.6458	0.6458	0.0000	0.6282	0.7872	1.0000
22	0.6724	0.6724	0.6724	0.6724	0.3069	0.7222	0.8261
23	0.7556	0.7556	0.7556	0.7556	0.2381	0.8000	0.7949
24	0.9000	0.7746	0.7746	0.7746	0.7746	0.7556	0.8814
25	0.8152	0.8152	0.8152	0.8152	0.8152	0.8485	0.8589
26	0.7727	0.8127	0.8127	0.8127	0.8127	0.6500	0.8810
27	0.7662	0.7662	0.7662	0.7662	0.7662	0.2800	0.8653
28	0.8271	0.8271	0.8271	0.8271	0.8271	0.8271	0.8359
29	0.7885	0.7885	0.7885	0.7885	0.7885	0.7885	0.7815
30	0.1746	0.1746	0.1746	0.1746	0.1746	0.1746	0.1333
31	1.0000	0.8919	0.8919	0.8919	0.8919	0.8919	0.8919

Table 5

Marines – Warrant					
Continuation Rates for Supply and Handling Occupation					
Population: White, Male, High Quality					
YOS	W1	W2	W3	W4	W5
1	1.0000	1.0000	1.0000	1.0000	1.0000
2	1.0000	1.0000	1.0000	1.0000	1.0000
3	1.0000	1.0000	1.0000	1.0000	1.0000
4	1.0000	1.0000	1.0000	1.0000	1.0000
5	1.0000	1.0000	1.0000	1.0000	1.0000
6	1.0000	1.0000	1.0000	1.0000	1.0000

Marines – Warrant					
Continuation Rates for Supply and Handling					
Occupation					
Population: White, Male, High Quality					
YOS	W1	W2	W3	W4	W5
7	1.0000	1.0000	1.0000	1.0000	1.0000
8	1.0000	1.0000	0.9950	0.9950	0.9950
9	0.9524	0.9500	0.9524	0.9524	0.9524
10	0.9596	0.9231	0.9596	0.9596	0.9596
11	0.9307	0.9560	0.6957	0.9307	0.9307
12	0.7979	0.7619	0.7391	0.7979	0.7979
13	0.7619	0.7619	0.7730	0.7619	0.7619
14	0.8357	0.8357	0.8467	0.8357	0.8357
15	0.8444	0.8444	0.7692	0.9730	0.8444
16	0.8776	0.8776	0.7273	0.9459	0.8776
17	0.7887	0.7887	0.7887	0.8088	0.7887
18	0.8298	0.8298	0.8298	0.7586	0.8298
19	0.6000	0.6000	0.6000	0.6000	0.6957
20	0.5769	0.5769	0.5769	0.5769	0.5769
21	1.0000	1.0000	1.0000	1.0000	1.0000
22	1.0000	1.0000	1.0000	1.0000	1.0000
23	1.0000	1.0000	1.0000	1.0000	1.0000
24	1.0000	1.0000	1.0000	1.0000	1.0000
25	1.0000	1.0000	1.0000	1.0000	1.0000
26	1.0000	1.0000	1.0000	1.0000	1.0000
27	1.0000	1.0000	1.0000	1.0000	1.0000
28	1.0000	1.0000	1.0000	1.0000	1.0000
29	1.0000	1.0000	1.0000	1.0000	1.0000
30	1.0000	1.0000	1.0000	1.0000	1.0000
31	1.0000	1.0000	1.0000	1.0000	1.0000

Table 6

Marines – Warrant					
Continuation Rates for Supply and Handling					
Occupation					
Population: Non-White, Male, High Quality					
YOS	W1	W2	W3	W4	W5
1	1.0000	1.0000	1.0000	1.0000	1.0000
2	1.0000	1.0000	1.0000	1.0000	1.0000
3	1.0000	1.0000	1.0000	1.0000	1.0000
4	1.0000	1.0000	1.0000	1.0000	1.0000
5	1.0000	1.0000	1.0000	1.0000	1.0000
6	1.0000	1.0000	1.0000	1.0000	1.0000
7	1.0000	1.0000	1.0000	1.0000	1.0000
8	1.0000	1.0000	1.0000	1.0000	1.0000

Marines – Warrant					
Continuation Rates for Supply and Handling Occupation					
Population: Non-White, Male, High Quality					
YOS	W1	W2	W3	W4	W5
9	1.0000	1.0000	0.9950	0.9950	0.9950
10	0.9524	0.9500	0.9524	0.9524	0.9524
11	0.9596	0.9231	0.9596	0.9596	0.9596
12	0.9307	0.9560	0.6957	0.9307	0.9307
13	0.7979	0.7619	0.7391	0.7979	0.7979
14	0.7619	0.7619	0.7730	0.7619	0.7619
15	0.8357	0.8357	0.8467	0.8357	0.8357
16	0.8444	0.8444	0.7692	0.9730	0.8444
17	0.8776	0.8776	0.7273	0.9459	0.8776
18	0.7887	0.7887	0.7887	0.8088	0.7887
19	0.8298	0.8298	0.8298	0.7586	0.8298
20	0.6000	0.6000	0.6000	0.6000	0.6957
21	0.5769	0.5769	0.5769	0.5769	0.5769
22	1.0000	1.0000	1.0000	1.0000	1.0000
23	1.0000	1.0000	1.0000	1.0000	1.0000
24	1.0000	1.0000	1.0000	1.0000	1.0000
25	1.0000	1.0000	1.0000	1.0000	1.0000
26	1.0000	1.0000	1.0000	1.0000	1.0000
27	1.0000	1.0000	1.0000	1.0000	1.0000
28	1.0000	1.0000	1.0000	1.0000	1.0000
29	1.0000	1.0000	1.0000	1.0000	1.0000
30	1.0000	1.0000	1.0000	1.0000	1.0000
31	1.0000	1.0000	1.0000	1.0000	1.0000

Table 7

Marines – Officer						
Continuation Rates for the Supply and Handling Occupation						
Population: White, Male, High Quality						
YOS	O1-O2	O3	O4	O5	O6	O7-10
1	1	0.9781	0.9781	0.9781	0.9781	0.9781
2	1	0.9846	0.9846	0.9846	0.9846	0.9846
3	0.8922	0.9153	0.9153	0.9153	0.9153	0.9153
4	0.7455	1	0.8286	0.8286	0.8286	0.8286
5	0.8507	0.8095	0.9034	0.9034	0.9034	0.9034
6	0.96	0.8824	0.9177	0.9177	0.9177	0.9177
7	0.9	0.7966	0.9155	0.9155	0.9155	0.9155
8	0.96	0.8873	0.9404	0.9404	0.9404	0.9404
9	1	0.9868	0.9307	0.9307	0.9307	0.9307
10	0.9167	0.9565	0.8696	0.9012	0.9012	0.9012
11	1	1	0.9556	0.937	0.937	0.937

12	0.9	1	1	0.9657	0.9657	0.9657
13	1	1	0.9804	0.9803	0.9803	0.9803
14	0.9412	1	0.975	0.9726	0.9726	0.9726
15	0.9091	1	1	0.9849	0.9849	0.9849
16	0.9706	1	0.9773	1	0.9781	0.9781
17	1	1	1	1	0.9919	0.9919
18	0.9804	0.9857	0.8571	1	0.9804	0.9804
19	0.9569	1	0.8738	1	0.9569	0.9569
20	0.7139	0.878	0.6154	0.6316	0.7139	0.7139
21	0.8127	0.92	0.7368	0.7143	0.8127	0.8127
22	0.8413	0.8182	0.7857	0.881	0.8413	0.8413
23	0.7828	0.7	0.5455	0.8	0.9737	0.7828
24	0.8272	0.8272	0.7105	0.6875	0.9889	0.8272
25	0.8591	0.8591	0.7727	0.6216	0.9882	0.8591
26	0.7704	0.7704	0.5	0.7778	0.8421	0.7704
27	0.8394	0.8394	0.8333	0.75	0.8765	0.8394
28	0.75	0.75	0.8125	0.5556	0.8056	0.75
29	0.7544	0.7544	0.7544	0.5	0.8267	0.7544
30	0.4795	0.4795	0.4795	0.5909	0.275	0.4795
31	0.7692	0.7692	0.7692	0.6667	0.697	0.8594

Table 8

Marines – Officer						
Continuation Rates for the Supply and Handling Occupation						
Population: Non-White, Male, High Quality						
YOS	O1-O2	O3	O4	O5	O6	O7-10
1	1	0.9781	0.9781	0.9781	0.9781	0.9781
2	1	0.9846	0.9846	0.9846	0.9846	0.9846
3	0.9091	0.9153	0.9153	0.9153	0.9153	0.9153
4	0.6875	1	0.8286	0.8286	0.8286	0.8286
5	0.8333	0.9	0.9034	0.9034	0.9034	0.9034
6	0.96	0.8519	0.9177	0.9177	0.9177	0.9177
7	0.9167	0.8537	0.9155	0.9155	0.9155	0.9155
8	0.96	0.9545	0.9404	0.9404	0.9404	0.9404
9	1	0.9231	0.9307	0.9307	0.9307	0.9307
10	0.9167	0.8947	0.8696	0.9012	0.9012	0.9012
11	1	0.9	1	0.937	0.937	0.937
12	0.9	1	1	0.9657	0.9657	0.9657
13	0.95	1	1	0.9803	0.9803	0.9803
14	0.9091	1	0.9783	0.9726	0.9726	0.9726
15	0.9333	1	1	0.9849	0.9849	0.9849
16	0.9706	1	1	1	0.9781	0.9781
17	1	1	1	1	0.9919	0.9919

18	0.9804	0.9857	0.8824	1	0.9804	0.9804
19	0.9569	1	0.8738	0.9667	0.9569	0.9569
20	0.7139	0.878	0.6875	0.6923	0.7139	0.7139
21	0.8127	0.92	0.7368	0.7308	0.8127	0.8127
22	0.8413	0.8182	0.7857	0.8913	0.8413	0.8413
23	0.7828	0.7	0.625	0.8182	0.9737	0.7828
24	0.8272	0.8272	0.7105	0.6875	0.9889	0.8272
25	0.8591	0.8591	0.7727	0.6216	0.9882	0.8591
26	0.7704	0.7704	0.5	0.7778	0.8421	0.7704
27	0.8394	0.8394	0.8333	0.75	0.8765	0.8394
28	0.75	0.75	0.8125	0.5556	0.8056	0.75
29	0.7544	0.7544	0.7544	0.5	0.8267	0.7544
30	0.4795	0.4795	0.4795	0.5909	0.275	0.4795
31	0.7692	0.7692	0.7692	0.6667	0.697	0.8594

2.4 Determine Promotions

The model then applies the baseline pin-on rates (with the same dimensions as the continuation rates) to determine promotions. If selected by the user, the promotions are adjusted to meet user-specified grade targets. This mode is selected by checking the “Promote to Grade Targets” box on the Projection Options panel. If the baseline pin-on rates generate too many promotions, the model begins eliminating promotions from the most junior year group first, working its way up the seniority list until the right number of promotions remain. If the baseline rates do not generate enough promotions, the model begins adding promotions to the year group just junior to the primary year group (the one with the highest pin-on rate). The model will only add promotions to a year group until its new pin-on rate equals the primary year group rate. If more promotions are needed, it moves down to the next year group.

The baseline pin-on rates can be edited by the user from the “Promotions” parameter edit screen. The same tool used to manually adjust continuation rates is available to manually adjust pin-on rates. For officer scenarios, the promotion parameter edit screen includes an option to change promotion opportunities by occupation, grade, and projection year. The baseline opportunities are those that produced the baseline pin-on rates, i.e., they were the prevailing opportunities the year before the baseline year, when most of the

promotion boards met to select the officers who pinned on during the baseline year. Officer pin-on rates are factored up or down proportional to changes in opportunity. For example if a baseline opportunity of 50 percent produced a pin-on rate of 60 percent, then increasing the opportunity to 70 percent increases the pin-on rate to $(70/50)*60 = 84$ percent. This adjustment, used in conjunction with the “Promote to Grade Targets” option, will cause phase points (average years of service at pin-on) to move in the proper direction when opportunities are changed. For example, increasing opportunity without increasing grade ceilings will cause phase points to increase as officers have to wait longer to pin-on.

Table 9

Marines – Enlisted Promotion Rates for the Supply and Handling Occupation Population: White, Male, High Quality							
YOS	E1-3	E4	E5	E6	E7	E8	E9
1	0.0411	0.0000	0.0000	0.0000	0.0000	0.0000	0.000
2	0.2953	0.1333	0.0909	0.0000	0.0000	0.0000	0.000
3	0.6550	0.2500	0.0000	0.0000	0.0000	0.0000	0.000
4	0.6875	0.3855	0.0000	0.0000	0.0000	0.0000	0.000
5	0.3571	0.5982	0.0171	0.1364	0.0000	0.0000	0.000
6	0.2813	0.6522	0.0079	0.1304	0.0000	0.0000	0.000
7	0.1905	0.5833	0.0515	0.0000	0.0000	0.0000	0.000
8	0.0588	0.7059	0.1143	0.0000	0.0000	0.0000	0.000
9	0.0833	0.7273	0.2317	0.0208	0.0667	0.0000	0.000
10	0.0870	0.6087	0.2439	0.0395	0.0000	0.0000	0.000
11	0.1000	0.4500	0.2778	0.0571	0.0179	0.0000	0.000
12	0.0000	0.0000	0.0714	0.0941	0.0000	0.0000	0.000
13	0.0000	0.0000	0.4000	0.2344	0.0000	0.0000	0.000
14	0.0556	0.0000	0.2857	0.2553	0.0000	0.0000	0.000
15	0.0000	0.0000	0.0000	0.1364	0.0345	0.0000	0.000
16	0.0000	0.0000	0.0000	0.0909	0.0256	0.0333	0.000
17	0.0000	0.0000	0.0000	0.1538	0.0847	0.0294	0.000
18	0.0000	0.0000	0.0000	0.0625	0.1961	0.0000	0.000
19	0.1000	0.0000	0.0000	0.0000	0.3171	0.0000	0.000
20	0.0000	0.0000	0.0000	0.0465	0.3333	0.1176	0.000
21	0.0000	0.0000	0.0000	0.0000	0.6000	0.0000	0.000
22	0.0000	0.0000	0.0000	0.0000	0.8276	0.0385	0.000
23	0.0909	0.0000	0.0000	0.0000	0.0000	0.0000	0.000
24	0.0000	0.0000	0.0000	0.0000	0.0000	0.1471	0.000

Marines – Enlisted							
Promotion Rates for the Supply and Handling Occupation							
Population: White, Male, High Quality							
YOS	E1-3	E4	E5	E6	E7	E8	E9
25	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.000
26	0.0000	0.0000	0.0000	0.0000	0.0000	0.4615	0.000
27	0.0000	0.0000	0.0000	0.0000	0.0000	0.7143	0.000
28	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.000
29	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.000
30	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.000
31	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.000

Table 10

Marines – Enlisted							
Promotion Rates for the Supply and Handling Occupation							
Population: Non-White, Male, High Quality							
YOS	E1-3	E4	E5	E6	E7	E8	E9
1	0.0462	0.0000	0.0000	0.0000	0.0000	0.0000	0.000
2	0.3502	0.1053	0.0909	0.0000	0.0000	0.0000	0.000
3	0.6872	0.2154	0.0000	0.0000	0.0000	0.0000	0.000
4	0.4348	0.3000	0.0000	0.0000	0.0000	0.0000	0.000
5	0.2778	0.6849	0.0000	0.1364	0.0000	0.0000	0.000
6	0.2813	0.6333	0.0351	0.1304	0.0000	0.0000	0.000
7	0.1905	0.5333	0.0000	0.0000	0.0000	0.0000	0.000
8	0.0588	0.7059	0.0952	0.0000	0.0000	0.0000	0.000
9	0.0833	0.7273	0.0690	0.0000	0.0667	0.0000	0.000
10	0.0870	0.6087	0.1364	0.0000	0.0000	0.0000	0.000
11	0.1000	0.4500	0.5000	0.0357	0.0179	0.0000	0.000
12	0.0000	0.0000	0.1364	0.0222	0.0000	0.0000	0.000
13	0.0000	0.0000	0.4000	0.2308	0.0000	0.0000	0.000
14	0.0556	0.0000	0.2857	0.1364	0.0000	0.0000	0.000
15	0.0000	0.0000	0.0000	0.3333	0.0000	0.0000	0.000
16	0.0000	0.0000	0.0000	0.0690	0.0000	0.0333	0.000
17	0.0000	0.0000	0.0000	0.1765	0.0345	0.0294	0.000
18	0.0000	0.0000	0.0000	0.0800	0.2500	0.0000	0.000
19	0.1000	0.0000	0.0000	0.0000	0.4000	0.0000	0.000
20	0.0000	0.0000	0.0000	0.0465	0.3333	0.1176	0.000
21	0.0000	0.0000	0.0000	0.0000	0.6000	0.0000	0.000
22	0.0000	0.0000	0.0000	0.0000	0.8276	0.0385	0.000
23	0.0909	0.0000	0.0000	0.0000	0.0000	0.0625	0.000
24	0.0000	0.0000	0.0000	0.0000	0.0000	0.1471	0.000
25	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.000
26	0.0000	0.0000	0.0000	0.0000	0.0000	0.4615	0.000
27	0.0000	0.0000	0.0000	0.0000	0.0000	0.7143	0.000

Marines – Enlisted							
Promotion Rates for the Supply and Handling Occupation							
Population: Non-White, Male, High Quality							
YOS	E1-3	E4	E5	E6	E7	E8	E9
28	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.000
29	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.000
30	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.000
31	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.000

Table 11

Marines – Warrant					
Promotion Rates for Supply and Handling Occupation					
Population: White, Male, High Quality					
YOS	W1	W2	W3	W4	W5
1	1	0	0	0	1
2	0	0	0	0	0
3	0	0.6207	0	0	0
4	0	0.027	0	0	0
5	0	0	0	0	0
6	0	0	0.7692	0	0
7	0	0	0.4118	0	0
8	0	0	0.8696	0	0
9	0	0	0	0	0
10	0	0	0	0	0
11	0	0	0	0.6774	0
12	0	0	0	0	0
13	0	0	0	0	0
14	0	0	0	0	0
15	0	0	0	0	0
16	0	0	0	0	0
17	0	0	0	0	0
18	0	0	0	0	0
19	0	0	0	0	0
20	0	0	0	0	0
21	0	0	0	0	0
22	0	0	0	0	0
23	0	0	0	0	0
24	0	0	0	0	0
25	0	0	0	0	0
26	0	0	0	0	0
27	0	0	0	0	0
28	0	0	0	0	0
29	0	0	0	0	0
30	0	0	0	0	0

Marines – Warrant					
Promotion Rates for Supply and Handling Occupation					
Population: White, Male, High Quality					
YOS	W1	W2	W3	W4	W5
31	0	0	0	0	0

Table 12

Marines – Warrant					
Promotion Rates for Supply and Handling Occupation					
Population: Non-White, Male, High Quality					
YOS	W1	W2	W3	W4	W5
1	1	0	0	0	1
2	0	0	0	0	0
3	0	0.4667	0	0	0
4	0	0.027	0	0	0
5	0	0	0	0	0
6	0	0	0.7857	0	0
7	0	0	0.4118	0	0
8	0	0	0.8696	0	0
9	0	0	0	0	0
10	0	0	0	0	0
11	0	0	0	0.6774	0
12	0	0	0	0	0
13	0	0	0	0	0
14	0	0	0	0	0
15	0	0	0	0	0
16	0	0	0	0	0
17	0	0	0	0	0
18	0	0	0	0	0
19	0	0	0	0	0
20	0	0	0	0	0
21	0	0	0	0	0
22	0	0	0	0	0
23	0	0	0	0	0
24	0	0	0	0	0
25	0	0	0	0	0
26	0	0	0	0	0
27	0	0	0	0	0
28	0	0	0	0	0
29	0	0	0	0	0
30	0	0	0	0	0
31	0	0	0	0	0

Table 13

Marines – Officer Promotion Rates for the Supply and Handling Occupation Population: White, Male, High Quality						
YOS	O2	O3	O4	O5	O6	O7-10
1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	0	0	0	0	0	0
4	0.3204	0	0	0	0	0
5	0.9565	0	0	0	0	0
6	0	0	0	0	0	0
7	0	0	0	0	0	0
8	0	0	0	0	0	0
9	0	0	0	0	0	0
10	0	0.8571	0	0	0	0
11	0	1	0	0	0	0
12	0	0	0	0	0	0
13	0	0	0	0	0	0
14	0	0	0	0	0	0
15	0	0	0.275	0	0	0
16	0	0	0.6512	0	0	0
17	0	0	0.1667	0	0	0
18	0	0	0.1667	0	0	0
19	0	0	0.0676	0	0	0
20	0	0	0.1667	0	0	0
21	0	0	0	0.05	0	0
22	0	0	0	0.4103	0	0
23	0	0	0	0.2407	0	0
24	0	0	0	0.0909	0	0
25	0	0	0	0	0	0
26	0	0	0	0	0	0
27	0	0	0	0	0	0
28	0	0	0	0	0.0328	0
29	0	0	0	0	0.0833	0
30	0	0	0	0	0	0
31	0	0	0	0	0	0

Table 14

Marines – Officer Promotion Rates for the Supply and Handling Occupation Population: Non-White, Male, High Quality						
---	--	--	--	--	--	--

YOS	O2	O3	O4	O5	O6	O7-10
1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	0	0	0	0	0	0
4	0.4872	0	0	0	0	0
5	1	0	0	0	0	0
6	0	0	0	0	0	0
7	0	0	0	0	0	0
8	0	0	0	0	0	0
9	0	0	0	0	0	0
10	0	0.9474	0	0	0	0
11	0	1	0	0	0	0
12	0	0	0	0	0	0
13	0	0	0	0	0	0
14	0	0	0	0	0	0
15	0	0	0.1538	0	0	0
16	0	0	0.75	0	0	0
17	0	0	0.1875	0	0	0
18	0	0	0.1667	0	0	0
19	0	0	0.0676	0	0	0
20	0	0	0.1667	0	0	0
21	0	0	0	0.0435	0	0
22	0	0	0	0.4318	0	0
23	0	0	0	0.2407	0	0
24	0	0	0	0.0909	0	0
25	0	0	0	0	0	0
26	0	0	0	0	0	0
27	0	0	0	0	0	0
28	0	0	0	0	0.0328	0
29	0	0	0	0	0.0833	0
30	0	0	0	0	0	0
31	0	0	0	0	0	0

2.5 Age the Force

The model ages the force one year by simply advancing each inventory cell to the next year of service cell.

Compensation Assumptions – There are three screens for compensation assumptions, which are selected by choosing their respective entries in the drop down list box. They are as follows:

- Military Allowance Starting Values and Annual Increase Rates – Data for Annual Increase Rates, the default display, are viewed in 2 pay categories (subsistence allowance and housing allowance) and by grade and projection year. The Starting Values option displays subsistence and housing allowance amounts by grade and allowance category. Also displayed are the percentage of service members receiving these pays. Housing allowance is divided into three rates; partial, with dependents, and without dependants. These amounts and percentages are editable.

Table 15

Marines- Enlisted Military Allowance Starting Values (As of FY 2005)							
Amounts Received	E1-E3	E4	E5	E6	E7	E8	E9
BAH Partial	\$8	\$8	\$9	\$10	\$13	\$14	\$18
BAH w Dependent	\$952	\$984	\$1,071	\$1,236	\$1,294	\$1,361	\$1,484
BAH w/o Dependent	\$774	\$768	\$891	\$929	\$1,004	\$1,130	\$1,209
BAS	\$145	\$187	\$228	\$241	\$243	\$244	\$245
Percent Receiving							
%Partial BAH	67.55	41.51	10.71	1.47	0.59	0.4	0.47
%Dep BAH	24.24	37.69	52.21	60.77	68.01	70.21	74.08
%Single BAH	2.94	11	18.14	15.6	10.26	10.18	8.04

Table 16

Marines- Enlisted Military Allowance Annual Increase									
BAS	2006	2007	2008	2009	2010	2011	2012	2013	2014
E1-E3	1.5	1.7	1.9	2	2	2	2	2	2
E4	1.5	1.7	1.9	2	2	2	2	2	2
E5	1.5	1.7	1.9	2	2	2	2	2	2
E6	1.5	1.7	1.9	2	2	2	2	2	2
E7	1.5	1.7	1.9	2	2	2	2	2	2

E8	1.5	1.7	1.9	2	2	2	2	2	2
E9	1.5	1.7	1.9	2	2	2	2	2	2
BAH									
E1-E3	5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
E4	5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
E5	5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
E6	5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
E7	5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
E8	5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
E9	5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5

Table 17

Marines- Warrant Military Allowance Starting Values (As of FY 2005)					
Amounts Received	W1	W2	W3	W4	W5
BAH Partial	\$17	\$28	\$88	\$35	\$43
BAH w Dependent	\$1,392	\$1,669	\$1,918	\$2,124	\$2,209
BAH w/o Dependent	\$1,089	\$1,463	\$1,644	\$1,700	\$1,842
BAS	\$193	\$197	\$197	\$198	\$197
Percent Receiving					
%Partial BAH	3.41	0.71	0.25	0.51	0.19
%Dep BAH	30.58	62.39	72.63	74.66	70.71
%Single BAH	51.74	25.56	11.4	7.19	5.2

Table 18

Marines- Warrant Military Allowance Annual Increase									
BAS	2006	2007	2008	2009	2010	2011	2012	2013	2014
W1	1.5	1.7	1.9	2	2	2	2	2	2
W2	1.5	1.7	1.9	2	2	2	2	2	2
W3	1.5	1.7	1.9	2	2	2	2	2	2
W4	1.5	1.7	1.9	2	2	2	2	2	2
W5	1.5	1.7	1.9	2	2	2	2	2	2
BAH									

W1	5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
W2	5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
W3	5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
W4	5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
W5	5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5

Table 19

Marines- Officer Military Allowance Starting Values (As of FY 2005)						
Amounts Received	O1-O2	O3	O4	O5	O6	O7-O10
BAH Partial	\$17	\$28	\$88	\$35	\$43	\$0
BAH w Dependent	\$1,392	\$1,669	\$1,918	\$2,124	\$2,209	\$2,403
BAH w/o Dependent	\$1,089	\$1,463	\$1,644	\$1,700	\$1,842	\$2,062
BAS	\$193	\$197	\$197	\$198	\$197	\$198
Percent Receiving						
%Partial BAH	3.41	0.71	0.25	0.51	0.19	0
%Dep BAH	30.58	62.39	72.63	74.66	70.71	50
%Single BAH	51.74	25.56	11.4	7.19	5.2	2.94

Table 20

Marines- Officer Military Allowance Annual Increase									
BAS	2006	2007	2008	2009	2010	2011	2012	2013	2014
O1-O2	1.5	1.7	1.9	2	2	2	2	2	2
O3	1.5	1.7	1.9	2	2	2	2	2	2
O4	1.5	1.7	1.9	2	2	2	2	2	2
O5	1.5	1.7	1.9	2	2	2	2	2	2
O6	1.5	1.7	1.9	2	2	2	2	2	2
O7-O10	1.5	1.7	1.9	2	2	2	2	2	2
BAH									
O1-O2	5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
O3	5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
O4	5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
O5	5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
O6	5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
O7-O10	5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5

- Other Compensation Starting Values and Annual Increase Rates – Annual increase rates are viewed/edited by occupation, pay category, and projection year – all default values are zero. The historical baseline starting values (average dollars per month) are displayed by occupation and grade and are editable. The view by occupation can be changed by making the appropriate selection from the occupation list box. The default view shows the annual increase rates; it also includes checkboxes for each occupation. This allows modifications to be made to any or all occupations simultaneously. This is accomplished by selecting a range (or multiple ranges by holding down the <CTRL> key) on the worksheet, selecting the occupations to be modified, and clicking the “Apply” button. Only the annual increase rates for the selected pay categories and projection years will be modified in the target occupations. Note that the list of pay categories varies by occupation – only the categories that were actually paid to members of the selected occupation during the baseline year are displayed.

Table 21

Marines – Enlisted Other Compensation for Supply and Service Occupation Starting Values as of FY 2005 (No increase to the rates over time)							
	E1-E3	E4	E5	E6	E7	E8	E9
Proficiency Pay	\$0	\$5	\$61	\$81	\$40	\$1	\$0
Foreign Duty Pay	\$25	\$21	\$14	\$13	\$12	\$14	\$9
Selective Reenl Bonus	\$0	\$27	\$8	\$2	\$2	\$0	\$0
Hazardous Duty Pay	\$3	\$4	\$4	\$5	\$6	\$9	\$0
Hostile Fire Pay	\$67	\$56	\$37	\$36	\$32	\$36	\$24
Diving Pay	\$0	\$0	\$0	\$0	\$0	\$1	\$0
Language Pay	\$0	\$1	\$0	\$0	\$0	\$0	\$0
Sea Pay	\$1	\$2	\$1	\$2	\$1	\$0	\$0
Family	\$31	\$44	\$41	\$42	\$42	\$39	\$32

separation pay							
Overseas Cola	\$64	\$60	\$120	\$140	\$171	\$286	\$321
Overseas Housing	\$1	\$8	\$28	\$24	\$30	\$103	\$82
All Other Special Pays	\$24	\$34	\$44	\$55	\$55	\$42	\$43

Table 22

Marines – Warrant					
Other Compensation for Supply and Service Occupation Starting Values as of FY 2005 (No increase to the rates over time)					
	W1	W2	W3	W4	W5
Hazardous duty pay	\$0	\$8	\$9	\$14	\$1
Hostile Fire	\$0	\$49	\$31	\$18	\$14
Sea Pay	\$0	\$18	\$23	\$23	\$19
Family Separation Pay	\$0	\$42	\$35	\$17	\$10
Overseas Cola	\$0	\$197	\$315	\$252	\$219
Overseas Housing	\$0	\$29	\$56	\$0	\$0

Table 23

Marines – Officer						
Other Compensation for Supply and Service Occupation Starting Values as of FY 2005 (No increase to the rates over time)						
	O1-O2	O3	O4	O5	O6	O7-O10
Haz duty	\$2	\$1	\$1	\$2	\$0	\$0
hostile fire	\$74	\$35	\$35	\$31	\$0	\$0
language pay	\$0	\$2	\$4	\$7	\$0	\$0
Sea pay	\$2	\$4	\$1	\$1	\$0	\$0
family separation pay	\$42	\$33	\$33	\$27	\$0	\$0
Overseas Cola	\$202	\$151	\$233	\$216	\$0	\$0

Overseas Housing	\$99	\$85	\$106	\$124	\$0	\$0
Other	\$0	\$0	\$0	\$1	\$0	\$0

- Pay and Unemployment Elasticities – Data are presented by YOS and two categories, pay and unemployment.

Tab 1: Economic Assumptions – On this screen the user can set the basic assumptions used in the model for computing costs and adjusting retention. These include, for each projection year:

- Unemployment rate
- Retirement accrual rate for each service
- Maximum basic pay for Social Security contribution
- Social Security contribution rate
- Medicare contribution rate

Table 24

Economic Assumptions as of FY 2005									
inflation rate	2006	2007	2008	2009	2010	2011	2012	2013	2014
unemployment rate	2.5	2.2	2.2	2.1	2.1	2.1	2.2	2.2	2.2
retirement accrual rate (%of Base Pay)	5.1	5	5.1	5.1	5.2	5.2	5.2	5.2	5.2
Army									
Navy	26.5	26.5	26.4	26.4	26.4	26.4	26.4	26.4	26.3
Marines	26.5	26.5	26.4	26.4	26.4	26.4	26.4	26.4	26.3
Air Force	26.5	26.5	26.4	26.4	26.4	26.4	26.4	26.4	26.3
Max pay for social security	26.5	26.5	26.4	26.4	26.4	26.4	26.4	26.4	26.3

Economic Assumptions as of FY 2005									
contribution									
Social Security contribution rate (% of Base Pay)	\$94,200	\$98,000	\$101,900	\$106,000	\$110,200	\$114,200	\$119,200	\$123,900	\$128,900
Medicare contribution rate (% of Base Pay)	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2
inflation rate	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45

Tab 2: Civilian Pay Functions – On this screen the user can view and modify the civilian pay functions for each community and occupation, and the rate of increase in civilian pay for each projection year. These functions are used to estimate civilian pay in the ACOL computations.

Table 25

Marines – Enlisted Civilian Base Pay for Supply and Handling Occupation Enlisted Base Pay = A + B*YOS + C*YOS^2											
			Annual Rate increase								
A	B	C	2006	2007	2008	2009	2010	2011	2012	2013	2014
9.9464	0.059919	.000909	3.1	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.3

Table 26

Marines – Warrant Civilian Base Pay for Supply and Handling Occupation											
---	--	--	--	--	--	--	--	--	--	--	--

Enlisted Base Pay = A + B*YOS + C*YOS^2											
			Annual Rate increase								
A	B	C	2006	2007	2008	2009	2010	2011	2012	2013	2014
10.5677	0.045741	.00075	3.1	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.3

Table 27

Marines – Officer Civilian Base Pay for Supply and Handling Occupation											
Enlisted Base Pay = A + B*YOS + C*YOS^2											
			Annual Rate increase								
A	B	C	2006	2007	2008	2009	2010	2011	2012	2013	2014
10.5677	0.045741	.00075	3.1	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.3

Tab 3: Military Base Pay – On this screen the user can view and modify the basic pay tables for each community, by grade and years of service. Note that the default basic pay tables shown on these screens are from the baseline year – the fiscal year just prior to the first projection year. The screen also allows the user to set the rate of increase in basic pay by community, grade, and years of service for each projection year. There is also a capability to set global (across-the-board) military pay increase rates for each projection year so the user does not have to repeatedly enter the same number into all of the community/grade/year of service cells. The global increase rates will apply to basic pay for all services and communities associated with the study.

Table 28

Marines – Enlisted Military Base Pay as of FY 2005 (Assumes increase of 3.1% in FY 2006, 2.2% increase in FY 2007, 3.4% increase in FY 2008 and subsequent)							
YOS	E1-3	E4	E5	E6	E7	E8	E9
1	\$1,235. 10	\$1,384. 50	\$1,456. 20	\$1,612. 80	\$1,759. 50	\$1,920. 30	\$2,220. 00
2	\$1,235. 10	\$1,384. 50	\$1,456. 20	\$1,612. 80	\$1,759. 50	\$1,920. 30	\$2,220. 00
3	\$1,235. 10	\$1,384. 50	\$1,547. 70	\$1,695. 60	\$1,877. 10	\$2,112. 60	\$2,423. 10

Marines – Enlisted
Military Base Pay as of FY 2005
(Assumes increase of 3.1% in FY 2006, 2.2% increase in FY 2007, 3.4% increase in FY 2008 and subsequent)

YOS	E1-3	E4	E5	E6	E7	E8	E9
4	\$1,235. 10	\$1,384. 50	\$1,641. 00	\$1,787. 10	\$1,967. 70	\$2,205. 90	\$2,515. 80
5	\$1,235. 10	\$1,384. 50	\$1,641. 00	\$1,877. 70	\$2,060. 70	\$2,296. 50	\$2,638. 80
6	\$1,235. 10	\$1,384. 50	\$1,641. 00	\$1,877. 70	\$2,060. 70	\$2,296. 50	\$2,638. 80
7	\$1,235. 10	\$1,384. 50	\$1,641. 00	\$1,957. 80	\$2,205. 30	\$2,391. 00	\$2,734. 50
8	\$1,235. 10	\$1,384. 50	\$1,641. 00	\$1,957. 80	\$2,205. 30	\$2,391. 00	\$2,734. 50
9	\$1,235. 10	\$1,384. 50	\$1,641. 00	\$1,957. 80	\$2,329. 80	\$2,604. 30	\$2,899. 50
10	\$1,235. 10	\$1,384. 50	\$1,641. 00	\$1,957. 80	\$2,329. 80	\$2,604. 30	\$2,899. 50
11	\$1,235. 10	\$1,384. 50	\$1,641. 00	\$1,957. 80	\$2,421. 60	\$2,687. 10	\$2,992. 20
12	\$1,235. 10	\$1,384. 50	\$1,641. 00	\$1,957. 80	\$2,421. 60	\$2,687. 10	\$2,992. 20
13	\$1,235. 10	\$1,384. 50	\$1,641. 00	\$1,957. 80	\$2,450. 70	\$2,779. 20	\$3,084. 60
14	\$1,235. 10	\$1,384. 50	\$1,641. 00	\$1,957. 80	\$2,450. 70	\$2,779. 20	\$3,084. 60
15	\$1,235. 10	\$1,384. 50	\$1,641. 00	\$1,957. 80	\$2,450. 70	\$2,859. 90	\$3,249. 60
16	\$1,235. 10	\$1,384. 50	\$1,641. 00	\$1,957. 80	\$2,450. 70	\$2,859. 90	\$3,249. 60
17	\$1,235. 10	\$1,384. 50	\$1,641. 00	\$1,957. 80	\$2,450. 70	\$2,888. 70	\$3,332. 40
18	\$1,235. 10	\$1,384. 50	\$1,641. 00	\$1,957. 80	\$2,450. 70	\$2,888. 70	\$3,332. 40
19	\$1,235. 10	\$1,384. 50	\$1,641. 00	\$1,957. 80	\$2,450. 70	\$2,908. 20	\$3,410. 70
20	\$1,235. 10	\$1,384. 50	\$1,641. 00	\$1,957. 80	\$2,450. 70	\$2,908. 20	\$3,410. 70
21	\$1,235. 10	\$1,384. 50	\$1,641. 00	\$1,957. 80	\$2,450. 70	\$2,908. 20	\$3,458. 70
22	\$1,235. 10	\$1,384. 50	\$1,641. 00	\$1,957. 80	\$2,450. 70	\$2,908. 20	\$3,458. 70
23	\$1,235. 10	\$1,384. 50	\$1,641. 00	\$1,957. 80	\$2,450. 70	\$2,908. 20	\$3,620. 40
24	\$1,235.	\$1,384.	\$1,641.	\$1,957.	\$2,450.	\$2,908.	\$3,620.

Marines – Enlisted							
Military Base Pay as of FY 2005							
(Assumes increase of 3.1% in FY 2006, 2.2% increase in FY 2007, 3.4% increase in FY 2008 and subsequent)							
YOS	E1-3	E4	E5	E6	E7	E8	E9
	10	50	00	80	70	20	40
25	\$1,235.10	\$1,384.50	\$1,641.00	\$1,957.80	\$2,450.70	\$2,908.20	\$3,725.10
26	\$1,235.10	\$1,384.50	\$1,641.00	\$1,957.80	\$2,450.70	\$2,908.20	\$3,725.10
27	\$1,235.10	\$1,384.50	\$1,641.00	\$1,957.80	\$2,450.70	\$2,908.20	\$3,990.00
28	\$1,235.10	\$1,384.50	\$1,641.00	\$1,957.80	\$2,450.70	\$2,908.20	\$3,990.00
29	\$1,235.10	\$1,384.50	\$1,641.00	\$1,957.80	\$2,450.70	\$2,908.20	\$3,990.00
30	\$1,235.10	\$1,384.50	\$1,641.00	\$1,957.80	\$2,450.70	\$2,908.20	\$3,990.00
31	\$1,235.10	\$1,384.50	\$1,641.00	\$1,957.80	\$2,450.70	\$2,908.20	\$3,990.00

Table 29

Marines – Warrant					
Military Base Pay as of FY 2005					
(Assumes increase of 3.1% in FY 2006, 2.2% increase in FY 2007, 3.4% increase in FY 2008 and subsequent)					
YOS	W1	W2	W3	W4	W5
1	\$2,290.20	\$2,593.50	\$2,948.40	\$3,228.60	\$5,548.20
2	\$2,290.20	\$2,593.50	\$2,948.40	\$3,228.60	\$5,548.20
3	\$2,477.70	\$2,741.70	\$3,071.70	\$3,473.40	\$5,548.20
4	\$2,603.10	\$2,871.30	\$3,197.40	\$3,573.30	\$5,548.20
5	\$2,684.40	\$2,965.50	\$3,238.80	\$3,671.40	\$5,548.20
6	\$2,684.40	\$2,965.50	\$3,238.80	\$3,671.40	\$5,548.20
7	\$2,900.40	\$3,046.20	\$3,371.10	\$3,840.30	\$5,548.20
8	\$2,900.40	\$3,046.20	\$3,371.10	\$3,840.30	\$5,548.20
9	\$3,030.90	\$3,268.20	\$3,522.30	\$4,007.10	\$5,548.20
10	\$3,030.90	\$3,268.20	\$3,522.30	\$4,007.10	\$5,548.20
11	\$3,146.40	\$3,483.00	\$3,721.80	\$4,176.30	\$5,548.20
12	\$3,146.40	\$3,483.00	\$3,721.80	\$4,176.30	\$5,548.20
13	\$3,275.40	\$3,564.00	\$3,918.90	\$4,341.00	\$5,548.20
14	\$3,275.40	\$3,564.00	\$3,918.90	\$4,341.00	\$5,548.20
15	\$3,360.90	\$3,687.00	\$4,128.30	\$4,511.70	\$5,548.20
16	\$3,360.90	\$3,687.00	\$4,128.30	\$4,511.70	\$5,548.20
17	\$3,438.30	\$3,771.30	\$4,285.50	\$4,779.00	\$5,548.20

Marines – Warrant					
Military Base Pay as of FY 2005					
(Assumes increase of 3.1% in FY 2006, 2.2% increase in FY 2007, 3.4% increase in FY 2008 and subsequent)					
YOS	W1	W2	W3	W4	W5
18	\$3,438.30	\$3,771.30	\$4,285.50	\$4,779.00	\$5,548.20
19	\$3,564.30	\$3,842.40	\$4,442.10	\$4,950.00	\$5,548.20
20	\$3,564.30	\$3,842.40	\$4,442.10	\$4,950.00	\$5,548.20
21	\$3,659.70	\$3,977.40	\$4,509.30	\$5,117.40	\$5,548.20
22	\$3,659.70	\$3,977.40	\$4,509.30	\$5,117.40	\$5,548.20
23	\$3,659.70	\$4,111.50	\$4,578.90	\$5,290.80	\$5,738.40
24	\$3,659.70	\$4,111.50	\$4,578.90	\$5,290.80	\$5,738.40
25	\$3,659.70	\$4,247.40	\$4,730.10	\$5,461.80	\$5,929.20
26	\$3,659.70	\$4,247.40	\$4,730.10	\$5,461.80	\$5,929.20
27	\$3,659.70	\$4,247.40	\$4,881.30	\$5,636.40	\$6,121.20
28	\$3,659.70	\$4,247.40	\$4,881.30	\$5,636.40	\$6,121.20
29	\$3,659.70	\$4,247.40	\$4,881.30	\$5,636.40	\$6,121.20
30	\$3,659.70	\$4,247.40	\$4,881.30	\$5,636.40	\$6,121.20
31	\$3,659.70	\$4,247.40	\$4,881.30	\$5,636.40	\$6,121.20

Table 30

Marines – Officer										
Military Base Pay as of FY 2005										
(Assumes increase of 3.1% in FY 2006, 2.2% increase in FY 2007, 3.4% increase in FY 2008 and subsequent)										
YOS	O1	O2	O3	O4	O5	O6	O7	O8	O9	O10
1	\$2,343.60	\$2,699.40	\$3,124.50	\$3,553.80	\$4,118.70	\$4,940.70	\$6,666.00	\$8,022.30	\$11,337.90	\$12,963.00
2	\$2,343.60	\$2,699.40	\$3,124.50	\$3,553.80	\$4,118.70	\$4,940.70	\$6,666.00	\$8,022.30	\$11,337.90	\$12,963.00
3	\$2,439.00	\$3,074.70	\$3,542.10	\$4,113.90	\$4,639.80	\$5,427.90	\$6,975.60	\$8,285.10	\$11,337.90	\$12,963.00
4	\$2,948.10	\$3,541.20	\$3,823.20	\$4,388.40	\$4,961.10	\$5,784.00	\$7,119.00	\$8,459.40	\$11,337.90	\$12,963.00
5	\$2,948.10	\$3,660.90	\$4,168.20	\$4,449.60	\$5,021.40	\$5,784.00	\$7,233.00	\$8,508.30	\$11,337.90	\$12,963.00
6	\$2,948.10	\$3,660.90	\$4,168.20	\$4,449.60	\$5,021.40	\$5,784.00	\$7,233.00	\$8,508.30	\$11,337.90	\$12,963.00
7	\$2,948.10	\$3,736.20	\$4,367.70	\$4,704.30	\$5,221.50	\$5,805.90	\$7,439.10	\$8,725.50	\$11,337.90	\$12,963.00
8	\$2,948.10	\$3,736.20	\$4,367.70	\$4,704.30	\$5,221.50	\$5,805.90	\$7,439.10	\$8,725.50	\$11,337.90	\$12,963.00
9	\$2,948.10	\$3,736.20	\$4,586.70	\$4,977.60	\$5,341.80	\$6,054.90	\$7,642.50	\$9,089.40	\$11,337.90	\$12,963.00
10	\$2,948.10	\$3,736.20	\$4,586.70	\$4,977.60	\$5,341.80	\$6,054.90	\$7,642.50	\$9,089.40	\$11,337.90	\$12,963.00
11	\$2,948.10	\$3,736.20	\$4,728.60	\$5,317.50	\$5,605.50	\$6,087.90	\$7,878.30	\$9,173.70	\$11,337.90	\$12,963.00
12	\$2,948.10	\$3,736.20	\$4,728.60	\$5,317.50	\$5,605.50	\$6,087.90	\$7,878.30	\$9,173.70	\$11,337.90	\$12,963.00
13	\$2,948.10	\$3,736.20	\$4,962.00	\$5,582.70	\$5,799.00	\$6,087.90	\$8,113.50	\$9,519.00	\$11,337.90	\$12,963.00

**Marines – Officer
Military Base Pay as of FY 2005
(Assumes increase of 3.1% in FY 2006, 2.2% increase in FY 2007, 3.4% increase in FY 2008 and subsequent)**

YOS	O1	O2	O3	O4	O5	O6	O7	O8	O9	O10
14	\$2,948.10	\$3,736.20	\$4,962.00	\$5,582.70	\$5,799.00	\$6,087.90	\$8,113.50	\$9,519.00	\$11,337.90	\$12,963.00
15	\$2,948.10	\$3,736.20	\$5,083.20	\$5,766.60	\$6,048.60	\$6,433.80	\$8,349.00	\$9,618.00	\$11,337.90	\$12,963.00
16	\$2,948.10	\$3,736.20	\$5,083.20	\$5,766.60	\$6,048.60	\$6,433.80	\$8,349.00	\$9,618.00	\$11,337.90	\$12,963.00
17	\$2,948.10	\$3,736.20	\$5,083.20	\$5,872.20	\$6,431.10	\$7,045.50	\$9,089.40	\$9,915.30	\$11,337.90	\$12,963.00
18	\$2,948.10	\$3,736.20	\$5,083.20	\$5,872.20	\$6,431.10	\$7,045.50	\$9,089.40	\$9,915.30	\$11,337.90	\$12,963.00
19	\$2,948.10	\$3,736.20	\$5,083.20	\$5,933.70	\$6,613.20	\$7,404.60	\$9,714.60	\$10,345.50	\$11,337.90	\$12,963.00
20	\$2,948.10	\$3,736.20	\$5,083.20	\$5,933.70	\$6,613.20	\$7,404.60	\$9,714.60	\$10,345.50	\$11,337.90	\$12,963.00
21	\$2,948.10	\$3,736.20	\$5,083.20	\$5,933.70	\$6,793.20	\$7,763.40	\$9,714.60	\$10,742.40	\$11,337.90	\$12,963.00
22	\$2,948.10	\$3,736.20	\$5,083.20	\$5,933.70	\$6,793.20	\$7,763.40	\$9,714.60	\$10,742.40	\$11,337.90	\$12,963.00
23	\$2,948.10	\$3,736.20	\$5,083.20	\$5,933.70	\$6,997.50	\$7,967.70	\$9,714.60	\$11,007.60	\$11,501.10	\$13,026.60
24	\$2,948.10	\$3,736.20	\$5,083.20	\$5,933.70	\$6,997.50	\$7,967.70	\$9,714.60	\$11,007.60	\$11,501.10	\$13,026.60
25	\$2,948.10	\$3,736.20	\$5,083.20	\$5,933.70	\$6,997.50	\$8,174.10	\$9,714.60	\$11,007.60	\$11,737.20	\$13,297.50
26	\$2,948.10	\$3,736.20	\$5,083.20	\$5,933.70	\$6,997.50	\$8,174.10	\$9,714.60	\$11,007.60	\$11,737.20	\$13,297.50
27	\$2,948.10	\$3,736.20	\$5,083.20	\$5,933.70	\$6,997.50	\$8,575.50	\$9,763.80	\$11,007.60	\$12,149.10	\$13,769.40
28	\$2,948.10	\$3,736.20	\$5,083.20	\$5,933.70	\$6,997.50	\$8,575.50	\$9,763.80	\$11,007.60	\$12,149.10	\$13,769.40
29	\$2,948.10	\$3,736.20	\$5,083.20	\$5,933.70	\$6,997.50	\$8,575.50	\$9,763.80	\$11,007.60	\$12,149.10	\$13,769.40
30	\$2,948.10	\$3,736.20	\$5,083.20	\$5,933.70	\$6,997.50	\$8,575.50	\$9,763.80	\$11,007.60	\$12,149.10	\$13,769.40
31	\$2,948.10	\$3,736.20	\$5,083.20	\$5,933.70	\$6,997.50	\$8,575.50	\$9,763.80	\$11,007.60	\$12,149.10	\$13,769.40

Tab 4: Retirement Systems – This screen, shown in Figure 3.11, allows the user to create new retirement systems. Retirement systems are listed at the left of the screen. The default systems are as follows:

- **Final Pay** – The system in effect for those entering military service before 1 October 1980. Retirement pay is based on final pay and is equal to 2.5 percentage

points for each year of service, after a minimum of 20 years of service. Benefits are indexed for inflation.

- **High Three** – For those who entered after October 1980 but before August 1986, retirement pay is based on the average of the three highest years of basic pay instead of final pay. Benefits are still indexed for inflation.

Redux+30K Bonus or High Three – Those entering after August 1986 have a choice of retirement systems. They may choose the High Three System described above, or they may choose to receive a \$30,000 bonus at the 15-year point and receive a reduced retirement annuity computed as follows. Their retired pay is based on the high-three average, but the percentage is reduced to 40 percent after 20 years of service, growing to 75 percent after 30 years of service. Inflation indexing is also reduced to one percentage point below the full index each year until age 62, at which time the real value of retirement pay is restored and the percentage of high-three pay is increased to the pre-1986 system.

**Appendix III: Tables of Organization
2007**

OPERATING FORCES	E3/2/1		E4		E5		E6		E7	
	T/O	ASR	T/O	ASR	T/O	ASR	T/O	ASR	T/O	ASR
I MEF/MarForPac										
Command Element	12	12	9	9	4	4	3	3	2	2
Aviation Combat Element	84	77	44	44	33	33	16	16	4	4
Ground Combat Element	109	109	48	48	27	27	26	26	1	1
Combat Service Support Element	73	67	61	61	51	51	17	17	11	11
II MEF/MarForCom										
Command Element	15	15	9	9	6	6	3	3	2	1
Aviation Combat Element	84	76	44	44	33	33	16	16	4	4
Ground Combat Element	99	99	44	44	24	24	23	23	2	2
Combat Service Support Element	75	69	62	62	51	51	17	17	11	11
MCSB, Norfolk					1	1			1	1
III MEF/MarForPac										
Command Element	9	9	4	4	4	4	2	2	2	1
Aviation Combat Element	42	41	22	22	17	17	8	8	2	2
Ground Combat Element	38	35	22	21	10	10	11	10	1	1
Combat Service Support Element	58	53	54	54	43	43	13	13	10	10
MarForRes										
HQ, MarForRes					1	1	1	1	1	1
I&I Duty					1	1	1	1	5	5

Operating Forces Totals:	698	662	423	422	306	306	157	156	59	57
---------------------------------	------------	------------	------------	------------	------------	------------	------------	------------	-----------	-----------

Supporting Establishment Totals:	76	62	74	73	87	87	61	60	93	93
---	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------

GRAND TOTALS:	774	724	497	495	393	393	218	216	152	150
----------------------	------------	------------	------------	------------	------------	------------	------------	------------	------------	------------

OPERATING FORCES	E8		E9		W2/1		W3		W4	
	T/O	ASR	T/O	ASR	T/O	ASR	T/O	ASR	T/O	ASR
I MEF/MarForPac										
Command Element	3	2	1	1						
Aviation Combat Element	5	5	1	1	1	1				
Ground Combat Element	5	5	1	1	2	1				
Combat Service Support Element	2	2	1	1	1	1	1	1	1	1
II MEF/MarForCom										
Command Element	3	2	1	1						
Aviation Combat Element	5	5	1	1	1	1				
Ground Combat Element	5	5	1	1	2	1				
Combat Service Support Element	2	2	1	1	1	1	1	1	1	1
MCSB, Norfolk										
III MEF/MarForPac										
Command Element	1	1	1	1						
Aviation Combat Element	3	3	1	1	1	1				
Ground Combat Element	5	4	1	1	2	1				
Combat Service Support Element	2	2	1	1	1	1	1	1	1	1
MarForRes										
HQ, MarForRes										
I&I Duty										

Operating Forces Totals:	41	38	12	12	12	9	3	3	3	3
---------------------------------	-----------	-----------	-----------	-----------	-----------	----------	----------	----------	----------	----------

Supporting Establishment Totals:	29	29	11	11	4	4	5	5	1	1
---	-----------	-----------	-----------	-----------	----------	----------	----------	----------	----------	----------

GRAND TOTALS:	70	67	23	23	16	13	8	8	4	4
----------------------	-----------	-----------	-----------	-----------	-----------	-----------	----------	----------	----------	----------

OPERATING FORCES	W5		O3		O4		O5		Total	
	T/O	ASR	T/O	ASR	T/O	ASR	T/O	ASR	T/O	ASR
I MEF/MarForPac										
Command Element							1	1	35	34
Aviation Combat Element									188	181
Ground Combat Element									219	218
Combat Service Support Element			1	1					220	214
II MEF/MarForCom										
Command Element							1	1	40	38
Aviation Combat Element									188	180
Ground Combat Element									200	199
Combat Service Support Element			1	1					223	217
MCSB, Norfolk									2	2
III MEF/MarForPac										
Command Element					1	1			24	23
Aviation Combat Element									96	95
Ground Combat Element									90	83
Combat Service Support Element			1	1					185	180
MarForRes										
HQ, MarForRes	1	1							4	4
I&I Duty									7	7

Operating Forces Totals:	1	1	3	3	1	1	2	2	1,721	1,675
---------------------------------	---	---	---	---	---	---	---	---	-------	-------

Supporting Establishment Totals:	-	-	4	4	5	5	1	1	451	435
---	---	---	---	---	---	---	---	---	-----	-----

GRAND TOTALS:	1	1	7	7	6	6	3	3	2,172	2,110
----------------------	---	---	---	---	---	---	---	---	-------	-------

Appendix IV: RGFSC Staffing Model

	FY02	FY07	Difference	
MC Food Service	3500	2554	946	
CONUS Mess halls	742	148	594	
MEF III Mess halls	195	195	0	
Total mess hall	937	343	594	
Proportion mess hall	0.267714	0.134299	0.501651	proportion compared
Prop. CONUS MH	0.262191	0.07528	0.287118	pre-migration

Food Service			
MEF I	1415	983	432
MEF II	1415	983	432
MEF III	670	588	82
Total	3500	2554	946

	MEF I	MEF II	MEF III	Total
RGFSC	297	297	0	594
FFSS	195	195	116	506
Other	-60	-60	-34	-154
Total	432	432	82	946

FFSS Not a lot of room for soaking up unused capacity
 If we assume 85% utilization, averaging the mean and the mode in survey question 3

	Excess Capacity	w/o new structure	
0.85	383	726	0.28426
0.99	26	369	0.144479
0.95	128	471	0.184417
0.9	255	598	0.234143
0.866	341	684	0.267714
0.85	383	726	0.28426

	Structure needed	New MH positions
0.3	766	423
0.275	702	359
0.267714	684	341
0.25	639	296
0.225	575	232
0.2	511	168
0.175	447	104
0.134299	343	0

With structure increase			New structure needed if excess capacity utilized				
	New positions		0.99	0.95	0.9	0.866	0.85
0.3	605	0.3	567	422	240	117	0
0.275	496	0.275	460	319	144	25	0
0.267714	465	0.267714286	430	291	117	0	0
0.25	394	0.25	359	223	54	0	0
0.225	299	0.225	265	134	0	0	0
0.2	210	0.2	177	50	0	0	0
0.175	126	0.175	94	0	0	0	0
0.134299	0	0.134299139	0	0	0	0	0