TM 4-41.11 (FM 10-23-2)

Dining Facility Operations

April 2012

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HEADQUARTERS, DEPARTMENT OF THE ARMY

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Technical Manual
No. 4-41.11 (FM 10-23-2)

Headquarters
Department of the Army
Washington, DC, 23 April 2012

Dining Facility Operations

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***This publication supersedes FM 10-23-2, dated 30 September 1993.**

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Preface

The objective of the Army garrison dining facility is to provide authorized diners quality meals in an environment that is comparable to first-class commercial cafeterias, such as any of the national chain restaurants that provide full meal service. This technical manual (TM) provides operational procedures for garrison dining facilities in an effort to meet this objective. It provides guidance for commanders, food service warrant officers, non-commissioned officers, food program managers, dining facility managers and food service personnel.

This manual is one part of a total rewrite of field manual (FM) 10-23-2, Tactics, Techniques, and Procedures for Garrison Food Preparation and Class I Operations Management. All topics related to garrison dining facility management, operations and techniques from this FM have been included in this manual. All food program management and subsistence supply management operational procedures are contained in TM 4-41.12, Food Program Operations.

Where appropriate, this manual references other food service doctrinal publications, such as Army Regulation (AR) 30-22 and Department of the Army Pamphlet (DA Pam) 30-22. Army Food Program policy and operational procedures are contained in these publications and should be used in conjunction with this manual to operate garrison dining facilities.

Part One of this manual provides an overview of personnel management, training requirements for food service personnel and dining facility account management principles.

Part Two of this manual discusses dining facility operational procedures for menu planning; ration receipt, inspection, storage and rotation; food protection, sanitation and pest control; safety and energy conservation; production; service; unit support; and diner feedback.

Part Three of this manual provides an overview of food preparation methods and techniques.

The appendixes contain two checklists, one sample standing operating procedure and one temperature chart. These will assist dining facility managers in their daily duties.

Commanders, food advisors, food program managers, dining facility managers and food service personnel should continue to provide feedback based on their lessons learned during dining facility operations on the content and operational procedures presented in this manual. Your input is vital to the continued evolvement and success of the Army's dining facility operational mission and to ensure that our Soldiers continue to be the best fed in the world.

This publication applies to the Active Army, the Army National Guard (ARNG)/Army National Guard of the United States (ARNGUS), and the United States Army Reserve (USAR) unless otherwise stated.

The proponent of this publication is the United States Army Training and Doctrine Command (TRADOC). Submit recommended changes on DA Form 2028 *(Recommended Changes to Publications and Blank Forms)*. Each comment should be keyed to the specific page and paragraph to which the comment applies. Provide your rationale for each comment. Forward the completed form to Commander, U.S. Army Quartermaster School, Joint Culinary Center of Excellence, ATTN: ATSM-CES-OC, 1831 A Avenue, Fort Lee, Virginia 23801-1601.

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PART ONE

PERSONNEL, TRAINING, AND ACCOUNT MANAGEMENT

Chapter 1

Personnel and Training

GENERAL

Food service leaders must be aware of their responsibilities, how to train their personnel, and how they can develop and manage a successful dining facility operation.

RESPONSIBILITIES

1-1. Food service personnel must know their job and work as part of a team. General responsibilities of the Dining Facility Manager (DFM), shift leader, food operations noncommissioned officer (NCO) and food service specialist are discussed in the following paragraphs.

Note: The Quartermaster Enlisted Personnel Proponent Office develops duty titles and job descriptions for military occupational specialty (MOS) 92G. The duty titles and job descriptions used in this manual have been taken from the MOS 92G career map as they relate to garrison dining facility operations only. Rank differences for the shift leader and food operations NCO duty titles in the following paragraphs have been adjusted to encompass one additional grade.

DINING FACILITY MANAGER

1-2. The DFM manages the overall dining facility operation and is in direct charge of all food service personnel. The DFM must be knowledgeable in all areas of dining facility operations. The normal 92G rank for this position is sergeant first class (SFC). The DFM's general responsibilities includes—

- Personnel management functions including orientation, counseling, evaluations, duty assignments, training and work scheduling.
- Menu planning.
- Subsistence requesting and receiving.
- Food preparation and serving.
- Safety, sanitation and security.
- Headcounting and cash turn-in.
- Automated information system (AIS) operations.
- Account management.
- Inventory management.
- Facility and equipment operation and maintenance.

- Coordination for dining facility support.
- Participation in the Installation Food Program.

SHIFT LEADER

1-3. The shift leader is responsible for assigning and supervising the job performance of food operations NCOs and food service specialists. The shift leader may be responsible for the cooking shift, pastries, rations, unit support or training. The shift leader should be proficient in all of the DFM's areas of responsibility and should assist the DFM in the overall operation of the dining facility. The DFM may designate one of the senior NCO shift leaders as the Assistant DFM. The normal 92G rank for this position is staff sergeant (SSG) to SFC.

FOOD OPERATIONS NCO

1-4. The food operations NCO may be the shift leader when the shift leader is absent. In addition to cooking, the food operations NCO must be able to supervise and train subordinates in all aspects of food safety, food preparation, cooking and serving. The food operations NCO must know and be able to teach the proper use of recipes, utensils, equipment, cleaning procedures, receipt and storage of subsistence and product usage. The normal 92G rank for this position is sergeant (SGT) to SSG.

FOOD SERVICE SPECIALIST

1-5. The major duties of the food service specialist are to prepare, cook and serve meals. The food service specialist must be able to prepare a variety of foods using recipes, both in small and large quantities, while applying food protection and sanitation measures. The food service specialist must know how to use and perform maintenance on dining facility equipment and utensils following basic safety and sanitation rules. This publication gives detailed information to assist the food service specialist in becoming more familiar with specifics pertaining to their assigned duties in these areas. The normal 92G rank for this position is private to specialist/corporal.

CONTRACT PERSONNEL

1-6. Contract personnel work with military personnel in almost all Army dining facilities. In dining facilities supported with dining facility attendant (DFA) contracts, military food service personnel manage the dining facility account and do the cooking. Contract workers provide cleaning services. In dining facilities supported with cook-support/DFA contracts (CS/DFA) contracts, military food service personnel manage the dining facility account and do some of the cooking. Contract workers provide cooking support as well as cleaning services.

1-7. The most important factor that military food service personnel must remember when working with contract workers is that they do not supervise the contract workers. The Government has a contract with the contractor and the contracting officer (KO) for the contract is ultimately responsible for their performance. Contract workers take all guidance from their own supervisors. DFMs can maintain a good dining facility operation that has contract workers by following these procedures:

- Attend the Joint Culinary Center of Excellence (JCCoE) Food Service Contract Management (FSCM) training course. This course provides a good overview of food service contract fundamentals.
- Get a copy of the food service contract from the contracting officer's representative (COR). The contract performance work statement (PWS) outlines the tasks and performance standards which the contract workers are required to perform.
- Do not supervise contract workers. Coordinate actions with the contract worker's supervisor.
- Maintain a good working relationship with the COR. The COR is responsible to the KO for overseeing the daily performance of the contractor. The DFM should provide all feedback on the performance of the contract workers to the COR.

- Assist the command food advisor and food program manager (FPM) in determining the number of cook-support contractor positions needed to augment military food service personnel when units deploy and the dining facility must remain operational.

CONSOLIDATED DINING FACILITY OPERATIONS

1-8. Consolidation of dining facilities results in the dining facility supporting multiple units. In addition, these unit's food service personnel are then consolidated to operate the dining facility. The consolidation may result in several senior 92G NCOs working within the same dining facility operation. Areas that the command food advisor will need to work out with the unit commanders and senior 92G NCOs in a memorandum of agreement (MOA) or memorandum of instruction (MOI) includes—

- Commander responsible for the dining facility operation. This responsibility may be elevated to the higher commander of the units being supported, designated to one unit commander only or rotated among the unit commanders.
- Unit senior NCO assignments. One will have to be designated as the DFM and the others should be assigned shift leader responsibilities for operational areas within the dining facility (Assistant DFM, cooking shifts, pastries, rations, unit support and training).
- NCO rating scheme. The DFM should rate and/or senior rate all NCOs within the dining facility operation. Food service personnel should be attached for duty to the unit of the commander responsible for the dining facility operation.
- Coordination of mission support outside of dining facility such as pulling cooks from dining facility for training prior to deployment and return of cooks to facility after redeployment of cooks.

PERSONNEL ROTATION

1-9. Due to the nature of military assignments, food service personnel including the DFM rotate into and out of the dining facility operation frequently. Since the DFM is overall in charge of the dining facility operation, the transition from one DFM to another DFM must be carefully planned. All required personnel and accountability actions must be completed prior to the transfer while still maintaining daily diner service. A checklist of actions for consideration when changing DFMs is at appendix A. This checklist may also be used to ensure all required actions are completed when transferring management from the military to a contractor or vice versa due to unit deployment or redeployment.

PERSONNEL ORIENTATION

1-10. The DFM must establish an orientation program for all newly arriving personnel. Personnel must be provided training in the layout, operations, policies and procedures of the dining facility. Even experienced personnel may not be skilled in all areas of your operation. Some of the more important areas that should be included in the orientation are—

- Identify the designated supervisor.
- Discuss specific duty assignment, job standards, and promotion and training potentials.
- Discuss the work hours and work schedules. There are peak and slack times in all operations and most personnel will have to work during the peak times. Emphasize the importance of personnel reporting for duty at times specified.
- Identify the safety and sanitation standards within the dining facility.

JOB DESCRIPTIONS

1-11. The DFM should prepare a job description for each position in the dining facility. The job description lists the general duties and tasks that are required of the person to perform in that job. The job description is a management tool and important in planning training activities. The DFM can use the job descriptions provided in the MOS 92G career map as discussed in paragraph 1-1 and add duties as needed. Figure 1-1 is a sample job description for the food operations NCO.

Job Description

Title	Food Operations NCO (SGT/SSG)
Location(s)	Garrison Dining Facility and Field Kitchen
Reports to	Shift Leader/Dining Facility Manager

Job Summary

Performs preliminary food preparation procedures, prepares and cooks menu items listed on the production schedule as prescribed by Army recipes/SOPs. Sets up serving lines, garnishes food items, serves, and applies food protection and sanitation measures in garrison and field environments at all times. Performs general housekeeping duties, sets up, operates, maintains and cleans kitchen equipment.

Summary of Essential Job Functions

Provides technical guidance to lower grade employees in garrison and field operations. Ensures that proper procedures, temperatures and time periods are adhered to during food preparation and serving. Directs safety, security, and fire prevention procedures and performs limited supervisory and inspection functions including shift supervision.

Responsible for assigning duties, filling in and completing the production schedule to include carrying any leftovers to the next meal/days production schedule, highlighting the leftovers, annotating all rations used throughout the meal period on a kitchen requisition, recording data on a risk management data log for cooking and serving (DA Form 7458/7459), performing corrective measures when necessary, and recording data on a cooling cooked items temperature chart according to TB MED 530, paragraph 3-53c.

Qualifications

This position requires knowledge of food preparation and production procedures. This duty requires someone who is highly motivated and responsible in distributing workload requirements and who possesses a positive attitude and has the ability to communicate to others effectively and without any prejudice or bias intentions. The job summary above is not to be construed as an exhaustive list of all responsibilities, duties, and skills required of personnel performing this job. All personnel may be required to perform duties outside of their normal responsibilities from time to time, as needed.

Figure 1-1. Sample job description

ROTATIONAL ASSIGNMENTS

1-12. The DFM should provide rotational assignments and cross training for all food service personnel in the dining facility. This process will ensure personnel receive training in more than one area such as administration, baking, cooking shifts, rations and training, and become proficient in their job duties.

WORK SCHEDULES

1-13. Effective scheduling will provide for the best use of all personnel, improve morale, lessen stress and reduce the potential for alcohol- and drug-related problems. Work schedules are developed based on the work load and unit training mission. If personnel problems develop, the work schedules should be reviewed and changed as required. Consider the following when developing work schedules:

- Allow individuals to be off two consecutive days each week.

- Factor in leaves, passes, holiday, medical appointments and scheduled field operations requirements.
- Ensure all personnel are given an equal opportunity to have weekends and holidays off.
- Consolidate dining facility operations on weekends when possible.
- Schedule more people to work at peak times and fewer to work at slack times.
- Stagger arrival and departure times so that personnel are not standing around with nothing to do.
- Remember: fairness increases morale and espirit de corps.

SKILLS ASSESSMENT

1-14. The shift leader or DFM should periodically assess the general food service skills of each food service Soldier. This assessment will ensure personnel are using the proper food service skills in the performance of their daily duties. Skills assessed as fair or unsatisfactory will provide the Soldier with area that they should improve on.

TRAINING

1-15. A critical step in developing a good dining facility is developing a good training program. An efficient operation cannot be maintained without trained people. The DFM is responsible for ensuring that each person is trained to do their job and that trainers have the needed skills to conduct effective training. Training must be continuous, performance-oriented and contain clear objectives to prepare personnel to do their jobs. The dining facility training program should include MOS proficiency training, common tasks and unit training, and food program regulatory training.

MOS PROFICIENCY TRAINING

1-16. The Soldier Training Publication (STP) is the primary source for the food service Soldier to use in maintaining MOS proficiency. STP 10-92G1-SM-TG and STP 10-92G25-SM-TG identify the individual MOS training requirements for Soldiers in MOS 92G. These STPs contain standardized training objectives (in the form of task summaries) to train and evaluate Soldiers on critical tasks which support unit missions during wartime. DFMs should use the STP to plan, conduct and evaluate individual training.

Performance Standards

1-17. The STP has tasks and job standards for food service specialists in each skill level. The standards give the sequence in which the steps in the task must be done. These standards may be used as a training tool by both workers and supervisors. They specify what Soldiers must be able to do at each grade level before they are eligible for promotion to the next grade.

Commercial Certification

1-18. All food service specialists arrive to their initial unit with fundamental food service skills they received in initial entry training. To build on these skills, JCCoE, in coordination with the American Culinary Federation (ACF), has developed a professional food service certification program that is open to MOS 92G/922A. Qualification prerequisites include mandatory courses in nutrition, sanitation and supervision; work experience; and passing certification examinations. Both hands-on and written examinations are required by the ACF. Upon completion, the individual will be certified as a Certified Culinarian. More information on this certification program can be found on the JCCoE web site.

COMMON TASKS AND UNIT TRAINING

1-19. The DFM should use the Soldier's Manuals of Common Tasks (SMCT) (STP 21-1-SMCT and STP 21-24-SMCT) to integrate Soldier, leader, and collective training tasks into the dining facility training program. Food service personnel will also have to maintain their fitness and proficiency with their weapon.

FOOD PROGRAM REGULATORY TRAINING

1-20. All food service personnel are required to have training in several general areas in order to work in the dining facility. According to regulations AR 30-22, DA Pam 30-22 and technical bulletin medical (TB MED) 530, training is required on sanitation, nutrition, equipment operation and maintenance, safety, energy conservation and hazardous communication (HAZCOM). Additional information on each of these topics is contained throughout this manual. The DFM should ensure all personnel are trained on these topics 100 percent of the time. The DFM may add additional training areas to these requirements as needed.

Sanitation

1-21. Proper food safety and sanitation are the most important aspects of the dining facility operation. All food service personnel must realize their responsibilities for the health and well-being of the people for whom they prepare food. Improper sanitation can result in food-borne illness outbreaks and loss of facility credibility. Personnel must be trained to know the causes of food-borne illness so that they can take steps to eliminate them. The FPM must ensure all food service personnel are familiar with the standards contained in TB MED 530. TB MED 530 contains food safety and sanitation training requirements for all food service personnel. Areas that should be included in the sanitation training program are—

- Proper storage and handling of food.
- Preparation and serving of food.
- Dangers of cross contamination of foods and how to avoid them.
- Importance of personal hygiene and sanitation.
- Installation food protection program requirements.
- Hazard Analysis and Critical Control Point (HACCP).
- Critical Control Points.

Nutrition

1-22. The training program should cover basic nutrition, nutrition standards and implementation procedures. Also, it should include discussions held at food service management board meetings and a diner education program according to AR 40-25. The role of food service personnel in meeting nutrition requirements should be stressed in training. The DFM should contact the FPM and dietitian for nutrition training materials. Instruct your personnel on the use of table tents and nutrition posters to inform diners of nutritional information and their choices.

Equipment Operation and Maintenance

1-23. Personnel must be taught to follow the manufacturer's instructions on the operation, maintenance and cleaning of each piece of equipment in the dining facility. The DFM should contact the facility engineers or FPM if the dining facility does not have the manual on each piece of equipment in the dining facility.

Safety

1-24. Classes in safety must be a regular part of your training program. The DFM must teach personnel how to work safely. The training program must stress safety rules, the need for the safe use of the equipment and what to do in case of an accident. Also, it must stress common causes of accidents and accident prevention. Use posters, slides, demonstrations and motion pictures available from the National Safety Council, local health departments, the American Red Cross and the Civil Defense Agency. The installation fire department should be consulted when classes in fire prevention are planned or given in your facility.

Energy Conservation

1-25. Energy use is a significant cost to the Army. Wasting energy is the same as throwing away edible food. Personnel must be trained on energy conservation principles as they relate to the dining facility operation. Chapter 6 of this manual provides guidance on how the DFM can establish an effective energy action plan within the dining facility.

HAZCOM

1-26. Food service personnel use many different types of chemicals on a daily basis to maintain a sanitary dining facility operation. The right cleaning supplies and equipment must be used. Too much of a cleaning product may damage equipment, result in injury to personnel or leave a toxic residue in foods. The FPM should include training on the following minimum components of HAZCOM:

- Proper chemical storage.
- Chemical labeling requirements.
- Use and location of material safety data sheets (MSDS).
- First-aid procedures.
- Protective clothing and equipment requirements.
- Spill control and cleanup procedures and equipment.

DOCUMENTATION

1-27. Keep training records brief and simple. Training records may be set up separately for each individual or by using a master document that lists all the personnel that were trained. Individual training records work best so the food service specialist can take their record when they are transferred to another unit. The DFM should determine where the training records are maintained; however, documentation on food program regulatory training should be maintained in the dining facility. A sample personnel training chart and a sample training chart using MOS developmental tasks from STP 10-92G1-SM-TG can be found on the JCCoe website, http://www.quartermaster.army.mil/jccoe/jccoe_main.html, on the Standard Operating Procedures page.

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Chapter 2

Account Management

GENERAL

Dining facility accounts are maintained under the Army Ration Credit System (ARCS). ARCS is used during garrison operations and during peacetime training where overnight billeting in the field over five days is not involved. The ARCS is a line-item ordering, dollar-accounting system. Under ARCS, the dining facility earns a monetary allowance based on headcount and the basic daily food allowance (BDFA) against which food costs are charged. The DFM orders subsistence and then balances the expenditures of the subsistence used against this allowance.

ACCOUNTING SYSTEMS

2-1. The dining facility account may be maintained manually or through the use of an approved AIS. Manual procedures and forms are discussed in detail in chapter 3 of DA Pam 30-22. The current approved Army AIS for food service is the Army Food Management Information System (AFMIS). AFMIS is a web-based system that contains procedures for operation (tutorials) on the actual web site. The general account management principles discussed in this chapter apply to both manual and AFMIS-maintained dining facility accounts.

ACCOUNT STATUS

2-2. The dining facility account status formula is shown in table 2-1. The DFM can use this formula at any time to determine if the dining facility account is zero, underspent or overspent. An underspent account means the dining facility's expenses (cost of food used) are less than monthly headcount earnings. An overspent account means the dining facility's expenses exceed monthly headcount earnings. At the end of each month, the account status is recorded and the account starts over for the next accounting period. At the end of the fiscal year (FY), each accounting period the dining facility is operational is added together to arrive at the cumulative year-to-date account status. The dining facility account begins at a zero balance at the beginning of each new FY. The main factors in maintaining the dining facility account are menu planning, subsistence ordering, earnings, expenses and the inventory.

Table 2-1. Dining facility account status formula

Line	*Formula Data Element*	*Data Example*
1	Beginning Inventory (last accounting period final inventory)	$26,228.26
2	Purchases (ration receipts)	$17,102.76
3	Total (line 1 + line 2)	$43,331.02
4	Current Inventory	$7,000.40
5	Actual Expenses (cost of food used) (line 3 – line 4)	$36,330.62
6	Earnings (headcount)	$30,254.62
7	Current Status (line 5 – line 6)	$6,076.00 overspent

MENU PLANNING AND REQUESTING SUBSISTENCE

2-3. The DFM plans the menus that will be served for each meal in the dining facility and then orders the subsistence. The cost of the menus planned and quality of the subsistence items ordered directly affect the

dining facility account status. When the menus planned and subsistence ordered exceed the BDFA reimbursement rates, the dining facility account will be overspent. Menu planning and requesting subsistence considerations and procedures are discussed in detail in chapter 3.

EARNINGS

2-4. Dining facility earnings are based upon the BDFA and the number of diners fed (headcount) for each meal.

BDFA

2-5. Each month the JCCoE publishes the dollar value of the BDFA for each installation. The BDFA is then used to compute meal values. Table 2-2 lists the conversion percentage and how the meal values are computed based upon using an example BDFA rate of $9.91. If the conversion results in an odd penny, as this example does, always apply the penny to the dinner and supper meal BDFA values.

Table 2-2. Sample BDFA conversion

Meal	*Conversion Percentage*	*Meal BDFA (Conversion % X $9.91)*
Breakfast	20	$1.98
Lunch	40	$3.96
Dinner	40	$3.97
Brunch	45	$4.46
Supper	55	$5.45

HEADCOUNT

2-6. After each meal, the headcount is multiplied by the BDFA meal value and then posted to the dining facility account as earnings. The only exception to this rule is for cash sales in a la carte dining facilities. Cash sales in a la carte dining facility operations are not multiplied by the BDFA meal value. Instead, the dining facility account earns only the base food cost plus the 20 percent condiment cost for all meals sold. Table 2-3 shows an example of how one day of headcount is calculated into earnings using the BDFA meal values from table 2-2 for a standard (non-a la carte) dining facility. Table 2-4 shows an example of how one day of headcount is calculated into earnings in an a la carte dining facility. Detailed headcount procedures are contained in AR 30-22 and DA Pam 30-22.

Table 2-3. Standard dining facility headcount earnings

Meal	*Headcount (SIK[1] & BAS[2])*	*BDFA Meal Rate*	*Meal Earnings (Headcount X BDFA Meal Rate)*
Breakfast	200	$1.98	$396.00
Lunch	253	$3.96	$1,002.00
Dinner	157	$3.97	$624.00
Total Day Headcount Earnings			$2,022.00

Notes:
1. Subsistence in kind (SIK) diners are authorized a meal card and eat for free.
2. Basic allowance for subsistence (BAS) diners pay cash for their meals.

EXPENSES

2-7. The cost of the subsistence purchased only becomes an expense to the dining facility account once it is used and removed from the value of the inventory. The DFM determines the value of the dining facility inventory by documenting the use of all food items for each meal and by doing weekly and monthly inventories.

Table 2-4. A la carte dining facility headcount earnings

Meal	*Headcount (SIK)*	*Headcount (BAS)*	*BDFA Meal Rate*	*Total Food Sales (no BAS discount meals sold)*	*Meal Earnings*
Breakfast	188		$1.98		$372.24
Breakfast		12		$26.60	$20.00
Lunch	211		$3.96		$835.56
Lunch		42		$196.00	$147.00
Dinner	150		$3.97		$595.50
Dinner		7		$28.00	$21.00
Total Day Headcount Earnings					$1,994.00

Note: The amount of meal earnings from a BAS diner paying the standard meal rate and a BAS diner paying the discount rate is the same since the dining facility earns the base food cost and 20% condiment cost. The difference when selling meals at both the standard and discount meal rates during a meal will be in the total food sales amount taken in by the dining facility since the BAS diner paying the discount meal rate does not pay the operating expense (1.33).

KITCHEN REQUISITIONS AND TRANSFERS

2-8. The Kitchen Requisition *(DA Form 4552*) is used in dining facilities not operating under AFMIS to record the disposition of all intensively managed items (meats) as well as condiments, self-service and standing operating procedure (SOP) items. Dining facilities operating under AFMIS use the kitchen requisitions report to record all food items used for each meal. The AFMIS kitchen requisitions report automatically removes the subsistence used from the dining facility inventory.

2-9. When subsistence transfers are approved and executed, the food items are removed from the dining facility inventory. When the dining facility is operating under AFMIS, the DFM should ensure that all kitchen requisitions and transfers are finalized prior to inputting the inventory.

INVENTORIES

2-10. Proper management of the inventory helps to maintain a balanced dining facility account. The DFM should conduct weekly and monthly subsistence inventories. The monthly inventory value is referred to as the accountable inventory since it is used to determine the monthly account status and should be conducted after the last meal the dining facility is operational during the month. The monthly inventories for the months of April and September (semi-annually) must be verified by a disinterested individual, which is coordinated by the FPM. The DFM should validate all accountable inventories since this inventory helps determine the dining facility account status. Taking the inventory can be a lengthy process unless the dining facility is properly organized. Use the following tips to speed up taking the inventory:

- Co-locate like items as much as possible.
- Line items up on the shelves as they are listed on the inventory sheets.
- Identify all storage areas that may not be physically located in the dining facility.
- Physically separate or mark food items that are not supposed to be counted on the inventory (open condiments, cans and boxes, field residuals, and warming and cooling beverages).
- Pre-print inventory or count sheets in advance.

INVENTORY LEVEL

2-11. Ideally, the DFM should order just the amount of subsistence needed until the next vendor delivery. Due to required subsistence order lead times and frequent changes in headcount projections, this is not always possible. The inventory level goal for dining facilities is to have no more than six days worth of subsistence physically on hand at any time. The DFM can determine the dining facility inventory objective and surplus inventory values by using the formula shown in table 2-5. Since this formula uses last accounting period's earnings and operational days to calculate the inventory objective and surplus, it may not always accurately reflect the amount of subsistence needed on hand to meet current requirements. An example of this is when the dining facility had a low feeding mission during the previous accounting period

and then feeds significantly more meals during the current accounting period. In this instance, the DFM would have to order more subsistence than the inventory objective indicates to feed the extra headcount. A good rule of thumb to determine the inventory objective at any time is to total the last six days worth of earnings and then add in any expected immediate extra feeding projection requirements for the next ration ordering cycle.

Table 2-5. Inventory objective and surplus formula

Line	*Formula Data Element*	*Data Example*
1	Last accounting period earnings	$30,254.62
2	Last accounting period operational days	30
3	Average daily earnings (line 1 divided by line 2)	$1,008.49
4	Target days of inventory	6
5	Inventory Objective (line 3 x line 4)	$6,050.94
6	Current inventory	$7,000.40
7	Surplus inventory (line 6 – line 5)	$949.46

REDUCING SURPLUS INVENTORY

2-12. Unnecessarily large inventories take up storage space, can lead to waste through spoilage and invite theft. The DFM can reduce surplus inventory by taking the following actions:

- Establish a cycle menu (see chapter 3).
- Mark all food items, cans and boxes with the date received from the vendor. Check the dates in the ration storage areas frequently to see if the food items are being used within the recommended six-day inventory objective period.
- Integrate surplus food items into the menus.
- Review recipes and food item usage and cut back on order quantities if you are over estimating the amount needed or being used.

FIELD RATION RESIDUALS

2-13. The DFM should maintain a separate manual inventory of all residual rations. Residual rations are considered a "free issue" and are not charged to the dining facility account. The value of these rations is not to be part of the inventory for account purposes and should be physically separated from the other rations. Once received in the dining facility, food service personnel should maintain a running inventory of the residual rations using DA Form 3034-2 *(Disposition of Subsistence)* and account for the use of all rations on the production schedule.

ACCOUNT STANDARDS

2-14. The dining facility account must be maintained on a monthly and FY basis. These account standards are contained in the following paragraphs.

MONTHLY ACCOUNTING PERIOD

2-15. The dining facility account can be overspent or underspent at the conclusion of each monthly accounting period. The monthly management factors of a plus 3 percent overspent or minus 10 percent underspent are used to indicate if the dining facility account needs analysis and validation to ensure it can meet the end of FY account status standard. Table 2-6 shows how the monthly management factor percentage is calculated.

Table 2-6. Monthly management factor percentage calculation

Line	*Formula Data Element*	*Data Example*
1	Ending account status	$6,076.00 overspent
2	Earnings (headcount)	$30,254.62
3	Total (line 1 divided by line 2 and expressed as a %)	20.09% overspent

END OF FY

2-16. The dining facility year-to-date account status must conclude the end of the FY at zero or underspent. Relief for loss actions must be taken on overspent dining facility accounts. The year-to-date status is calculated by comparing the total dollar value of all overspent accounting periods to the total dollar value of all underspent accounting periods. If the underspent dollar value exceeds the overspent dollar value, the dining facility account is underspent for the FY. If the overspent dollar value exceeds the underspent dollar value, the dining facility account is overspent for the FY.

BALANCING THE ACCOUNT

2-17. The goal is to keep the dining facility account balanced throughout the FY. A balanced account is one in which the amount of subsistence used equals the allowance earned. The DFM is required to take remedial actions to adjust a plus or minus account status. Prior to initiating any remedial action, the DFM should first analyze the dining facility account to see what the possible reasons are that is causing the account to be overspent or underspent. It should be noted that an underspent account is not a sign of poor account management as long as the dining facility is meeting Army Menu Standards and providing diners with a variety of food items. In this instance, remedial actions would simply be to ensure the dining facility is following Army Menu Standards and verify diner satisfaction. Table 2-7 provides possible reasons that may cause the dining facility account to be overspent or underspent and remedial actions for each. Additional guidance on the validation and analysis of dining facility accounts is contained in chapter 3 of DA Pam 30-22.

Table 2-7. Account analysis and remedial actions

Area	*Analysis*	*Remedial Actions*
Data posting	Verify to see if all account transactions (earnings, vendor receipts, transfers and inventories) have been posted correctly.	Correct incorrect data. Notify FPM or the subsistence supply management office (SSMO) if account has been closed and the data cannot be corrected.
Menu planning	Verify if the menus meet Army Menu Standards and BDFA meal values.	Adjust menus to meet Army Menu Standards. Reduce cost of meals for overspent accounts and increase cost of meals for underspent accounts.
Food waste	Verify if food is being wasted due to over-ordering, inadequate storage and rotation, faulty headcount projections, faulty equipment, food preparation or serving.	Identify problem areas and initiate additional oversight and training.

Table 2-7. Account analysis and remedial actions (continued)

Area	*Analysis*	*Remedial Actions*
Personnel & Storage	Verify that food service personnel are paying for their meals and are not pilfering subsistence from storage areas.	Establish controls to ensure payment for all meals and to prevent unabated access to ration storage areas.
A la carte	Verify that the price for each menu item being sold is priced correctly and that the cashier is ringing up all meal sales correctly.	Change prices on menu items, notify FPM to correct AFMIS recipe cards and monitor headcounter.

PART TWO

OPERATIONS

Chapter 3

Menu Planning and Requesting Subsistence

GENERAL

Menu planning is deciding what type of food products will be served and how they will be prepared. Under ARCS, the DFM may decide to plan the complete menu, use an established menu or use a combination of both. When an established menu is not used, the DFM must ensure that the menu supplies the nutrients needed by using the food guide pyramid and other menu planning guidance to plan the menu. Once the menu is planned, the DFM must forecast the anticipated headcount accurately and order the subsistence to meet feeding requirements.

MENU PLANNING GUIDES AND STANDARDS

3-1. AFMIS and the JCCoE web site both contain master menus for dining facility operations. The DFM may use these as a starting point and adjust these menus to meet diner's preferences. All menus should be reviewed by a dietitian. These menus contain main service line, short-order, salad bar, dessert and fitness menu choices. Additionally, JCCoE annually sends out special menus for the Army Birthday, Thanksgiving and Christmas meals.

3-2. The menu standards contained in chapter 3 of DA Pam 30-22 are the primary menu planning standards for the dining facility. The DFM should use these standards as well as the menu planning and nutrition guidance provided in AR 40-25, AR 30-22 and this manual to plan menus.

CYCLE MENU

3-3. The DFM cannot show up each morning and then decide what menu items food service personnel will prepare. Developing menus requires detailed planning, otherwise the required foods may not be in the dining facility to prepare.

3-4. The first step in menu planning is to develop a cycle menu. A cycle menu is a menu that repeats after a certain number of days (for instance 14, 21, 28 or 42 days). The appropriate length of a good cycle menu is generally from 21 to 28 days. Menu cycles shorter than 21 days tend to repeat too often and menu cycles longer than 28 days are difficult to maintain administratively.

BENEFITS

3-5. A cycle menu adds predictability to the menu planning process. Additional benefits of establishing a cycle menu includes—

- Provides a basis for meal costing and diner satisfaction adjustments.
- Food service personnel know what to expect and can provide quality input to the DFM on the food items being prepared and served.
- Can reduce the number of food items the dining facility maintains in inventory.
- Can maintain or improve subsistence prime vendor (SPV) fill rates.
- Can reduce pricing of food items received from the SPV.
- Creates less overall administrative work since menu templates for production schedules can be used.

CONSIDERATIONS

3-6. Considerations for planning a cycle menu include—

- Diner demographics and preferences. The Army's diversity is spread across the world. Regional menu items are usually popular not only within that region (Tex-Mex in the southwest) but in all dining facilities around the world. Food items may be run several times within the menu cycle based upon their acceptability and popularity. Be careful though, even though most diners may like certain food items, such as lasagna, most will not want to eat it every day. Menus should offer variety and balance in taste, color, shape, flavor, texture and temperature.
- Diner dietary requirements. The DFM should strive to incorporate choices that meet their diners' health, lifestyle and religious requirements. Remember, a choice of one is not a choice. Establishing what alternate choices should be made available is best determined based upon the number of diners needing special dietary requirements and the impact to the rest of the menu service. All menus should be nutritionally adequate and offer the diner low-calorie options. Coordination with the installation dietitian will ensure that nutritional requirements are addressed.
- Dining facility equipment. It is hard to run rotisserie chicken without a rotisserie. The dining facility equipment must be available or planned to be purchased prior to implementing certain food items on the cycle menu. The dining facility must be able to support the mechanical or electrical requirements of the equipment being purchased.
- Food service specialist staffing and experience. The number of food service personnel available and their cooking experience must be considered. Staffing must be adequate to support the styles of service the dining facility is offering and the scheduled menus being prepared.
- BDFA and monetary status of the dining facility account. If you only have $3.65 in your pocket to buy lunch, you cannot spend $4.00. The cycle menu must meet dining facility account standards. Food item cost considerations includes using pre-prepared vs. scratch-prepared foods, cost per yield, quality or grade, availability and current market costs.
- Special occasions such as holidays, super suppers and ethnic meals. You have to serve turkey on Thanksgiving. The menu items for special occasions must meet diner expectations for the meal being planned. The dining facility account earns a 25 percent increase to the BDFA for the Army Birthday, Thanksgiving and Christmas meals.

SPECIALTY SERVICE METHODS

3-7. Newer prototype dining facilities are designed to offer additional styles of service such as a la carte, carry-out, exhibition cooking, self-service, destination areas and drive-thru. Older dining facilities may only be able to offer limited styles of service without further renovation.

A La Carte

3-8. The a la carte concept enables cash customers to select and pay for only those food items they want to eat. Each food item is priced separately. Key menu planning considerations for a la carte dining facilities include food item pricing and the location of the headcount stations. Detailed a la carte facility layout, menu planning and food pricing guidance are contained in chapter 3 of DA Pam 30-22.

Carry-Out

3-9. The dining facility may offer the carry-out option for the entire meal or for only certain food items on the menu. Newer dining facility designs may include a separate area for the carry-out service. Since the diner does not eat in the dining facility, the dining facility must place the food in carry-out containers. The cost of these containers must be included in the dining facility's operating budget that should be submitted to the FPM annually.

Exhibition Cooking

3-10. Exhibition cooking is cooking meal items in front of the diner. Cooking a hamburger to order can be considered exhibition cooking; although exhibition cooking generally involves the use of induction cookers or special grills. In this type of cooking, a limited number of food items are made available for diner selection. Once the diner makes their selection, the food service specialist cooks the food items in front of the diner. Exhibition cooking is designed to be quick and provide a bit of a show for the diner.

Self-Service

3-11. Self-service is the diner serving themselves instead of food service personnel serving the food items. All dining facility operations offer self-service to some extent in areas such as the breakfast/salad bar and beverage areas. Considerations when planning for self-service include—

- Increased food cost. Since diners can serve themselves, portion control is difficult to achieve. The DFM may choose to use a modified self-service concept where the cooks serve the high-dollar food items (meats) and let the diners serve themselves everything else.
- Serving equipment. Most hot serving lines are not designed to be turned around so the diner can serve themselves. The serving equipment may need to be modified or new equipment ordered. When diners serve themselves, the food must be protected through the use of sneeze guards.
- Monitoring and replenishing. Self-service requires fewer servers; however, food service personnel must still monitor and replenish the serving lines. Diners serving themselves tend to make more of a mess on the serving line so dining facility personnel must be available to keep the serving lines clean.
- Flow rate. Diners serving themselves can slow the flow rate of the serving line down significantly.

Destination Areas

3-12. Destination areas are when all menu items required for a complete meal are located in one area within the dining facility. The diner can pick and choose what type of meal they want to eat from several destination options available such as ethnic food themes (Italian and Mexican), sandwiches, pizza, or grill items and then gather all the items needed for a complete meal without having to walk through the whole serving line. When these items are part of a branded concept using manufacturers' marketing material, the destination area is known as a kiosk.

Drive-Thru

3-13. The drive-thru option is available for use in new dining facility designs. This concept capitalizes on current fast food franchises' speed and ease of service by allowing diners to remain in their vehicles and get a meal from the dining facility. This concept requires special menu planning, equipment, training and carry-out containers.

PLATE COST

3-14. The DFM should determine the cost of the cycle menu to ensure it will not cause the dining facility account to be overspent. The DFM does this by calculating the plate cost of each meal. The plate cost is the average dollar cost of the food items it takes to feed one diner one meal. The plate cost should be calculated twice for each meal; once during the menu planning stage (projected plate cost) and again after each meal is served (actual plate cost). For example, during menu planning you calculated it will cost $1.67 to feed tomorrow's breakfast meal to each diner. This figure represents your projected plate cost. After the meal is over, you calculated it cost $1.82 to feed breakfast to each diner. This figure represents your actual plate cost.

PROJECTED MEAL COST

3-15. When manually computing the projected plate cost, the DFM must total the cost of all ingredients from each recipe and divide this total by the projected headcount for the projected meal. For dining facilities operating under AFMIS, take the total projected meal cost from the production schedule when it is created and divide it by the projected headcount. Table 3-1 shows a projected plate cost calculation.

Note: The DFM must accurately project the estimated total headcount and number of servings needed for each recipe and SOP item listed on the production schedule. Additionally, the AFMIS recipe cards must be accurate with the right ingredients to properly calculate out the projected cost per serving. The DFM should notify the FPM when any AFMIS recipe card or SOP contains inaccurate ingredients or required quantities and needs to be corrected.

Table 3-1. Projected plate cost calculation

Line	*Data Element*	*Cost*
1	Projected Meal Cost	$960.00
2	Projected Headcount	300
3	Projected Plate Cost (line 1 divided by line 2)	$3.20

ACTUAL PLATE COST

3-16. The actual plate cost is calculated to determine if the projected plate cost was accurate and to provide a basis for adjusting the food items being served for the meal. The actual plate cost is the true cost to feed that meal for the purposes of the dining facility account. When manually computing the actual plate cost, the DFM must total the cost of all food used and divide this total by the actual headcount for that meal. For dining facilities operating under AFMIS, take the total actual cost of the Kitchen Requisition Report and divide it by the actual headcount for the meal. The calculation formula for the actual plate cost is the same one used as shown in table 3-1.

CYCLE MENU AVERAGE PLATE COST

3-17. The plate cost for each meal in the cycle menu will vary depending upon the types of foods planned for each meal. One meal may contain high cost food items (steak & shrimp) while another may contain low cost food items (spaghetti & chicken). The steak & shrimp meal plate cost may exceed the BDFA reimbursement rate for that meal while the spaghetti & chicken meal plate cost may be under it. This is OK. The goal of planning the cycle menu is to average the high and low plate costs out over the course of the cycle so that the cycle average meets the BDFA reimbursement rate for each meal. Table 3-2 shows how the projected and actual plate costs are averaged out over a five-day period. The DFM can average the cycle menu by week or over the course of the entire cycle menu.

Table 3-2. Cycle menu plate cost averaging

Data Element	*Cycle Menu Data*					*Plate Cost Average*
Cycle Day Menu (Lunch)	1	2	3	4	5	
BDFA Meal Rate	$3.20	$3.20	$3.20	$3.20	$3.20	$3.20
Projected Plate Cost	$3.50	$3.45	$3.28	$2.99	$3.25	$3.29
Actual Plate Cost	$3.22	$4.03	$3.83	$2.80	$3.28	$3.43

ANALYZING PLATE COSTS

3-18. The DFM must continually analyze projected and actual plate costs in relation to the BDFA reimbursement rates for each meal. If costs seem high for a particular meal, investigate further to determine why the plate cost is high such as over food prep, waste, etc. and adjust the food items on that meal to lower it. This analysis provides the basis for developing a good cycle menu for both diner satisfaction and account status requirements.

REQUESTING SUBSISTENCE

3-19. Once the menus have been planned, the DFM must estimate the number of diners that will eat each meal, how much of each food item the diners will want to eat at each meal, and then order the subsistence. These procedures are discussed in the following paragraphs.

ESTIMATE THE NUMBER OF DINERS

3-20. You can use figures from your previous headcount records (historical data) to estimate the number of diners that will eat each meal. However, these figures must be adjusted for holiday meals, alerts, field exercises, weather, time of month and other special circumstances. The DFM should also continuously review unit training calendars of the units supported by the dining facility to assist in this task.

DETERMINE DINER PREFERENCES

3-21. The DFM can use previous production schedules to determine which food items have been the most acceptable. For example, if you are planning to serve meat loaf, baked chicken and short order in the same meal, you will need to estimate how many servings of each is needed so the appropriate amounts of each may be ordered and prepared. Table 3-3 shows how the diner preference is calculated using a previous production schedule. The diner preference calculation is usually done with the meats, although it can be done with any food item being served. Table 3-4 shows how the previous diner preference food item percentages are applied to the same meal once it comes up again in the cycle menu for a new projected headcount.

Note: When determining diner preferences using previous production schedules, food service personnel must be instructed to annotate the run-out times of the food items on the production schedule. If the meat loaf shown in table 3-3 ran out 30 minutes into a 90-minute serving period, the calculation for the diner preference would be inaccurate for estimating the requirements for future meals since diners may have selected the meat loaf if it had been available the entire meal serving period and less of the other food items.

Table 3-3. Diner preference calculation

Line	*Data Element*	*Meat Loaf*	*Baked Chicken*	*Burgers*	*Hot Dogs*	*Cheese Steak Sandwich*
1	Total servings prepared	120	140	30	10	30
2	Total servings leftover/discarded	18	5	0	2	5
3	Number served (line 1 – line 2)	102	135	30	8	25
4	Actual headcount	300	300	300	300	300
5	Diner preference (line 3 divided by line 4, expressed as a %)	34%	45%	10%	3%	8%

ESTIMATE THE REQUIREMENTS FOR EACH FOOD ITEM

3-22. Once the estimated number of servings for each food items has been determined, the DFM must determine how much of each food item is needed for each meal. When calculating this manually, compute the requirement for 100 diners by multiplying the requirement for 100 portions from the recipe card times the number of portions to prepare. For example, in table 3-4 the projected number of servings needed for meat loaf is 185. If the recipe card requirement for 100 diners is 30 pounds of ground beef, multiply 1.85 times 30 to get 56 pounds of ground beef required for 185 servings. If the dining facility is operating under AFMIS, once the projected servings are input into the production schedule, the DFM can generate a subsistence order. AFMIS automatically calculates the requirements of each food item needed for each meal.

Table 3-4. Diner preference calculation using new projected headcount

Line	*Data Element*	*Meat Loaf*	*Baked Chicken*	*Burgers*	*Hot Dogs*	*Cheese Steak Sandwich*
1	Projected headcount	545	545	545	545	545
2	Diner preference (from table 3-3)	34%	45%	10%	3%	8%
3	Projected servings (line 1 x line 2)	185	245	55	16	44

DETERMINE THE QUANTITY OF SURPLUS FOOD ON HAND

3-23. Review your stockage of items required for upcoming menus and subtract the amount required to prepare meals during the current issue period from the amount on hand. The difference is the amount of surplus. This may be used in the development of your menus to reduce the surplus inventory.

FIGURE THE QUANTITY OF FOOD TO ORDER

3-24. Subtract the items and amounts which will be used from the surplus stock you have on hand and what is due-in from previous ration orders. The result is the minimum that you must order. Order enough of each item to prepare the number of meals you expect to serve.

PREPARE YOUR REQUEST

3-25. According to AR 40-657 *(Veterinary/Medical Food Safety*, *Quality Assurance and Laboratory Services)*, the DFM must order all subsistence from approved sources. The dining facility orders subsistence from their designated SPV and local market vendors (if applicable). The DFM should review each vendor catalog for "best value" food items prior to ordering. A "best value" food item is a food item that provides the DFM with the following:

- Meets Army Menu Standards grade or quality standards.
- Best price.
- Meets intended use for the product based upon brand and grade.
- Comes in an appropriate pack size for use.
- Meet nutritional requirements.

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Chapter 4

Subsistence Receipt, Inspection, Storage, and Rotation

GENERAL

Food service personnel must safeguard subsistence from the time of receipt through diner consumption. Subsistence must be received, inspected, stored, rotated and used correctly to prevent its loss through expiration, waste or theft.

RECEIPT

4-1. Dining facilities receive subsistence based upon the frequency of deliveries contained within each food vendor contract. To facilitate subsistence deliveries, the DFM must make sure that—

- The delivery area is readily accessible to off-load the subsistence.
- Enough personnel are designated to perform the receiving function so as not to unduly delay the vendor from moving to their next delivery and so the subsistence can be moved into the appropriate storage area in a timely manner.
- There is enough refrigeration, freezer and dry-storage space available to store the foods being delivered.
- Frozen and refrigerated items and perishables are inspected and moved to proper storage areas first to ensure time/temperature parameters are maintained.

RECORDING RECEIPTS

4-2. Accurately record all receipts on the issue documents. The authorized receiving person(s) verifies the food items being received are the same ones that were ordered (identity), checks all items for wholesomeness (condition), verifies the quantity received (amount) and then signs the issue document. When signed, the issue document becomes the receipt. A copy of the receipt goes to the activity that electronically inputs the receipt which in turn obligates the Government for the purchase of the subsistence. Problems that may be encountered during the receiving process and how they should be handled are listed in table 4-1.

INSPECTION

4-3. Food service personnel must follow proper food inspection procedures when receiving subsistence. Inspection procedures for receiving specific subsistence items are discussed in the following paragraphs. Things to check during subsistence deliveries include—

- Ensure delivery vehicle protection seal is verified prior to opening and verified again when resealed upon completion of the delivery.
- Check the ambient temperature of the delivery vehicle (monitoring thermometer). The temperature of the vehicle storage area(s) may be higher than recommended temperature requirements due to a lack of recovery time when the vehicle is used to conduct many deliveries in a short period of time. Vendor delivery vehicles should be able to maintain required temperatures for both refrigerated and frozen foods (through the use of separate storage areas) if required.
- Check the delivery vehicle for unsanitary conditions.
- Confirm items delivered with items listed on the invoice.
- Verify for quantity and identity.
- Assess product quality and condition (size, color, sweetness, firmness and smell).

- Check expiration dates (use-by, expired and best-by).
- Measure product temperatures. Frozen food temperatures should not be allowed to rise above 10 degrees Fahrenheit while they are being transported.
- Check packaging material for foreign material and any form of contamination.
- Ensure product meet Berry Amendment requirements and Buy American Act compliance.

PERISHABLES

4-4. Perishables include both frozen and refrigerated foods. Subsistence must arrive at the proper temperature and be placed into the appropriate recommended storage temperature quickly to prevent any deterioration of these items.

Frozen Subsistence

4-5. Frozen items should be frozen solid when they are received. The packages should be checked for ice on the sides, top and bottom. Ice on packages may indicate that the subsistence has thawed and been refrozen. It should be checked by veterinary service personnel (VSP). When the food has thawed, it must be used right away. Thawed food should never be refrozen.

Table 4-1. Receiving problems and actions

Problem	*Action*
Grade or brand of item received does not match the type of item ordered and listed on the issue document (unauthorized substitution).	Reject item. Complete DA Form 7589 (*Subsistence Vendor Contract Discrepancy Report*) and submit to Subsistence Supply Manager (SSM)/FPM. See DA Pam 30-22 on how to complete the DA Form 7589.
Quantity of item received is less than ordered (does not include rounding to case lots).	Complete DA Form 7589 and submit to SSM/FPM. Contact SSMO to coordinate with vendor for replacement.
Quantity of item received is more than ordered (does not include rounding to case lots).	Reject overage. Complete DA Form 7589 and submit to SSM/FPM.
Item not received that was ordered (not in stock).	Complete DA Form 7589 and submit to SSM/FPM. Contact SSMO to coordinate with vendor for replacement.
Item condition is unacceptable (open, leaking, punctured, off-odor, showing signs of spoilage, and so forth).	Reject item. Complete DA Form 7589 and submit to SSM/FPM. Contact SSMO to coordinate with vendor for replacement.
Item tampering or contamination is suspected.	Reject item. Immediately contact VSP and FPM.
Items are not within required product temperature range.	Reject items or secure products in a medical hold status and coordinate with VSP to determine suitability.
Defects/shortages are found while placing items into storage after vendor has completed delivery and left (same day).	Place item on hold. Contact SSMO/FPM to coordinate with vendor for resolution.

Meat

4-6. Inspect meat for odor, color, damage and slime. The odor should be mild and the color normal. There should be no damage or slime.

Fresh Fruits and Vegetables

4-7. Check fresh fruits and vegetables for mold, wilt, rot and other defects. Remove the bad items and store the rest. Fresh fruits and vegetables should also be checked for signs of insect infestation. Do not remove them from the shipping container unless they are needed within 24 hours. When vegetables (except

onions) are removed from the shipping container, they should be trimmed, washed, drained, placed in a covered container and refrigerated as quickly as possible. Never allow vegetables, except potatoes, onions and garlic, to stand at room temperature for any length of time.

Eggs, Milk and Milk Products

4-8. The temperature of raw shell eggs, milk and milk products brought to your dining facility should not be above 45 degrees Fahrenheit. Reject broken or leaky containers. Butter should have a uniform color, firm texture and be free of mold or specks. Cheeses should be checked for uniform color and unbroken packaging. Bottles and cartons should be free of grease or dirt. Bulk milk containers must be delivered with both seals in place and with all rubber or synthetic parts protected from contamination. Check the expiration date stamped on the package.

SEMI-PERISHABLES

4-9. Check dry stores, such as cereals, flour and sugar for signs of exposure to grease or moisture or contamination from insects, rats or mice. Reject open containers unless it is clear they were opened during ration breakdown. If a container is discolored, open it and make sure the food is not damaged or spoiled. If the outside of the container is damp or moldy the inside contents may also be moldy.

Bread and Baked Products

4-10. Check the date code on baked items before accepting them. Your bread vendor should provide you with a date code guide. Post it so that the person who is checking can refer to it easily.

Canned Goods

4-11. Check the condition of the container in which the cans are packed. If the container is crushed or torn, open it and check the cans for holes and rust. Do not accept damaged cans. Check for swollen tops or bottoms, leaks, flawed seals, dents or rust.

CAUTION

A can that seems undamaged on the outside may still be contaminated. If, when the can is opened, the contents appear abnormal in color, odor or texture; are foamy; or have a milky-colored liquid—do not use them. Do not even taste them. This could be a sign of botulism, a poisonous toxin found in underprocessed food that has a low acid content.

STORAGE

4-12. To keep received foods in good condition, store both perishable and semiperishable foods as soon as they are inspected. Keep food in good condition by storing it right and using it as soon as possible, even if you have to make some changes in your menus. The main cause of waste as a result of storing food is poor management. Subsistence supplies should be stored so they are accessible and secure. The DFM is responsible for the security of stocks from theft and damage.

4-13. To prevent loss of quality and increase accessibility, use the following general principles for storing food:

- Store foods in areas designed for food storage only. Do not store food products in toilet or chemical storage areas.
- Store food products at least six inches above the floor on shelves, racks, dollies or other easily cleanable surfaces.
- Keep food away from the wall. This eases cleaning and discourages pest harborage in semiperishable storage areas.
- Arrange the items so that air can move around them.
- Store the oldest items at the front of the shelves and use them first (see Rotation).
- Place heavy packages on lower shelves.
- Place the most frequently needed items on lower shelves, near the entrance.
- Keep storage areas clean and dry.
- Keep all subsistence in clean containers or wrappers. Do not reuse packaging.
- Arrange subsistence on shelves accordingly to facilitate inventories.

PRESERVATION OF PERISHABLE SUBSISTENCE

4-14. Perishables must be refrigerated. This eliminates some of your keeping problems since the refrigerator protects the food from insects, rodents and light. When you store perishables, consider the temperature, humidity, air circulation and sanitation needed to keep the food from spoiling. Food which has spoiled must be removed immediately. Do not order more than you can reasonably expect to use between issue cycles.

4-15. Store perishable foods at the prescribed temperature. Frozen food should be stored at 0 degrees Fahrenheit or below. The best storage temperature for ice cream is -10 degrees Fahrenheit. Refrigerated food should be stored at 34 to 40 degrees Fahrenheit. Keep thermometers in refrigerators and freezers and check the temperatures in them often. To keep refrigerators and freezers operating efficiently, keep them clean, especially their door gaskets and refrigeration coils. There should be a buildup of no more than a quarter of an inch of ice on the inside of refrigerator or freezer compartments.

4-16. Always store the most hazardous foods below the least hazardous foods. This prevents contamination from products such as raw chicken blood dripping onto products such as lettuce, which is eaten raw. Do not store food directly on the floor of the refrigerator and do not store food in contact with water or undrained ice.

Eggs

4-17. Raw shell eggs must be stored in a refrigerator. Do not store eggs near foods which have strong odors. Keep frozen eggs in a freezer.

Milk and Dairy Products

4-18. Refrigerate milk, cream, butter, cheese, margarine and pastries with fillings or frostings made with eggs or milk. Butter absorbs odors and must be stored away from foods with strong odors. If cheese is frozen, the taste becomes flat and the cheese becomes dry and crumbly, but it still can be used. Bulk milk may be stored in a refrigerated milk dispenser between meals and overnight. Cut milk tubes diagonally approximately ½ inch below the bottom of the cutoff valve to prevent milk from pooling at the bottom of the dispensing tube between diner uses and overnight.

Fruits and Vegetables

4-19. Most fruits and vegetables need to be stored under refrigeration. Check fruits and vegetables daily for spoilage. Some exceptions and special-handling considerations are—

- Bananas, apples, avocados, tomatoes and pears ripen best at room temperature.

- Potatoes and onions should be stored in a cool, dark, dry place. Onions should not be stored with potatoes or moist vegetables.
- Berries, cherries, grapes and plums should not be washed prior to refrigeration, as the moisture increases the possibility of mold growth.

PRESERVATION OF SEMIPERISHABLE SUBSISTENCE

4-20. Semiperishable subsistence is not as likely to spoil as perishable subsistence. Store semiperishables in storage areas that are clean, dry, well-ventilated, odor free, and free of insects and rodents. Safe storage periods become very uncertain at extremes of temperature.

WARNING

Storing foods in unlined galvanized cans may result in food poisoning.

Insects (Roaches, Flies, Weevils, Moths)

4-21. Foods stored at temperatures between 60 degrees Fahrenheit and 90 degrees Fahrenheit are especially attractive to insects. Infested supplies should be segregated until VSP can determine if they should be used or destroyed. Roaches and flies not only contaminate the subsistence but may spread disease as well.

Rodents (Rats and Mice)

4-22. Rodents physically destroy food and contaminate it with their excreta and hair. The best method of control is to prevent entry of these animals. More information on pest control and prevention is contained in chapter 5.

Freezing

4-23. Dry products such as grains, cereals and dehydrated foods are not usually damaged by freezing. If foods contain relatively large amounts of water, freezing may soften the consistency and texture and the appearance may suffer. Emulsions such as canned cheese and butter, prepared mustard, and mayonnaise may separate because of freezing but can still be used.

Heat

4-24. A high-storage temperature encourages bacterial growth, mold growth and insect infestation. Canned foods spoil more quickly, flour and related products are more likely to become insect-infested and some items become rancid. Store bread and pastries on shelves in a cool, dry place.

Humidity (Moisture)

4-25. High humidity speeds the growth of bacteria and molds, promotes insect infestation and causes mustiness in flour, rice and similar food. High humidity also causes items like sugar and salt to cake and become hard and leads to rust forming on cans.

Light

4-26. Products packed in glass or transparent containers may be damaged by light. Exposure can cause color changes and affect the flavor of foods containing edible oils and fats.

ROTATION

4-27. When items are received, check for an expiration date. The expiration date is the date by which they must be used. If there is no expiration date, clearly mark the date received on the item. This will enable ration and cook personnel to use proper food rotation principles. For all types of foods, except bread, follow the "first-in, first-out, first-to-expire" (FIFOFE) rule. For bread, follow the “last-in, first-out” (LIFO) rule to ensure diners get the freshest bread available for each meal.

SURPLUS SUBSISTENCE

4-28. Subsistence that cannot be used prior to expiration or extended dining facility closure should be handled as follows:

- Contact VSP to determine if the food’s expiration date can be extended. VSP are the only personnel that can extend the expiration date of subsistence.
- Contact the command food advisor to transfer excess food that can be used within its expiration date to another dining facility for use.
- Contact the FPM to donate the food under the Food Recovery Program according to the procedures contained in DA Pam 30-22. Expired foods may not be donated under this program.

UNFIT SUBSISTENCE

4-29. The DFM should contact VSP for inspection, documentation and disposition instructions for any food that may not be fit for consumption as a result of expiration, contamination, damage or a failure to subsist. Upon inspection, VSP will issue the dining facility a DA Form 7538 (*Subsistence Serviceability Certificate)* or input the Subsistence Serviceability Certificate into AFMIS. The Subsistence Serviceability Certificate will serve as a supporting document for required relief from loss actions according to AR 30-22.

FOOD RECALLS

4-30. Defense Logistics Agency – Troop Support (DLA-TS) issues food alerts, vendor recalls and ALFOODACT messages when hazardous, tampered or suspected tampering of foods may involve the military services. Alerts are initiated when there is a possibility that a food may be in the Department of Defense (DOD) system and ALFOODACT messages are initiated when it is confirmed that the food is in the DOD system. ALFOODACT messages are distributed to VSP who in turn notifies the DFM. The ALFOODACT message contains specific information and instructions on how to identify and dispose of the product in question. When the dining facility receives an alert, vendor recall or ALFOODACT message, food service personnel immediately should—

- Determine (through inventory) if the product is on hand.
- If the product is on hand, secure all products in a “Medical Hold” status and follow the instructions outlined in the ALFOODACT, usually found in #7 or #8 in the body of the message.
- Notify VSP of all positive findings.
- Coordinate with VSP, the SSMO and the FPM to receive credit to the dining facility account for all items affected by the recall.

FIELD RATION RESIDUALS

4-31. Dining facilities receiving field ration residuals must adhere to the same receipt, storage and rotation principles previously discussed in this chapter. Additionally, VSP must inspect all field ration residuals prior to issue to the dining facility.

Chapter 5

Food Protection, Sanitation, and Pest Control

GENERAL

Quality food service improves morale and provides an essential foundation for health and readiness. It is important to maintain a sanitary operation that follows proper food protection guidelines. Food may readily become contaminated and can support the rapid growth of many disease-producing microorganisms. Failure to maintain proper temperature, sanitation standards and personal hygiene for food and equipment will cause diners to get sick. Food service personnel must follow proper sanitation and food protection procedures during the receipt, storage, preparation and serving of food.

RESPONSIBILITIES

5-1. TB MED 530 provides food protection and sanitation standards and responsibilities for dining facility operations. The DFM is responsible for enforcing these standards. The FPM, command food advisor and preventive medicine personnel are available to assist the DFM in this area. To prevent food-borne illness, the DFM must take actions to—

- Prevent food contamination.
- Retard the growth of microorganisms in food.
- Train and motivate personnel.

FOOD-BORNE ILLNESS

5-2. Food must be protected from contamination, stored properly and kept at the proper temperature. If it is not, the food may deteriorate and cause food-borne illness or result in loss from spoilage. Foods contaminated with disease-carrying microorganisms, toxins, or chemicals can cause illness or death. The DFM should immediately report any known or suspected food-borne illnesses involving the dining facility to the installation medical authority.

ILLNESS FACTORS

5-3. The eight most frequently cited factors involved in outbreaks of food-borne illness are—

- Failing to properly cool foods.
- Failing to heat or cook foods thoroughly.
- Allowing infected food service workers to work in the facility.
- Preparing foods too far in advance of serving.
- Using raw or contaminated ingredients in foods that receive no further cooking.
- Allowing foods to remain at bacteria-incubating temperatures.
- Failing to reheat cooked foods to temperatures that kill bacteria.
- Allowing cross-contamination of cooked foods with raw items either by workers who improperly handle foods or clean equipment.

HAZARDS

5-4. There are three main types of hazards associated with storing and handling foods. They are biological, chemical and physical. The biological hazard is the most serious in the dining facility.

Biological

5-5. Bacteria can multiply rapidly at temperatures between 40 to 140 degrees Fahrenheit. This range is known as the temperature danger zone (TDZ). Discard any potentially hazardous food (PHF) immediately if the item has been in the TDZ greater than 4 hours. This is a cumulative time. Ensure PHF leftovers that were not in the TDZ longer than 4 hours are used within 24 hours from time of service. Time and temperature are important factors in preventing food-borne illnesses when preparing, holding and serving PHFs. Some food-borne illnesses and their causes are shown in Table 5-1. Harmful bacteria can be killed by cooking foods to proper internal temperatures.

Table 5-1. Food-borne illnesses and their causes

Illness	*Cause*
Staphylococcus	Improper refrigeration. Food handlers with cuts, wounds, coughs or colds.
Botulism	Damaged cans or jars. Improper canning methods.
Salmonella	Improperly cooked poultry and poultry products, meats, eggs and egg products. Cross-contamination from raw to cooked foods.
Escherichia coli (Ecoli) O157:H7	Undercooked ground beef, unpasteurized milk and juice, raw sprouts and lettuce.
Streptococcus	Poor personal hygiene. Food handlers with coughs or colds. Food stored at the wrong temperatures.
Bacillary Dysentery (Shigellosis)	Food contaminated by people, water, flies, roaches or rats.
Trichinosis	Pork or pork products not cooked to an internal temperature of 155°F.
Clostridium Perfringens Food Poisoning	Inadequately cooled and reheated meats.

Chemical

5-6. These hazards result from the improper use of additives, poisonous metals, preservatives and pesticides. Chemicals and metal products should be used only for their intended purpose. They should be stored properly and away from food-storage areas. Use proper containers for storing and preparing foods.

Physical

5-7. Food service personnel must constantly guard against physical contamination. Faulty equipment can contaminate foods or be a safety hazard. Also, foods may be physically contaminated (dirt, glass fragments and wood splinters) when received in the dining facility.

EMPLOYEE GUIDELINES

5-8. Effective food service operations require strict compliance with standards in regard to employee supervision, health, appearance and training. Food service personnel must be knowledgeable in the principles and practices of food-borne illness prevention and first aid for choking. This knowledge is obtained through required initial training and continuous refresher training. A cook's mount checklist for evaluating dining facility personnel for possible health and appearance hazards when they report for duty

can be found on the JCCoE website, http://www.quartermaster.army.mil/jccoe/jccoe_main.html, on the Standard Operating Procedures page. Employee guidelines are provided in the following paragraphs.

HEALTH

5-9. Personnel cannot work in a food service establishment (in any capacity) while infected with a communicable disease unless cleared for duty by a medical authority. Personnel suffering from acute gastrointestinal illness or open and/or pus-containing wounds are restricted from working with exposed food; clean equipment, utensils and linens; and unwrapped single service/single use items.

PROPER ATTIRE AND APPEARANCE

5-10. Personnel handling food must wear clean outer clothing to prevent contamination of food, equipment, utensils, linens, and single-service/single-use items. Proper dining facility duty attire is as follows:

- Wear a clean food-service uniform daily. Food-service uniforms should readily show accumulations of soil or dirt.
- Wear rounded-neck tee shirts as an outer garment only while performing custodial duties.
- Wear an effective clean hair restraint (such as a hair net or cap). This will help prevent hair from falling onto or touching food or food-contact surfaces.
- Do not wear any jewelry. Plain wedding bands and a medical bracelet or necklace are acceptable, but ornate rings, ear rings, nose rings, lip rings, bracelets, watches and similar items that collect soil and may catch in machinery or on sharp or hot objects are not authorized.
- Military personnel who are detailed by a roster to work as food service attendants and who are authorized to work on the serving line or in food preparation areas may wear the food service uniform specified, or they may use light colored aprons over their clean, duty uniforms.

HYGIENIC PRACTICES

5-11. The cleanest establishment and neatest employee appearance will have little effect in preventing product contamination and food-borne illness if proper hygienic practices are not followed. The following list contains some important hygienic practices:

- Personnel experiencing persistent cough, sneezing, or a runny nose should not work with exposed food or food contact surfaces that will not be cleaned again prior to use.
- Personnel must clean their hands in a lavatory sink (not one used for food preparation or janitorial purposes) after eating, drinking, using the restroom or using tobacco. Use of warm water and soap will increase effectiveness. Use alcohol-based hand sanitizer if soap and water are not available.
- When handling food products, employees' fingernails must be real and free of nail polish or sparkles and should be trimmed, filed, and maintained so that the edges and surfaces are cleanable, not rough and do not extend beyond the flesh portion of the finger tip.
- Personnel must not care for or handle any animals which may be present, unless they properly wash their hands and change their outer garments prior to handling food or food-contact surfaces.

FOOD PREPARATION

5-12. Food service personnel preparing foods need to be cognizant of the types of foods that they are handling and potential dangers to ensure cross-contaminations do not occur. Preparers should be especially vigilant about hand washing and sanitizing food contact surfaces. If temperatures are not controlled when food is prepared, held and served, food-borne illness may result. Areas to watch include—

- Thaw foods properly. Thaw foods under refrigeration at temperatures of 40 degrees Fahrenheit or below, under potable running water or as part of the conventional cooking process.
- Use the correct cooking temperature and time. Although 140 degrees Fahrenheit is adequate to prevent further bacterial growth, different products must reach certain internal temperatures and

time to ensure that bacteria have been killed. Check thermometers for accuracy, and use them to ensure that proper temperatures have been reached. See Table 5-2 for required internal cooking temperatures.

- Discard all breading ingredients after breading food because the ingredients will have become contaminated.

FOOD HANDLING

5-13. When handling food, always place emphasis on preventing contamination of the food product. Ensure you use proper techniques when handling utensils and equipment. Observe the following general procedures when handling food:

- Avoid all bare hand or arm contact with ready-to-eat foods that will not be cooked further before serving.
- Minimize bare hand or arm contact with food that is not in a ready-to-eat form. When possible, handle food with clean utensils, such as tongs, scoops, spoons or forks.
- Wear single-use food service gloves or use utensils such as tongs when handling ready-to-eat foods. To maintain sanitary conditions, replace gloves when they become soiled, when switching from one food to another, or after an interruption of work for eating, drinking, tobacco or restroom use, or cleaning of the work area.

Note. Always be aware that glove use provides a false sense of security from contamination, so personnel must practice good sanitary procedures when using them.

Table 5-2. Required internal temperatures

Product	*Temperature (°F for 15 seconds)*
Whole muscle beef, lamb, veal, made-to-order eggs, canned ham, whole fish and seafood.	145
Pork, ground meat/pork, bulk-prep eggs and comminuted fish.	155
Poultry, stuffed products, leftovers and dressings.	165

TASTING AND TESTING

5-14. Observe the following when taste-testing:

- Use only sanitized utensils to withdraw food portions.
- Taste test away from the food preparation area.
- Discard as waste any uneaten food portion withdrawn for taste testing.
- Clean and sanitize utensils used for taste testing before you reuse them.

UTENSIL AND EQUIPMENT HANDLING

5-15. Observe the following during the handling of utensils and equipment:

- Grasp clean and sanitized flatware, cups, glasses, bowls and plates by the handle, bottom, or edge. Do not contaminate food-contact surfaces or the rim of bowls, cups or glasses with your hands.
- Use care when handling soiled napkins, glasses, cups, flatware and any other soiled utensils. Soiled articles may contaminate clean utensils and equipment, your hands and ultimately the food served to the customer. Always wash your hands after handling any used or otherwise potentially soiled items.

CUSTODIAL DUTIES

5-16. Perform custodial duties (such as mopping the floor and cleaning grease hoods or grease traps) when contamination of food is least likely to occur (that is, after food preparation) and interference with service is minimal. Perform custodial duties toward the end of the work shift when food preparation has ceased or diminished.

CLEAN-AS-YOU-GO

5-17. Enforce a "clean-as-you-go" policy by making food service personnel responsible for continuous cleaning in their work areas, for messes such as spills, splashes, drippings, peelings, cores and packaging. “Clean-as-you-go" does not include routine custodial cleaning as described above.

SANITATION

5-18. Food service personnel stress the importance of food appearance and taste. Although this is a good practice, far more important is the enforcement of proper sanitation procedures during food preparation and serving. All food service training programs should include formal and documented training on personal hygiene and sanitation. This training must include but is not limited to sanitation practices for dining areas, food storage, preparation and service. The training must include proper waste disposal; insect and rodent control; and the cleaning of dishes and equipment. The local medical authority can assist the DFM by providing training in the areas of dining facility sanitation.

MANUAL WAREWASHING, CLEANING AND SANITIZING

5-19. For manual washing, rinsing and sanitizing of utensils and equipment use a sink with at least three compartments. If the dining facility only has two sinks, the DFM can add another container for washing. The two available sinks should be used for rinsing and sanitizing. Portable food contact items such as pots, pans, utensils and nonelectrical items should be cleaned in these sinks in an area separate from food preparation.

PRE-WASH PROCEDURE

5-20. Pre-scrape and pre-flush equipment and utensils, and when necessary pre-soak or scrub them with abrasives to remove food particles and soil. The pre-flush water temperature should be between 80 to 110 degrees Fahrenheit.

FIRST SINK COMPARTMENT

5-21. Wash equipment and utensils thoroughly in the first compartment with a detergent solution. The detergent must be approved for food service equipment use and must be used according to the manufacturer’s label instructions. Keep the sink clean and the water temperature at a range of 110 to 120 degrees Fahrenheit.

SECOND SINK COMPARTMENT

5-22. Rinse equipment and utensils free of detergent and abrasives with clean hot water (120 to 140 degrees Fahrenheit) in the second compartment.

THIRD SINK COMPARTMENT

5-23. Sanitize the food-contact surfaces of all equipment and utensils in the third compartment according to one of the methods described below.

Hot Water Method

5-24. Sanitize all food-contact surfaces of equipment and utensils by immersion for at least 30 seconds in clean, hot water at a temperature of at least 171 degrees Fahrenheit. Integral heating devices or fixtures

should be installed in, on, or under the sanitizing compartment of the sink capable of bringing the water to and maintaining it at a temperature of at least 171 degrees Fahrenheit.

5-25. Use a numerical and scaled thermometer that is accurate within 3 degrees Fahrenheit to make frequent checks of water temperatures. Use dish-baskets of such size and design to permit complete immersion of the tableware, kitchenware and equipment in the hot water.

Chemical Sanitizing

5-26. When hot water is not available, use chemical sanitizers to sanitize equipment.

Chlorine

5-27. Sanitize food-contact surfaces, equipment and utensils by immersing the items for at least 15 seconds using a cleaning solution containing between 100 parts per million (PPM) of chlorine at a potential of hydrogen (pH) range of 6-10.

5-28. To make the initial bleach solution, use unscented household bleach at one ounce (two tablespoons) per four gallons of water, at a temperature of 75 degrees Fahrenheit, as higher temperatures can cause the chlorine to evaporate from the solution and can corrode certain metals.

Iodine

5-29. Immerse for at least 30 seconds in a clean solution containing between 12.5-25 PPM of available iodine and having a pH not higher than 5.0 at a temperature of at least 75 degrees Fahrenheit but not more than 120 degrees Fahrenheit.

Quaternary Ammonium

5-30. Immerse in a clean solution containing quaternary ammonium compound solution for at least 30 seconds at a minimum temperature of 75 degrees Fahrenheit at a concentration of 200 PPM or as specified in 21 CFR 178.1010 and used only in water with 500 milligrams per litre (mg/L) hardness or less. This process requires the sanitized equipment to receive an additional rinse with clean potable water after being sanitized.

Other Sanitizing Solutions

5-31. Any other chemical sanitizing agent allowed by 21 CFR 178.1010 that provides the equivalent bactericidal effect of the above solutions may be used when applied according to the manufacturer's directions for use and when approved by the installation medical authority.

CAUTION

When using chemical sanitizers, care must be taken to follow the instructions carefully.

FIXED EQUIPMENT

5-32. Equipment or utensils that cannot be properly washed and sanitized using a three-compartment sink should be washed and sanitized using the following procedures:

- Disassemble according to the equipment manual. Wash and sanitize the smaller equipment parts in a three-compartment sink.
- Scrape and remove as many food particles from the fixed equipment as possible.
- Wash equipment using hot detergent solution (110 to 120 degrees Fahrenheit).
- Rinse equipment using hot clear water.
- Sanitize equipment using one of the chemical sanitizing methods discussed above.

MECHANICAL DISHWASHING

5-33. Dishwashing operations present special problems to the DFM. The DFM must know how to operate and maintain the dishwasher according to the manufacturer's instructions. Mechanical cleaning and sanitizing of equipment, utensils, tableware and flatware involve much more than simply pressing the "ON" button of the dishwasher. The success of the mechanical cleaning and sanitizing operation depends on compliance with sanitary standards-of-practice. Table 5-3 gives some tips for operating and maintaining dishwashers.

Table 5-3. Tips for operating and maintaining dishwashers

Do	*Don't*
Know the capacity and speed of your machine.	Overload the machine.
Use the right detergent.	Use hand dishwashing detergent.
Use and maintain as the manufacturer recommends.	Use the machine if the water is not heated to the right temperature.
Read the operator's manual and keep it on file in the dining facility	Throw away or misplace the operator's manual.

MAINTAINING SANITARY STANDARDS

5-34. Before loading the dishwasher, do the following:

- Flush or scrape soiled equipment, utensils, tableware and flatware to remove excess food and soil.
- When necessary, soak items to remove resistant food particles and soil (unless a pre-wash cycle is part of the dishwashing operation).
- Arrange the placement of items on racks, trays, baskets or on conveyors to permit free draining of detergent wash and rinse waters. This will ensure that wash and rinse water will have contact with all food-contact surfaces.
- Ensure the same person is not loading the dirty items into the dishwasher and unloading the clean items from the dishwasher without properly washing their hands between these tasks. Cross-contamination will result otherwise.

WASHING AND SANITIZING FLATWARE

5-35. Washing flatware in a dishwasher is a two-step operation that includes two full dishwashing cycles. Both of these operations require your attention. Wash, rinse and sanitizing waters must reach all surfaces of each piece of flatware to maximize the machine's sanitation effect.

5-36. To ensure thorough flatware washing on the first cycle—

- Scatter flatware loosely on cutlery racks or place flatware loosely in flatware dispenser containers (20-25 pieces) with the eating portion of the flatware facing up.
- Separate identical pieces of flatware, particularly spoons, to prevent them from coming together and obstructing the water drainage.
- Run flatware through the dishwasher.

5-37. After the first cycle, sort flatware by type and place in flatware dispenser containers with the eating portion of the flatware facing down. Place the flatware and dispenser on cutlery racks and run back through another dishwashing cycle. Once the flatware has adequately air-dried, the flatware may be placed directly in the diner flatware dispenser since it is already in dispenser containers with the eating portion of the flatware facing down.

STORAGE OF CLEANED AND SANITIZED UTENSILS, TABLEWARE AND EQUIPMENT

5-38. No matter which procedure is used for washing utensils, tableware and equipment, they should always be air dried. Towels of any kind must never be used. Towels can quickly become contaminated or

may be contaminated before use. This contamination is quickly spread to those utensils or tableware that is dried by the towel later. Utensils that are immersed in water of 171 degrees Fahrenheit or more will air dry very quickly. There are a number of rinse additives available that will aid in preventing water spotting.

5-39. Food-contact surfaces of all cleaned and sanitized equipment and utensils must be handled in a manner that will protect them from contamination. Cleaned spoons, knives, and forks should be stored with their handles up. Clean cups, glasses, bowls and plates should be stored with the food-contact surfaces facing down.

5-40. Portable equipment and utensils must be stored above the floor in a clean, dry location. Suitable space and facilities, such as shelves, cabinets, or movable carts, should be protected from splashes, dust, and other contamination.

CLEANING GUIDELINES

5-41. Proper cleaning of the dining facility is an important part of physical safety, food protection and insect/rodent control. Dirt and debris, particularly organic debris, can lead to slipping and falling accidents, cause contamination of the food being prepared, and attract/sustain rodents and insects. In addition to the "clean-as-you-go" policy described earlier, maintain a cleaning schedule that adequately covers the entire facility.

CLEANING FREQUENCY

5-42. Keep equipment, utensils and the entire food service establishment clean and sanitary at all times. Below are some minimum guidelines for cleaning various items:

- Tableware. Wash, rinse and sanitize after each use.
- Kitchenware, utensils and food-contact surface of equipment. Wash, rinse and sanitize after each use and following any interruption of operation when contamination may occur.
- Equipment and utensils used continuously or in a production line process. Wash, rinse and sanitize at intervals throughout the work period.
- Equipment and utensils that touch raw food products. Clean and sanitize thoroughly before these items touch other food.
- Food-contact surfaces of grills. Clean at least once per operating shift. Food-contact surfaces must be free of encrusted grease, food debris and other accumulated soil.
- Deep fryers. Drain and strain oil daily. Wipe the internal and external surfaces clean of soil and debris after each use. Keep covered with a tight fitting lid when not in use.
- Ice machines. Clean at least monthly. Disconnect, wash, rinse and sanitize external and internal surfaces according to the manufacturer's instructions.
- Non food-contact surfaces of equipment. Clean as often as necessary to prevent accumulation of dust, dirt, food particles and other debris.
- Floors and walls. Clean daily but do not expose food to possible contamination. This daily cleaning does not apply to spills; they require immediate clean-up as part of the "clean-as-you-go" process.

CLEANING CHEMICALS

5-43. Use detergents and sanitizers only according to the manufacturer's instructions. Contact preventive medicine personnel for additional information on sanitizer use and approval.

CAUTION

Never use phenol compounds for sanitizing food-contact surfaces.

CLEANING MATERIALS

5-44. Do not use steel wool, sponges or sponge-type cloths in the dining facility. It is preferable to use single-use paper towels or disposable cloths rather than reusable cloths for cleaning equipment, walls and counter top surfaces of a food-service establishment. If you use reusable wiping cloths, exchange them for a clean one when they become soiled and adhere to the following:

- Keep cloths used for wiping food spills on tableware (including plates or bowls being served to the customer) clean and dry, and use them for no other purpose.
- Rinse cloths used for wiping food spills on kitchenware and food-contact surfaces of equipment after each use. Store these cloths in a clean sanitizing solution when not in use. Use them for no other purpose.
- Rinse cloths used for cleaning nonfood-contact surfaces (including counters, dining table tops and shelves) after each use. Store these cloths in a separate clean sanitizing solution when not in use. Use them for no other purpose.
- A locally developed system must be in place to ensure that the cloths used for these three purposes are not intermingled during the laundry process. Suggestions include having three different styles or colors of cloth and posting a chart to indicate the purpose of each.

WASTE DISPOSAL

5-45. The dining facility has three types of waste. These types are liquids, organic solids and inorganic solids. Organic solids come from edible products and include plate waste, discarded leftover items, meat trimmings and vegetable peelings. Inorganic solids come from inedible products and include bones, packaging materials and waste paper products.

LIQUIDS

5-46. A dining facility disposes of liquid waste except cooking oil through the sewer system. Make sure not to remove the drain covers on sinks and the floor. They keep large particles from clogging the drains. Some drains also have catch baskets that need to be emptied on a regular basis. If a piece of equipment does not have a strainer on the drain, use a colander or strainer to drain or clean. Drains should be cleaned whenever dirty or daily at a minimum.

ORGANIC SOLIDS

5-47. Organic solids may be placed in trash cans with inorganic solids, reduced by removing the liquid, composted or run through a disposer. These methods are discussed below—

- Reduction. Reduction reduces the volume of the food waste by removing the liquid in the waste by using either pulpers, digesters, dehydrators or shredders. Once the liquid is removed, the remaining food waste may be composted or discarded with the rest of the waste in the dumpster. Some reducing machines can be used for both organic and inorganic solids (pulpers).
- Composting. Some organic solids may be sent to an installation or local community composting facility and turned into compost. Composting may require the cooks to separate the compostable food waste into separate waste containers in the kitchen which will then be picked up by the vendor or facility engineers.
- Disposal. Some organic solids may be converted to liquid waste through the use of a garbage disposal system. Local environmental policy and equipment specifications will dictate which organic solids may be converted.

INORGANIC SOLIDS/RECYCLING

5-48. Some installations may require the separation of organic solids from inorganic solids prior to disposal. The facility engineers are responsible for removing solid waste from the dining facility and disposing of it according to state and local environmental regulations.

5-49. Many installations have recycling programs for waste items such as cardboard, cans, office paper, plastics and grease. Vendor or facility engineer personnel may provide separate containers at each dining facility location for the collection and pick-up of these items. Dining facility personnel should ensure that recycle items are separated as required and placed in the appropriate recycle containers. Guidelines to ensure proper handling and disposal of garbage/recycle materials include—

- Keep lids and doors closed on all dumpsters, trash compactors and recycle containers.
- Garbage racks and cans should be clean and lids should fit tightly onto cans.
- Fill garbage containers not more than 4 inches from the top to avoid spillage.
- Remove garbage from food preparation areas as soon as possible.
- Keep garbage containers covered in the food preparation and ware-washing areas when the facility is not operating.
- Keep entire garbage storage and recycle areas clean.
- Dumpsters, Trash Compactors and recycle containers should be at least 59 feet from the dining facility.

PEST CONTROL AND PREVENTION

5-50. Pest infestation is a significant indicator of overall facility sanitation and employee practices and brings a significant potential for contamination of food and economic loss through product condemnation. Further, pests can spread many disease carrying organisms, including E. coli O157:H7 and others that cause food poisoning, cholera, dysentery and salmonella. Finally, the sight of rodents and insects in a food establishment will turn diners away from the facility and lead to complaints. By following some basic prevention and control methods, you can greatly reduce the likelihood of pest infestation in the dining facility.

FLY CONTROL

5-51. Good sanitation and custodial practices are the key to a fly-free facility. All food and garbage attract flies and can provide a breeding ground. Remove garbage from the facility as soon as possible and ensure that the cleaning program includes the removal of food debris from underneath and behind equipment and other hard to reach places. Keep food covered as much as possible to keep flies away. Accessible food will invite them to your facility. Protect all entrances to the dining facility from flying insects. The following are means of protection from flies entering your facility:

- Doors that are tight fitting and self-closing.
- Windows that close tightly.
- Proper screening.
- Air curtains that provide sufficient air velocity to cover the entire door opening.

RODENT PREVENTION

5-52. Without food, water or shelter, a population of rats or mice cannot survive. Eliminating rodent access to these three things will keep rodents out of your facility. In addition, take the steps described in the following paragraphs.

Eliminate Entranceways

5-53. Rodents can fit through holes the size of a quarter or even smaller. Eliminating potential entranceways takes careful inspection of the facility to find all potential rodent access areas. Common rodent entranceways and methods to eliminate them include—

- Gaps between the closed door and the floor permit rodents to enter; tightly sealing the building will hinder rodent access.
- Basement windows, vents and floor drains provide rodents with an easy access into the building. Protect all vents and basement windows with mesh screens. Cover floor drains with a perforated metal cap with a removable hinge.

Eliminate Hiding Places

5-54. Rodents build nests in places such as crowded storage rooms, near garbage containers, along walls, and under boards and crates. The following measures will help you eliminate places for rodents to hide and breed:

- Keep garbage in heavy-duty plastic or galvanized metal containers with tight-fitting lids.
- Place containers on racks at least 18 inches above the ground or on concrete blocks.
- Place garbage cans or dumpsters as far from the building as conveniently possible, at least 50 ft.
- Place all dry-food products in storerooms and on racks at least 6 inches above the floor.
- Keep food products away from the walls.
- Store boards, crates, and other containers or racks away from the walls.

Starve Rodents

5-55. Careful storage and proper cleaning will reduce a rodent's food sources. To eliminate rodent food sources, you must sweep floors regularly and clean up spills immediately. Frequently clean hard to reach places such as under and behind equipment. Eliminate standing or dripping water, as these attract and sustain rodents.

COCKROACH PREVENTION

5-56. Ridding a dining facility of cockroaches means depriving these pests of food, water, shelter and access to the facility. Eliminate food and water sources by keeping the facility clean. Remember, cockroaches can and will eat practically anything. A mere crust of bread can support an entire cockroach population. Careful cleaning reduces the food supplies for insects, destroys many insect eggs and may reveal new infestations before they become serious. Some cleaning practices are as follows:

- Clean hard-to-reach corners and crevices and under and behind equipment.
- Clean areas where grease accumulates, such as around ranges and ventilation areas.
- Remove garbage promptly.
- Never leave food uncovered.
- Wipe up spills immediately.
- Do not allow puddles from cleaning or other activities to remain on the floor.
- Do not store wet mops or brushes in the food-preparation area.
- Pick up crumbs and other scraps of food as quickly as possible.
- Keep lavatories and toilet areas clean.
- Clean storage areas regularly.
- Repair all water and sewage leaks as quickly as possible.
- Cockroaches become inactive at temperatures below 40 degrees Fahrenheit, therefore, if practical refrigerate items such as cocoa, powdered milk, and nuts to reduce infestation.
- Rotate subsistence accordingly so insects will not have an opportunity to infest and complete their life cycle.
- Contact Department of Public Works to establish or schedule a work order for spraying to help prevent rodent/pest infestation.

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Chapter 6

Safety and Energy Conservation

GENERAL

Safety and energy conservation depend on the involvement of everyone in the dining facility. Accidents cost money through the loss of man hours and damage to or destruction of food or equipment. Dining facilities are among the highest energy users at most installations. Energy conservation programs are needed to control costs and reduce the likelihood of energy shortages that can adversely affect the mission. Each installation is required to have both safety and energy conservation programs and the dining facility should comply with and be an extension of these programs.

RESPONSIBILITIES

6-1. The DFM is responsible for implementing and maintaining dining facility safety and energy conservation programs. To assure success, the DFM must have active support and guidance from installation safety and environmental offices, fire department, facility engineers, food program management office (FPMO) and command food advisor. Command emphasis, incentives, awards and recognition are vital to the success and effectiveness of these programs.

DINING FACILITY SAFETY

6-2. The DFM must ensure that safety is included in the day-to-day operation of the dining facility. Accidents will occur even when personnel are well-trained in how to prevent them. Do not wait for accidents to happen before you initiate action. Make on-the-spot corrections if you observe unsafe conditions or acts. Food service personnel should know what to do when accidents happen and how to report them according to their installation safety office. A checklist for evaluating the dining facility for identifying possible safety hazards is located at appendix B. Some common sense rules for safety are described below.

STOREROOMS

6-3. Store containers by contents, size and type. Use sturdy shelves, and place heavy or larger items such as cases, large bags or number 10 cans on low shelves. Have shelving low enough so that personnel can easily see the contents. Make sure personnel—

- Use a well-braced ladder to reach items on high shelves.
- Keep the aisles clear and the floor clean and dry.
- Get a firm grip on containers before lifting.
- Bend your knees, keep you back straight and use thigh and shoulder muscles for lifting.
- Keep the load close to your body, walk normally and ease the load to a resting place.
- Make sure personnel can see where they are going. Be alert.
- Get help if needed.
- CO2 containers must be secured with a chain in an upright position or placed in a secure container to preclude damage to the dispensing head and possible injury to personnel.

COOKING AND SERVING AREAS

6-4. Burns, bumps and falls often happen in the cooking and serving areas. Make sure personnel—

- Turn the handles of pots and pans so that they point to the back or side of the range.
- Close oven doors when not inserting or removing pans.
- Use pot-handling pads for hot items.
- Keep the floors under, around and behind appliances clean.
- Clean up spills at once.
- Clean grease filters frequently.
- Give a warning when passing behind other personnel.
- Change steam table inserts carefully.
- Do not rush when carrying hot pans of food.
- Do not spill grease on open flames.

KNIVES

6-5. Knives are probably the most dangerous items personnel use. Constantly stress knife safety whenever knives are used in the dining facility. When personnel know which knife to use and how to use and care for it, there will be fewer accidents. Some safety rules to follow when using knives are—

- Make sure knives are kept sharpened. Use proper sharpening procedures, as shown in figure 7-3 and 7-4, page 7-9, of this manual.
- Use a cutting board and not the palm of the hand.
- Cut away from the body. Use correct hand placement when slicing as shown in figure 6-1 and chopping as shown in figure 6-2.
- Do not try to catch a falling knife.
- Be very careful when carrying a knife. Always carry knives at your side next to your leg with the cutting edge facing to the rear.
- Wash knives separately from other utensils. Never leave knives in a sink.
- Wash and store knives immediately after use.
- Store knives in a metal or plastic slotted rack and not in drawers.

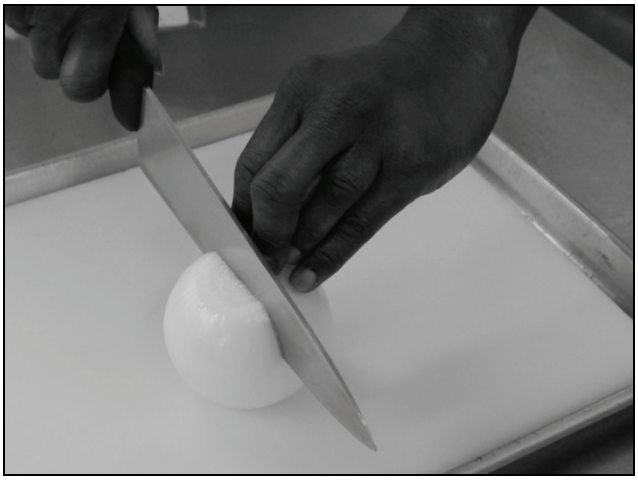


Figure 6-1. Claw cutting method



Figure 6-2. Correct hand placement when chopping

OTHER EQUIPMENT

6-6. Never let personnel use equipment until they are trained to operate it. Always follow the manufacturer's operating, safety and maintenance instructions. If equipment is not working correctly, have the engineers check it—do not tinker. Table 6-1 lists hazards associated with different sources of energy and safety precautions.

Table 6-1. Sources of energy, their dangers and safety precautions

Source	*Danger*	*Precaution*
Gas	Explosion, Fire, Burns, Toxic Fumes	Do not put flammable material near flames. Air the room out before you light the pilot.
Steam	Burns, Explosion	Make sure gauges are working. Open doors or lids as instructed.
Electricity	Shock	Do not handle electrical equipment with wet hands. Keep grease and water out of wiring. Unplug equipment before you clean it. Do not allow water to pool on the floor.

CLEANING PRODUCTS

6-7. Cleaning products can be very dangerous substances when not used correctly. Many cleaning products are poisonous and toxic chemicals. You should—

- Permit only those cleaning products that are normally required to maintain the condition of the dining facility and its equipment and utensils.
- Store poisonous and toxic chemicals in a locked cabinet labeled with the words "Hazardous Material Storage."
- Keep cleaning products in their original containers.
- Ensure containers are labeled prominently and distinctively for easy identification.
- Ensure personnel read labels and follow all instructions before using.
- Ensure personnel do not mix cleaning products.
- Ensure the MSDS for each cleaning product is posted in a readily accessible place for all food service personnel. Ensure multi-language signs are posted when foreign employees work in the facility.
- Ensure personnel are trained on the use, first aid, and location of the MSDS for each cleaning product.

- Ensure that all personnel use appropriate protective clothing and equipment provided for their protection.
- Do not store or use chemical pesticides in the dining facility. Only certified and authorized individuals may apply pesticides in a food service establishment.
- Do not store personal medications in food storage, preparation or service areas.

FIRE PREVENTION

6-8. The DFM must continually stress fire prevention during daily operations. Three things must be present to have a fire. They are known as the fire triangle. These are—

- Oxygen.
- Heat source.
- Fuel.

6-9. There are three classes of fire with which you must be familiar. They are—

- Class A Fires – Ordinary combustibles, such as wood, paper or cloth.
- Class B Fires – Flammable liquids and grease.
- Class C Fires – Electrical Fires.

FIRE EXTINGUISHERS

6-10. Fire extinguishers are classified by what they put out. Each extinguisher breaks a different link of the fire triangle. Class A extinguishers cool the source of the fire and eliminate the heat source. Class B extinguishers blanket the source with foam or chemicals to cover the fuel source. Most fire extinguishers used in a dining facility are rated for more than one type of fire. Because a fire within a dining facility may include one or more of the classes, a multipurpose, dry-chemical extinguisher is the most effective and should be readily available.

6-11. Fire extinguishers are generally hung on hooks or placed in clear plastic containers on or in the walls throughout the dining facility and require food service personnel to manually get and operate them in the event of a fire. Regardless of the type of fire extinguishers in the dining facility, the DFM must ensure that—

- Food service personnel are trained in their operation.
- Food service personnel are designated as fire marshals. The installation fire department or safety office should be consulted for this training.
- All fire extinguishers are inspected regularly to ensure that they are still charged and operational. Fire extinguishers should be checked weekly and monthly and exchanged annually.

FIRE SPRINKLERS AND SUPPRESSION SYSTEMS

6-12. Automatic fire sprinklers and fire suppression systems (used in equipment ventilation hoods) turn on automatically when triggered by extreme heat and/or fire. The DFM should coordinate with the facility engineers to have the automatic fire sprinklers and fire suppression systems checked at least annually or as required. Each type of fire sprinkler and fire suppression system will have a tag indicating the last time it was inspected.

ENERGY CONSERVATION

6-13. Effective energy conservation programs are required to combat inflation. The cost of energy continues to rise, consuming an increasingly higher percentage of operating funds. We can expect these costs to continue to increase in the future. Without effective conservation programs, we cannot control costs and the resultant shortages of fuel and power will adversely affect mission accomplishment.

ENERGY ACTION PLAN

6-14. To effectively manage the dining facility energy conservation program, the DFM should develop an action plan. The action plan should be based upon the installation and FPMO energy conservation programs and include the actions listed below.

REVIEW PERSONNEL WORK SCHEDULES AND SHIFTS

6-15. The time personnel arrive in the morning and depart in the evenings can have an impact on the amount of energy the dining facility uses. Using the same set arrival and departure times for all food service personnel regardless of the number of personnel to be fed can increase energy use significantly. Establish work schedule times based upon the required feeding mission and stagger personnel to arrive and depart accordingly to accomplish each required task. If the dining facility is preparing pastries between the dinner and breakfast meals (night baking), the DFM should review the required workload for this task and see if it can be incorporated into the morning or afternoon work shifts.

OBSERVE PERSONNEL WORK HABITS

6-16. Using the dining facility energy conservation principles listed in table 6-2, the DFM should observe several work shifts over a number of days to get a good indication of the energy conservation areas dining facility personnel need to place additional emphasis on.

Table 6-2. Energy conservation areas

Equipment
Preheat only the equipment that will be used.
Follow recommended equipment preheating times.
Reduce temperature or turn equipment off during slack serving periods.
Use full production capacity when possible or practical when using dishwashers, grills, steamers and ovens.
Select the correct size of equipment for cooking.
Keep equipment clean.
Operate ventilation equipment only when required; operate on low speed if possible; and keep filters clean.
Food Storage
Place refrigerated and frozen foods into refrigerators or freezers immediately upon arrival.
Do not place hot foods in the refrigerator or freezer.
Do not hold refrigeration doors open for long periods of time.
Use doorway closures (plastic strips) on all walk-in refrigerators.
Other
Shut water off when not in use.
Shut lights off when the room is not in use.
Shut dining room TVs off between meal periods.

CHECK FACILITY AND EQUIPMENT MAINTENANCE

6-17. Conduct an evaluation of the dining facility and the equipment with a facility engineer representative to make sure that the building and equipment are in good condition and operating efficiently. Ensure the building cooling and heating systems are operating properly. Windows and doors (including those with gaskets) should be in good repair and fit airtight. On refrigeration equipment, ensure evaporator coils are free from excess frost and the condenser coils are free from dust or lint. Correct deficiencies noted, and replace equipment that is not economically reparable. Energy consumption is higher when equipment is not functioning properly. All new equipment should be ENERGY STAR qualified.

TRACK USAGE

6-18. Contact the facility engineers to see if the dining facility is separately metered to track energy usage. If so, request to receive a copy of the usage report monthly or as available. The DFM can use this to determine if energy conservation measures are effective by taking the monthly cost of the energy used and divide it by the total number of meals fed to arrive at energy cost per plate fed ratio. Compare all future month's energy cost per plate fed to this base to determine the rise and fall of energy used in the dining facility.

CONDUCT ENERGY CONSERVATION MEETINGS

6-19. Frequently meet with all food service personnel to review the energy action plan and areas needing improvement. Explain how the program is important to the Army's overall energy management efforts and how it will change operating methods and schedules to decrease energy consumption.

ENERGY SHORTAGES

6-20. A very important part of energy management that must not be overlooked is what to do during electrical blackouts, brownouts, gas shortages, or complete power failures. Immediately notify your command food advisor and the FPM in the event of an emergency. The energy outage or shortage may be installation-wide or may be limited to a specific area. The command food advisor and FPM will coordinate with the facility engineers to restore power or take additional actions if the outage or shortage will be for an extended time. Dining facility operations may have to be consolidated. Field kitchen equipment and operational rations may have to be used. Only when personnel are properly prepared will the facility continue to operate smoothly during such an emergency.

BLACKOUTS

6-21. During a blackout you should—

- Maintain a stock of flashlights and batteries. These will be needed to find articles in walk-ins and storerooms where emergency lighting is not available.
- Keep candles (with holders) on hand to light kitchen and dining and service areas.
- Keep freezers and refrigerators closed as much as possible.
- Keep disposable dishes and utensils on hand.
- Keep sterno on hand so that if hot food can be prepared, it can be kept warm.
- Decide what will be served as quickly as possible.

BROWNOUTS AND GAS SHORTAGES

6-22. These are situations in which power supplies are curtailed slightly or sharply but not cut completely. You should—

- Decrease menu selections. The fewer items you prepare, the less energy you will use.
- Serve stews and soups. These can be prepared in one pot and contain a complete meal.
- Use as many canned items as practical. Normally, they are precooked and require limited heating time.
- If you serve potatoes, use instant or dehydrated. For dessert, use fruit.

RESTRICTED ENERGY MENU SUGGESTIONS

6-23. Curtailed preparation and cooking capabilities could mean less varied entree selections. To compensate for this, use as many authorized canned and precooked convenience items as possible. When possible use field ration residual components. The following foods require minimal energy output:

- Sandwich meats. Prepare sandwiches using bread, cheese and appetizing cold sandwich meats such as sliced canned ham, cooked boneless turkey, salami, and bologna.
- Salads and vegetables. Prepare tossed salads. In addition, cottage cheese will add texture, contrast and extra protein to your menu.
- Potato or corn chips, canned and fresh fruit, hard-boiled eggs (if they can be cooked) and pickles and relishes.
- Soups. You might use canned or dehydrated soups that come in a variety of flavors. Instant soup and gravy bases, such as chicken, beef, and ham-flavored are nutritious, and require little energy to prepare.
- Beverages. Beverages to compliment the meals are tea or instant coffee (if water can be boiled); milk from a gravity flow milk dispenser; beverage bases; and instant orange and grapefruit juices. Various juices provide many essential nutrients when menu selections are temporarily limited.

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Chapter 7
Production

GENERAL

Food service personnel that use standardized production tools and cooking methods prepare appealing, appetizing and nutritious meals. Production tools and cooking methods discussed in this chapter include production schedules, recipes, preparation and cooking methods, SOPs, kitchen utensils, garnishing, seasonings, and the use of leftovers.

PRODUCTION SCHEDULE

7-1. The primary tool used for the daily scheduling of meals is DA Form 3034 (*Production Schedule)* or production schedule report. The production schedule report is used when the dining facility is operating under AFMIS. The production schedule and production schedule report provide all the information a food service specialist needs for preparing a meal including the following:

- Name of person assigned to prepare each item.
- Recipe or SOP numbers.
- Food items to be prepared and served.
- Time to start preparing or cooking each item to include progressive cooking.
- Portions to prepare.
- Portions actually prepared. The quantity of food items used for each meal is documented on the kitchen requisition as discussed in chapter 2, paragraph 2-8.
- Leftovers to be used in subsequent meals.
- Leftovers to be discarded.
- Special instructions for preparing, cooking or serving a particular item. Comments that should be included are food item run-out times, usage of field residuals, how saved leftovers will be used, why leftovers were discarded or number of seconds served.

PRODUCTION SCHEDULE AND PRODUCTION SCHEDULE REPORT DIFFERENCES

7-2. Preparation instructions for the production schedule are contained in chapter 3 of DA Pam 30-22. Figure 7-1 is a sample production schedule and figure 7-2 is a sample production schedule report. The preparation instructions for the AFMIS production schedule report are generally the same as for the production schedule except for the following key differences:

- The dining facility clerk should enter the estimated portions to prepare (not 1) for all SOP food items when generating the production schedule report. This procedure ensures the required quantities for each ingredient contained on the SOP recipe is generated for both subsistence orders and meal production.
- The production schedule report contains a critical control point block. The critical control point from the recipe card should be entered prior to the beginning of meal preparation.
- The prep time should be entered for SOP recipes prior to the beginning of meal preparation.

PRODUCTION SCHEDULE

For use of this form, see DA PAM 30-22; the proponent agency is DCS, G4

1. UNIT									2. SERVING PERIOD	
Bldg 1817, Fort Anywhere, IN 35647									1130-1300	
3. DATE (YYYYMMDD)	4. MEAL								5. PROJECTED HEADCOUNT	6. ACTUAL HEADCOUNT
	B	L	D	BR	S	SO	N	B/L		
20120110	☐	☑	☐	☐	☐	☐	☐	☐	450	425

7. PERSON ASSIGNED	8. RECIPE NUMBER	9. RECIPE NAME	10. PREP TIME	11. PORTIONS TO PREPARE	12. ACTUAL PORTIONS PREPARED	13. LEFTOVER/ DISCARD	14. SPECIAL INSTRUCTIONS
Mottin	P-6	TOMATO SOUP	1000	300	270	4	
Millan	L-25	LASAGNA	0800	250	250		
McKinney	L-158	SAVORY BAKED CHICKEN	0830	200	200	25	Use for dinner 10 Jan
Williams	E-8	RICE PILAF	1000	200	200		
Williams	Q-50	OVEN BROWNED POTATOES	0930	250	255	20	Use for dinner 10 Jan
Hosey	Q-26	HERBED GREEN BEANS	1015	200	175	8	
Hosey	Q-27	CALICO CORN	1000	200	225	7	
Hill	O-16-1	CHICKEN GRAVY	1030	350	300	10	
Holland	M-34	MACARONI SALAD	0930	175	150	6	
Holland	M-40	POTATO SALAD	0930	200	200	3	
Primeau	H-5	SHORTBREAD COOKIES	0900	200	200		
Vartuli-Dusablon	SOP-11	ICE CREAM (IND)					
Vartuli-Dusablon	SOP-1	FRESH FRUIT					
Vartuli-Dusablon	SOP-8	SLICED BREAD					
Mottin	C-5	COFFEE	1110	100	100	6	
Mottin	SOP-4	BULK MILK					
Mottin	SOP-5	1/2 PINT MILKS					
Mottin	SOP-28	SODA					
Holland	SOP-6	SALAD BAR					
Holland	SOP-7	SALAD DRESSINGS (BULK)					
Holland	SOP-12	CRACKERS					

15a. FOS/MANAGER SIGNATURE	15b. RANK	16a. SHIFT LEADER SIGNATURE	16b. RANK
Robert Sell	SFC	Sally Roberts	SGT

DA FORM 3034, MAR 2006 — DA FORM 3034, JUL 2002, IS OBSOLETE. — APD PE v1.01ES

SAMPLE

Figure 7-1. Sample production schedule

Date Printed: 2012-01-05 1627 Thursday

Production Schedule Report

AJK-S001-1

UIC: TNG001

ACES Training Lab (Inst156)

Description:

Meal Date: 2012-01-10 Tuesday Lunch 1130 - 1300 Projected HC: 450 Actual HC: 425

Assign	Time	Recipe #	Recipe Name	Portions	Actual	LO/Discard	CCP
Mottin	1000	P00600	TOMATO SOUP	300	270	4	165/15 sec
Instructions:							
Millan	0800	L02500	LASAGNA	250	250		155/15 sec
Instructions:							
McKinney	0830	L15800	SAVORY BAKED CHICKEN	200	200	25	165/15 sec
Instructions:					Use for Dinner 10 Jan		
Hill	1030	O01602	CHICKEN GRAVY	350	300	10	165/15 sec
Instructions:							
Williams	1000	E00800	RICE PILAF	200	200		145/15 sec
Instructions:							
Hosey	1015	Q02600	HERBED GREEN BEANS	200	175	8	145/15 sec
Instructions: Use progressive cooking							
Hosey	1000	Q02700	CALICO CORN	225	225	7	145/15 sec
Instructions: Use progressive cooking							
Williams	0930	Q05000	OVEN BROWNED POTATOES	250	255	20	145/15 sec
Instructions:					Use for Dinner 10 Jan		
Holland	0930	M03400	MACARONI SALAD	175	150	6	< 40
Instructions:							
Holland	0930	M04000	POTATO SALAD	200	200	3	< 40
Instructions:							
Vartuli-	1115	S00800	BREADS ASSORTED	350			
Instructions:							
Primeau	0900	H00500	SHORTBREAD COOKIES	200	200		
Instructions:							
Vartuli-	1115	S00100	FRUIT FRESH ASSORTED	275			
Instructions:							
Vartuli-	1115	S01301	ICE CREAM BAR	150			
Instructions:							

SAMPLE

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Figure 7-2. Sample production schedule report

RECIPES

7-3. Recipes are instructions that explain how to prepare a standardized food product. Army recipes are contained in TM 10-412 (*Armed Forces Recipe Service).* AFMIS also contains the recipes from TM 10-412. Food service personnel must refer to these recipes and instructions for quantities of ingredients; methods of combining; cooking methods, cutting methods, times and temperatures for cooking; and the number and size of servings the recipes will yield. They also must be able to convert measurements in recipes to prepare a desired number of servings. Many recipes contain informational notes on how to prepare an item or a variation using alternate methods or equipment. The DFM should indicate any notes that the cook is to follow in the special instructions column of the production schedule.

USING RECIPE CARDS

7-4. Recipes should be followed carefully. Use the following procedures as a guide:

- Read the recipe card before starting to cook. If any cooking terms or methods are new, ask for assistance.
- Assemble all utensils and ingredients you need. Measure or weigh the ingredients accurately. Scrape containers when removing foods from containers so that none of the ingredients are wasted. For instance use a rubber spatula to remove products such as tomato paste completely from the can.
- Preheat cooking equipment only long enough to reach the temperature given on the recipe card.
- Follow the recipe card in setting up the equipment you are going to use.
- For successful results, follow preparation procedures exactly as stated on the recipe card.
- Follow directions for removing cooked products from the cooking utensil. Scrape cooking pans when transferring food products from cooking to serving pans. Be careful while handling and serving the finished product.

CONVENIENCE PREPARED FOODS

7-5. Convenience prepared foods include prepared and precooked foods. Prepared foods may come in a raw form or already precooked and only require heating. Precooked foods require heating to serving temperature. Specific cooking instructions should be located on the food's package. Cooking times, nutrient content and serving size will vary among manufacturers for identical food items. In order to maintain the quality of these convenience prepared foods, instructions must be read and followed every time a convenience prepared food is utilized.

ADJUSTING QUANTITIES

7-6. The recipes in TM 10-412 are based on 100 servings. Recipes may be increased or decreased by following the conversion charts in TM 10-412 under general information. The cook may calculate the quantities of ingredients required and write the adjusted quantities on the recipe card in pencil. AFMIS automatically calculates the quantities of ingredients required based upon the number of servings input for each recipe.

CHANGING SEASONINGS

7-7. The DFM may change seasonings or specified quantities of seasonings in a recipe based on experience, training and diner preference. Food service personnel should not change seasonings without the consent of their supervisor. Always make sure the changes will be acceptable to the diners.

USING STANDARDIZED MEASUREMENTS

7-8. Success in cooking requires accuracy at all times. This includes the proper measurement of ingredients used in food preparation. It also means using the proper conversion factors from one unit of measure to another. Table 7-1 shows units of measure commonly found in recipes, lists their abbreviations and shows their equivalents in other units of measure. Table 7-2 shows you how to convert measurements

from one to another. If possible, use accurately calibrated scales to weigh out ingredients. If scales are not available, use the procedures listed in the following paragraphs to measure ingredients.

Table 7-1. Measurement equivalents

Unit	*Abbreviation*	*Equivalent*
gallon	gal	4 quarts
quart	qt	2 pints
pint	pt	2 cups
cup	c	8 ounces
ounce	oz	1/8 cup, 2 tablespoons
tablespoon	tbsp	1/2 ounce, 3 teaspoons
teaspoon	tsp	1/6 ounce, 1/3 tablespoon

Table 7-2. Measurement conversion

From To	*GAL*	*QT*	*PT*	*C*	*OZ*	*TBSP*	*TSP*
GAL		Divide by 4	Divide by 8	Divide by 16			
QT	Multiply by 4		Divide by 2	Divide by 4			
PT	Multiply by 8	Multiply by 2		Divide by 2			
C	Multiply by 16	Multiply by 4	Multiply by 2		Divide by 8	Divide by 16	
OZ		Multiply by 32	Multiply by 16	Multiply by 8		Divide by 2	Divide by 6
TBSP				Multiply by 16	Multiply by 2		Divide by 3
TSP					Multiply by 6	Multiply by 3	

Flour, General Purpose or Bread

7-9. When specified, sift before measuring. Place flour lightly in measuring utensil. Level with straight edge of knife. Do not shake utensil. Do not pack flour.

Sugar, Granulated

7-10. Fill measuring utensil. Level with straight edge of knife. If sugar is lumpy, sift before measuring.

Sugar, Brown

7-11. Pack brown sugar firmly into the measuring utensil. If the sugar is lumpy, break lumps with a rolling pin before measuring it.

Milk, Nonfat Dry

7-12. Stir lightly with a fork or spoon. Place lightly in measuring utensil. Do not shake utensil. Level with straight edge of knife.

Baking Powder, Herbs and Spices

7-13. Stir lightly with fork or spoon. Dip dry measuring spoon into the container, bringing it up heaping full. Level with straight edge of knife.

Solid Fats

7-14. Press fat firmly into measuring utensil. Level with straight edge of knife. An alternative method for measuring solid fat is to use a larger-than-required utensil in which a portion of liquid has been added such as using a quart ladle filled with two cups of water when measuring two cups of shortening. Add enough shortening to the water until the water level is reaches the four cup mark. The ladle will contain two cups of shortening.

Liquids

7-15. When measuring liquids, place the measuring utensil on a level surface and fill to the mark which indicates the amount required. Do not overfill this type of utensil.

USING MIXING METHODS

7-16. Use the mixing method given in the recipe. If you substitute one method for another, the results may not be satisfactory. When using a mechanical mixer, always start with the lowest speed and work up to the desired speed. This will help to prevent the ingredients from being thrown from the mixing bowl.

Stirring

7-17. Stirring is moving ingredients in a circle with a utensil such as a spoon or paddle. Use mechanical mixers for mixing large batches. Set the mixer for slow or medium speed so that the speed of the beaters will be equivalent to the speed of hand stirring. Select a low speed for mixing a thin liquid into a thick one. Also, make sure the mixing container is large enough to prevent spilling.

Beating

7-18. Beating is making a mixture smooth by moving a utensil in a fast, regular, circular motion to incorporate air into a product. Products can also be beaten in a mixing machine with the beater accessory.

Whipping

7-19. Whipping is combining ingredients rapidly with a wire whip to increase the volume by incorporating air.

Folding

7-20. Folding is incorporating an ingredient into a mixture by gentle turning the item over without stirring or beating the mixture.

USING CUTTING METHODS

7-21. Cut foods according to the instructions given in the recipe card. Using incorrect cutting methods may negatively affect the look and taste of the food product. Trim or pare only the inedible portions of foods such as strawberries, tomatoes, green peppers, onions, cucumbers, carrots, lettuce, cabbage and celery. Excess trimming and paring increases food preparation waste. Table 7-3 shows recipe cutting methods and their approximate cut sizes.

STANDING OPERATING PROCEDURES

7-22. SOPs must be written to provide detailed instructions for those menu items not listed in TM 10-412. For many DFMs this can be a difficult, time-consuming task. Many things must be taken into consideration when preparing a food preparation and serving SOP for dining facility operations. The use of diagrams can greatly assist the DFM in this task.

Table 7-3. Cutting methods

Method	*Approximate Cut Size*
Mince	1/16 inch
Chop	1/8 inch
Dice	¼ inch
Cube	½ inch

7-23. SOPs must be based on the type of equipment available. While some facilities may have bread dispensers, soft-serve ice cream dispensers, automatic meat slicers and so forth, others may not. Each SOP would have to address the conditions of the facility for which it was developed.

7-24. SOPs must also consider the number of personnel that the facility supports. The average number of personnel subsisted in the facility will indirectly define the amounts of a particular item with which the DFM will want to start the serving period. If your facility serves 300 per meal and the item you are preparing is frozen orange juice (32-ounce can), you might indicate to prepare 12 cans for the start of the meal serving period and then replenish as needed. However, if your facility serves 35 per meal, you would most likely start with only two cans of juice.

7-25. Appendix C provides a sample SOP that can be tailored for use in your dining facility to save time and effort. Remember, each operation is somewhat different. Think out your instructions and make them as simple and direct as possible. The newest most inexperienced member of your team must be able to understand how you want each item prepared. When preparing your SOP, group together similar items such as butter patties with melted butter; jams, jellies, individual servings of dressings with jar types and sizes; bulk milk with 1/2 pints and eggnog; and so on.

7-26. SOPs must be updated as changes occur. For example, include changes in meal service methods, equipment or number of diners supported.

7-27. For dining facilities that operate on AFMIS, the DFM must prepare each SOP recipe based upon 100 portions and then submit the SOP recipes to the FPM. The FPM will input each SOP recipe in AFMIS so the dining facility can input the SOP recipe numbers on the production schedule. AFMIS will also scale the amounts of ingredients listed on the SOP recipes based on the number of servings input on the production schedule.

COOKING METHODS

7-28. The two basic methods used to cook foods are moist heat and dry heat. You may also have to combine methods to prepare a food item. For example, some recipes call for pan frying followed by braising. These methods are introduced below and discussed in Chapter 12. Terms are fully explained in the glossary.

MOIST HEAT

7-29. Foods cooked by this method are simmered, stewed or steamed. This type of cooking is done in a liquid (except fat) or in steam.

DRY HEAT

7-30. Foods cooked by this method are broiled, roasted, baked, grilled, pan-fried, deep-fat fried or pan-broiled. This type of cooking is done without the addition of an outside liquid.

KITCHEN UTENSILS

7-31. Use the correct utensils for best food preparation, cooking and serving results. Food service personnel will use many miscellaneous kitchen utensils including spatulas, wire whips, food turners, spoons, ladles, graters, rolling pins, quart dippers, tongs and colanders for each meal. Food particles gather easily on these items. Wash these items in hot water and detergent, then rinse, sanitize and let them air-dry. Use only authorized cleansers on stainless steel or chromium-plated utensils. Do not use harsh scouring powder. You can remove mild discoloration on stainless steel with vinegar and salt or with lemon juice. Additional guidance on the use and care of knives and thermometers are contained in the following paragraphs.

KNIVES

7-32. Each knife is designed for a certain job and should be used only for that job. Table 7-4 shows the knives most frequently used.

Table 7-4. Knives used in a dining facility

KNIFE	TYPE	USE	DESCRIPTON
	Boning knife	Cutting through joints. Cutting close around bones to separate the meat from the bones.	Short, narrow, stiff blade; narrow bevel*.
	Steak knife	Cutting steaks and roasts.	Long, wide blade; wide bevel*
	Paring knife	Peeling fruits and vegetables.	Small, narrow blade; narrow bevel*.
	Cooks' knife	Cutting, slicing, dicing, or chopping.	Large, wide blade; wide bevel*.
*The bevel is the part of the blade sharpened to make the cutting edge of the knife.			

Sharpening

7-33. Sharpen knives on a medium-fine-grade carborundum oilstone. Never grind a knife on a power- or hand-driven stone because this treatment will remove the temper from the cutting edge. The correct way to sharpen a knife with a mounted sharpening stone is shown in figure 7-3. If the entire stone is used for sharpening the knife, the stone will not "hollow-out" at a particular spot. Do not use a newly sharpened knife until the blade and handle are thoroughly cleaned.

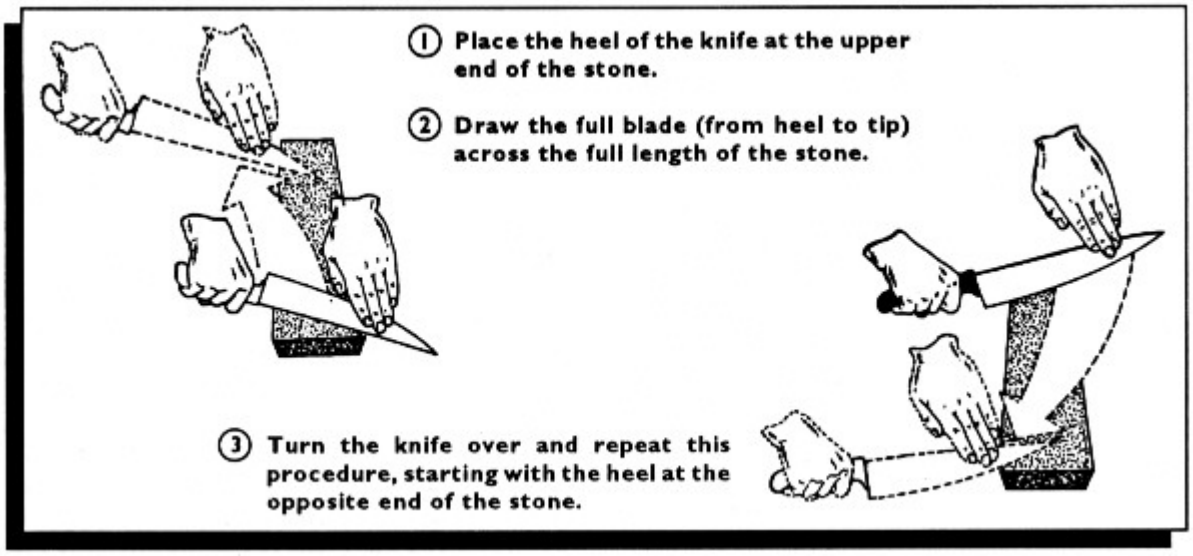


Figure 7-3. Sharpening a knife

Steeling

7-34. After the knife is sharpened on a stone, the blade must be trued with a butcher's steel. There is a technique to handling a butcher's steel, which you can master with practice. Procedures for steeling a knife are shown in figure 7-4.

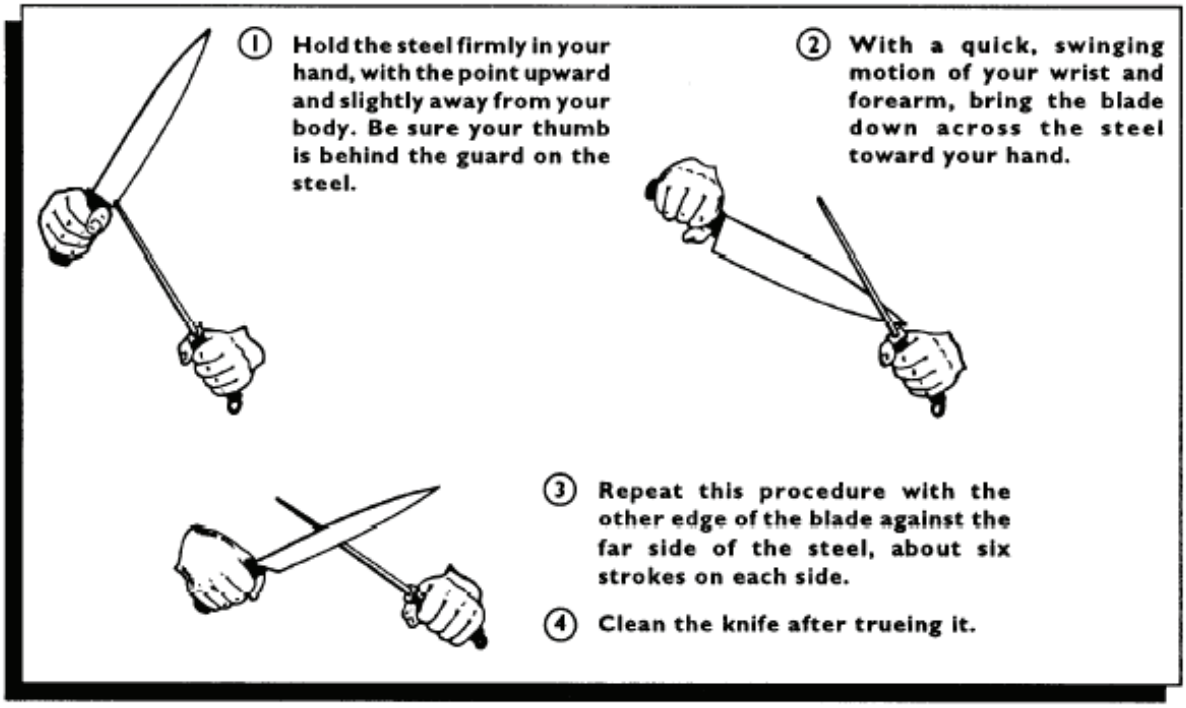


Figure 7-4. Steeling a knife

THERMOMETERS

7-35. Thermometers take the guesswork out of cooking. The recipes indicate when you should use them. Mercury-filled glass thermometers are prohibited and should be removed from use. There are many types of metal thermometers available for use in dining facilities.

Oven Thermometer

7-36. Ranges are equipped with regulators and thermostats. They control the oven temperature so foods can be baked at an even heat. However, the oven thermostat should be calibrated periodically to verify the temperature. Even if an oven has a thermostat, place an oven thermometer inside it during the baking process to make sure that correct temperatures are used.

Deep-Fat Thermometer

7-37. Use a deep-fat thermometer for deep-fat frying. The thermometer will show when the fat has reached the correct temperature for cooking a particular food. It will also show the temperature of the fat throughout the cooking process. During the cooking process, use a thermometer to verify the accuracy of the thermostat on the deep-fat fryer. Place the probe below the surface of the melted fat, but do not let it touch the side or bottom of the container.

Refrigerator Thermometer

7-38. Use a metal thermometer in refrigerators to determine if the proper temperature is being maintained. Glass thermometers should not be used.

Meat Thermometer

7-39. A meat thermometer is the most dependable way to determine when the meat has reached the desired degree of doneness. When the center of the meat reaches the temperature specified in the recipe, the meat is done.

Surface Temperature Thermometer

7-40. Use the surface temperature thermometer to check grill surface cooking temperatures. Check the temperature at several spots on the grill to make sure the temperature is uniform across the entire grill surface.

Digital Thermometer

7-41. Many different types of digital thermometers are now available for dining facility use. Digital thermometers use an infrared beam to measure the surface temperature of foods. Some digital thermometers also are available with an attachable probe that allows the cook to measure the internal temperature of foods.

SEASONINGS

7-42. Use salt, spices and herbs to enhance the flavor of foods. These are described in the following paragraphs.

SALT

7-43. Salt is an important seasoning used in preparing foods. It is a standard ingredient in most recipes. Salt brings out the natural food flavor. Even carbohydrate foods, such as candy, require some salt. Foods that have distinctive flavors require less salt than those that do not. Exercise caution, follow the recipe card and do not overseason.

FLAVORED SALTS AND SEASONING BLENDS

7-44. Flavored salts are a blend of ground seasoning and table salt. Celery salt is a blend of salt and ground celery seed. Onion salt is a blend of salt and onion powder, a ground product of dehydrated onions. Garlic salt is a blend of garlic powder, a ground product of dehydrated garlic. Use flavored salts in salads, salad dressings, stews, tomato dishes, sauces and soups. With meat dishes, use garlic and onion salts; with fish

dishes, use celery salt. Commercially-prepared seasoning blends for cooking and diner use are available for purchase through the SPV.

SPICES AND HERBS

7-45. Tables 7-5 and 7-6 list some popular spices, blends and herbs and give their uses. Use the following principles when storing spices:

- Spices should be stored in a cool (68 degrees Fahrenheit) and dry (60 percent humidity or less) environment.
- Store paprika, red pepper, chili powder, allspice, cloves, parsley flakes, dill, marjoram and cumin in cold storage (32 to 40 degrees Fahrenheit).
- Spices should not be held for longer than three months if possible.
- Spice containers should be kept tightly closed when not in use.

Table 7-5. Spices

Spice	*General Uses*
Allspice, whole	Pickling, spicing meats, seasoning gravies
Allspice, ground	Puddings, pies, cakes, relishes, tomato sauces, dressings
Anise	Baked products, candies, puddings, sweet sauces, beverages
Caraway seed	Breads and rolls, cottage and soft mild cheeses, new cabbage, turnips, chowders, pickling
Cardamom	Baked products, vegetables, pickling
Cayenne	Meats, sauces, fish, eggs, gravies, seafood, salads
Celery seed, whole	Pickling, coleslaw, potato salad, salad dressings
Celery seed, ground	Soups, stews, tomato dishes, fish
Chili powder (blend)	Mexican dishes, cocktail sauces, stews, hamburgers, egg dishes, barbecue sauces
Cinnamon, stick	Pickling, preserving
Cinnamon, ground	Puddings, baked products, stewed fruits, whipped cream, hot cereals, mincemeat, mashed sweet potatoes, cinnamon toast
Cloves, whole	Garnishes for ham and pork roasts, pickling, preserving, spiced syrups, beverages
Cloves, ground	Baked products, puddings, stews, applesauce
Cumin seed	Soups, deviled eggs, cheese dishes, meat pies, canapés, Mexican and Oriental dishes
Curry powder (blend)	Salad dressings, chowder, scalloped tomatoes, curry sauce, curries of meat, fish, eggs, chicken
Dill seed	Pickling, fish dishes, soups, sauces, salad dressings, sauerkraut
Fennel seed	Soups, sauces, gravies, salads
Garlic powder	Roasts, soups, stews, salads
Ginger	Baked products, roast chicken, pot roasts, canned pears

Table 7-5. Spices (continued)

Spice	*General Uses*
Horseradish	Condiments, sauces, pickling, dressings, gravies, oyster stew, fish and meat dressings, sweet sauces, chocolate desserts
Mace	Baked products, pickling, fish sauces, gravies, oyster stew, fish and meat dressings, sweet sauce, chocolate desserts
Mustard, ground	Sauces, gravies
Mustard, prepared	Salad dressings, ham, frankfurters, cheese
Mustard, seed	Pork products, dressings, boiled beets, garnish for vegetable salads
Nutmeg	Puddings, sauces, custards, baked products, pot pies, applesauce, doughnuts
Paprika	Garnishes for salads, vegetables, meats, fish, goulash, salad dressings
Pepper	General culinary purposes
Poppy seed, whole	Baked products, vegetables, vegetable salads, salad dressings
Poultry seasonings	Meat and poultry dressings, meat loaves, omelets, hamburgers, biscuit dough
Pumpkin pie spice (blend)	Pumpkin dishes, cookies, buns, gingerbread, sweet potato pie
Sausage seasonings	Meat loaves, sausages, pork products
Sesame seed, whole	Baked products, salads, sauces, fish, meat dishes
Turmeric	Pickling, salads, mustard sauce, meat and egg dishes

Table 7-6. Herbs

Herbs	*General Uses*
Basil	Tomato paste and sauces, soups, stews, meat pies, lamb dishes
Bay leaf	Pickling, sauces, stews, soups, tomato mixtures, meat dishes, fish, chowders, boiled potatoes
Marjoram	Poultry dressing, lamb dishes, stews, soup, hash, meat pies, scalloped potatoes, cheese dishes, sauces, sausage products
Oregano	Pork dishes stews, soups, meat sauces, omelets, gravies, vegetables, salads, salad dressings
Parsley	Garnishes, general culinary purposes
Rosemary	Lamb dishes, stews, soups, dressings, fish, basting for roasts, egg dishes, potatoes, salads, salad dressings
Saffron	Baked products, candies, stews, vegetables, sauces, coloring for beverages and foods
Sage	Poultry and meat dressings, tomato and cheese dishes, dried beans, baked fish, salad greens, chowders, salad dressings
Savory	Egg dishes, salads, soups, pea-bean dishes, poultry dressing, meat dishes, stews, gravies, chowders, salad dressings
Tarragon	Sauces, salads, chicken, meats, egg dishes, tomato dishes
Thyme	Sauces, dressing, stews, soups, chowders, salad dressings, poultry and meat (especially veal and pork) dishes

GARNISHES

7-46. Garnishes do much to make a meal attractive. Information on making specific garnishes may be found in TM 10-412. In garnishing food, there are several guidelines to follow:

- Plan and prepare garnish ahead of time. Do not wait until the food is ready to go to the serving line and then toss on a garnish as an afterthought.
- Use a garnish that is eye-appealing in shape, color and texture.
- Use a garnish that is edible.
- Do not over garnish.
- Do not garnish foods that have a "built-in" garnish. For example a tossed vegetable salad or a cake iced with a frosting that complements the color and flavor of the cake needs no garnish.
- Garnish only food items, not the serving line or service table except for special occasions.

LEFTOVERS

7-47. Use progressive cooking, progressive replenishment and knowledge of diner preferences to keep leftovers to a minimum. Discarding leftover foods that can be kept from meal to meal contributes to food waste. Cooks and dining facility attendants should always ask their supervisors prior to discarding foods at the end of the meal period if they have a question on what foods may be retained as leftovers.

RETAINING FOODS

7-48. Before you retain foods as leftovers, the following criteria must meet. Foods must—

- Be maintained at a safe temperature during preparation, holding and service.
- Be protected against contamination during service by use of sneeze guards.
- Be served by an authorized individual using the proper utensils, or be individually wrapped or packaged.
- Be washed (especially hard-skinned fruit) before re-service.

DISCARDING FOODS

7-49. Although foods may meet the above criteria to be retained as leftovers, some of these foods are unfit for re-serving. Do not retain the following items as leftovers:

- Foods which have been creamed or handled considerably (such as hashes, creamed meats, and most gravies and dressings).
- Highly perishable foods (such as most seafood).
- Raw or partially cooked PHFs.
- Any food from an insulated food container (IFC) that was not consumed.

LIMITATIONS ON LEFTOVERS

7-50. In addition to meeting criteria for retention as a leftover, there are several stipulations and limitations for holding, preparing and serving leftovers. Label leftover PHFs with DA Label 178 (*Leftover-Use within 24 Hours)* showing the date and time they were removed from service and follow these guidelines:

- Retain PHF leftovers for no more than 24 hours if they are chilled to 40 degrees Fahrenheit or below and no more than 5 hours if they are maintained hot (140 degrees Fahrenheit or above).
- Reheat chilled leftovers intended for service to an internal temperature of 165 degrees Fahrenheit for 15 seconds. Offer leftovers one time and then discard them.

RULES FOR COOLING

7-51. Cool foods requiring refrigeration after preparation to an internal temperature of 40 degrees Fahrenheit or below within four hours. Rapid cooling must bring the product temperature to 70 degrees Fahrenheit within the first two hours. Use one of the following rapid cooling methods when cooling PHFs:

- Place the food container in an ice bath and stir the food every 10 minutes.
- Portion food in shallow pans (3 inches or less) or small containers (2 gallons or less).
- Circulate cold water in a steam-jacketed kettle (where feasible).
- Store and stir food for a short time in a walk-in freezer.
- Immerse the cooking container in cold, running water while stirring the food.
- Distribute the food among several refrigerators.
- During all handling, use an appropriate cover to protect food from contamination.

Chapter 8
Service

GENERAL

One of the most important factors in satisfying the diner is the manner in which food is served. Serving a meal involves more than preparing meats, starches, vegetables, salads and placing the food items on the serving line. The DFM must select the best arrangement for displaying the food items to be served and supervise the serving of food to the diners. Food service is a customer-orientated business and diners are entitled to friendly, courteous and efficient service. Meals must be served on time and replenished promptly so that diners do not have to wait. Thoughtful and imaginative planning and good supervision in the dining facility are musts.

PROGRESSIVE COOKERY

8-1. The last diner on the serving line, as well as the first, is entitled to be served an attractive, well-cooked, hot meal. Progressive cookery is the primary method used to provide fresh, hot items throughout the meal-serving period. In progressive cookery, food is cooked in batches at staggered times. You maintain a continuous cooking operation up to and through the serving period. For example, you would not want to cook all the French fries needed for a 90-minute lunch serving period at one time. You would cook the French fries in batches throughout the serving period in order to keep up with diner demand. In this way, each diner gets hot, tasty, French-fried potatoes with his meal.

8-2. Progressive cookery reduces food waste since it cuts down on the amount of food prepared before the meal thereby reducing the amount of food left over at the conclusion of the meal. Progressively cook all the breakfast food items such as bacon, sausage, ham, cream beef, hash browns, grits, oatmeal, farina, pancakes, waffles and French toast. For lunch and dinner, progressively cook all the short-order food items, main-line starches and vegetables, and meat items that can be deep-fat fried or grilled.

SERVING LINE

8-3. The order in which you place food on the serving line is governed largely by the equipment, the space available for cold items, the location of the steam table and the location of the grill. However, you must follow certain rules. These rules are—

- Protect displayed, open food or drink against consumer contamination with easily cleanable counter-protector devices, cabinets, display cases, containers, sneeze guards or other NSF International (NSF)-approved protective equipment.
- Serve hot foods HOT—140 degrees Fahrenheit or more—and cold foods COLD—40 degrees Fahrenheit or less. Place hot items—soup, meat and vegetables—on the steam table. Place cold items—salads, relishes and certain desserts—near refrigerators for speed and ease in replenishing.
- Ice for consumer use is dispensed only by employees with scoops, tongs or other ice-dispensing utensils or through automatic self-service equipment. Use of glassware for scooping ice from bins is prohibited. Between uses, ice-transfer utensils must be stored outside the ice bin in a way that protects them from contamination or inside the bin, provided the handle always remains uncovered. Except for ice-dispensing equipment, self-service ice is not permitted.

- Arrange food attractively on the serving line. For instance, fresh fruit should be neatly arranged and not just dumped on a tray. The different colors of the fruit can help the serving line look more attractive.
- Make certain that trays, glasses, dinnerware, flatware and serving utensils are clean.
- See that flatware is on hand at all times for diners. Place flatware at the end of the serving line. This will help eliminate unnecessary walking and help prevent diners from taking more utensils than they need for the meal. Use a separate serving utensil for each food item served.
- Place condiments, salad dressings and similar items on a condiment table in the dining area. For fast-moving items, select locations for easy access for both replenishment and service.
- Make sure serving lines are set up as close to serving time as possible (for instance no more than 15 minutes prior to serving). Hot food should be placed on the line last. Once the line is set up, check menu items against those listed on the production schedule. Sample the food for palatability and check the serving temperature.
- Make sure that grilled items for both short-order and main-course meals are grilled to order when possible.
- Make sure pastry and baked items are prepared as close to serving time as possible. They should be cut and replenished in uniform portions throughout the serving period to keep them from drying out.
- Check the layout of mobile service and dispensing equipment and self-service beverage-dispensing equipment to see how it affects traffic flow. Look for bottle-necks where diners are slowing down during the serving period. See if you can change the set-up or reduce the waiting time in these areas. For instance if the juice dispenser has four dispensing heads and the dining facility is using apple, orange, grape and cranberry juices, the DFM might want to eliminate the cranberry juice and use an additional dispensing head for orange juice since it is the most popular juice for the breakfast meal.

DISPLAY PLATES

8-4. The practice of using display plates containing samples of the foods being served is not authorized. Using display plates promotes food waste and is cost prohibitive. Consider how much money is lost when the cost of the food for these plates is multiplied by all Army dining facilities for each meal. The potential cost to the Army Food Program budget could be millions of dollars per year.

SERVICE

8-5. The shift leader and food operations NCO assign and briefs servers on the proper serving of all related food items. They should encourage the use of self-service whenever possible except for certain high-cost food items such as meat. Self-service may have to be limited when a large number of people need to be served in a short period of time.

8-6. Servers must be given instructions on the proper serving portion, plate appearance and correct utensil to use for serving each food item. The recipe card contains the proper serving portion information. Serving utensils and their uses are as follows:

- Use tongs for serving items that should be picked up and placed in the dish (certain meats, bread, relishes and similar items).
- Use an ice-cream scoop for serving foods such as mashed potatoes. Ice-cream scoops come in many different sizes so the DFM should ensure the dining facility has the correct sizes available.
- Use the 8-ounce ladle for serving soup. Dip the ladle into the soup, stir the soup, then pour the soup into the bowl. Use the 2-ounce ladle the same way for serving gravy or a dessert sauce.
- Use a basting spoon for serving stews, certain vegetables and other foods of a fairly soft consistency. Use a slotted spoon for serving any item with which the liquid is not served. If the food you serve sticks to the spoon, use another utensil to free it.
- Use pie- and cake-servers and food-turners for serving pie, cake and individual salads from a sheet pan. Use a second utensil to push the item from the serving utensil.

FLOW RATE

8-7. You want diners in the serving lines to move as rapidly as possible. Establishing and meeting a flow rate standard will ensure this happens. The term flow rate refers to the number of diners the servers can serve from the main- or short-order serving lines per minute. Food service contracts have flow rate requirements contained in the PWS for both the main-line and short-order serving lines. For instance, the flow rate standard for the main-line may be seven diners per minute and four diners per minute for the short-order line. Main-lines and short-order lines have separate flow rate standards because foods prepared on the grill for service from the short-order line takes longer. Considerations for use of flow rates are as follows:

- When measuring the flow rate, time the number of diners served from the serving lines per minute at several intervals throughout the serving period and calculate an average to determine if the flow rate is being met.
- Flow rates should not be measured when the cooks are replenishing the serving line.
- Setting and measuring flow rates for headcounters should be a separate measurement from the serving lines. Headcounters are usually only measured when they are identified as a diner bottleneck area.
- Flow rates generally do not apply to self-service hot lines, salad/breakfast bars or beverage areas since the diner determines which foods they want and how fast or slow they put the food on their plate.

PROGRESSIVE REPLENISHMENT

8-8. In addition to progressive cookery, the DFM and shift leader should use progressive replenishment to reduce food waste. Progressive replenishment is putting food on the serving lines in amounts that are not excessive. For example, replenishing the cold bar with a full 6-inch line pan of canned fruit with 30 minutes left in the serving period will most likely ensure that most of this fruit ends up in the trash can. The DFM and shift leader should ensure that cooks only put out the quantities that will most likely be eaten prior to the end of the meal period. Techniques for progressive replenishment include:

- Determine the correct starting pans for each type of food item. For example, starting with a full 6-inch line pan of jalapeños is too much. This food item could probably be served from a 2-inch 1/3 pan based on the expected headcount.
- Cut back on the starting and replenishing quantities. Going back to the first bullet, only put out 1/3 bag of the jalapeños in that pan if that is all the diners are likely to eat during a given meal.
- Monitor the headcount continuously throughout the serving period. Know the meal projections and if the dining facility is hitting the meal projection halfway through the meal, slow down cooking and how much you put out for replenishment.
- Watch cold bars and self-served food items closely. A lot of these food items left over at the end of the meal end up in the dumpster.
- Do not bring food to the serving line and dump it in an empty or almost-empty serving pan. Instead, take the serving pan to the kitchen and replace it with a fresh pan of items.
- Add the food remaining in the pan taken from the serving line to the new supply before bringing it from the kitchen (old over new but never new over old). Do not do this if the food is baked in the pan from which it is served (for example, turkey pot pie, macaroni and cheese and baked beans).
- Be sure each new pan of food you bring to the serving line is as appetizing and attractive as the first (garnish throughout serving and replenishment).
- Try to minimize interfering with traffic flow while replenishing food items.

TRAY DROP AREA

8-9. The DFM should periodically review the tray drop area during the meal serving period and assess how much and what food items are being left on the trays or plates. Food left on trays or plates are indicators of whether unacceptable preparation methods were used or the food itself was not a quality

product. If you see an uneaten food item on a tray or plate, ask that diner if there was something wrong with their meal. Their answer provides great feedback on menu preparation and acceptability. The DFM will never fully understand a diner's preference if they don't take the time to talk to them frequently.

Chapter 9
Unit Support

GENERAL

Units may require subsistence support outside of the dining facility or the normal meal serving period based upon their mission or training requirements. The dining facility may be requested to provide units with remote site feeding, warming or cooling beverages, travel rations, extended meal feeding times and organization day support. Additional information on the requirements for these types of support requests can be found in AR 30-22 and DA Pam 30-22.

REQUEST LEAD TIMES AND ROUTING

9-1. The DFM, in coordination with the command food advisor and the FPM, should develop an SOP containing unit support request submission lead times and routing procedures. Lead times for request submissions are necessary to ensure the type(s) of rations needed can be ordered, received and prepared in time to support the request. Line item A-rations must be ordered according to the SSMO vendor schedule of issues. Operational rations and commercial box meals may have special order lead times. Unit support requests must be routed through and approved by the appropriate personnel to ensure the request is authorized within the Army Food Program and the necessary food service personnel, in the case of contracted workers, will be available to support the request. A sample request lead time and routing schedule is provided in table 9-1.

Table 9-1. Sample request lead time and routing schedule

Type of Request	*Required Submission Lead Time*
Remote site feeding (using only line item A-rations)	10 working days prior to date needed
Remote site feeding (using operational rations)	14 working days prior to date needed
Warming or Cooling Beverages	10 working days prior to date needed
Travel Rations	14 working days prior to date needed
Extended Meal Feeding Time	7 working days prior to date needed
Organization Day	10 working days prior to date needed

Request Routing	*Military-Operated Dining Facilities*	*Contractor-Operated Dining Facilities*
Request initiated by	Unit Commander	Unit Commander
Verified by	Unit S-1 Officer (when Defense Finance and Accounting Service [DFAS] action is indicated)	Unit S-1 Officer (when DFAS action is indicated)
Routed through	Command food advisor	Not applicable (N/A)
Coordinated/approved by	FPMO/COR	FPMO/COR
Approved request sent to	DFM Contract Project Manager	Contract Project Manager Dining Facility Manager

REQUEST FORECASTS

9-2. Unit commanders are responsible for providing accurate forecasts on unit support requests. Inaccurate forecasts waste Government time, money and subsistence. When there is a deviation of 10 percent between the meals requested on the request and the actual headcount for remote site feeding, extended meal feeding time and organization day requests, the DFM will provide the necessary data to the commander having operational control of the dining facility. The commander having operational control of the dining facility will conduct an investigation and determine if the dining facility account has been adversely impacted. Units that request operational rations from the dining facility will return all excess operational rations to the dining facility.

REMOTE SITE FEEDING

9-3. Units request remote site feeding when the unit is training away from the dining facility and a field kitchen is not operational to support the unit. Food service personnel prepare and pack the meals into IFCs in the dining facility. Unit personnel pick the meals up, transport them to the training location, serve the meals and then return the IFCs back to the dining facility for cleaning. The remote site feeding requirement may be for one meal or for a short duration field training exercise, which may not exceed five days according to AR 30-22, chapter 4. Procedures for subsisting personnel for more than five days during field training under the Army Field Feeding System (AFFS) are contained in DA Pam 30-22, chapter 4. Figure 9-1 shows a sample remote site feeding request. Considerations for remote site feeding include—

- Menu planning. The menu should equal the BDFA value of the meal for which it is being served. Not all menu items served in the dining facility (for instance fish) can be used for remote site feeding. Foods used for remote site feeding must be able to maintain their appearance, shape and taste after being placed in an IFC and held up to four hours. It is best to use portioned cuts of meat for ease of serving instead of using meat items that are hard to determine an exact serving portion with such as roast beef.
- Menu variety. Sending one type of meat, starch and vegetable to the field may be unacceptable to all diners due to their dietary or religious restrictions. Send at least two choices of each hot food item to give diners a choice.
- IFCs. The DFM should let the unit know the required number of containers needed to support the request and when the containers should be provided to the dining facility. Upon receiving the containers, the DFM should inventory each container to ensure it is complete and serviceable.
- Unit Transportation. The unit picking up the meals must have a vehicle that meets the sanitary requirements of TB MED 530 for the transport of food (for instance clean, covered and raised bed). The DFM should not release the meals to the unit if the vehicle does not meet these standards.
- Unit verification and pick-up of the meals. The unit should arrive to the dining facility in enough time prior to the scheduled pick-up time in order to verify the contents of meal being provided. Dining facility personnel should brief the personnel picking the food up on the contents, serving procedures (sizes and utensils to use) and food safety requirements. Additionally, unit personnel should verify that the temperature of each food is at the required temperature prior to departure from the dining facility. A sample unit pick-up remote site feeding checklist can be found on the JCCoE website, http://www.quartermaster.army.mil/jccoe/jccoe_main.html, on the Standard Operating Procedures page.
- Headcount. The unit must provide headcount to the dining facility for each meal provided. Depending upon the mission, the unit may use the signature headcount system, a one-line entry or DA Form 5913 (*Strength and Feeder Report*). The unit S-1 officer must verify the request if DFAS action is indicated.
- Account. The dining facility earns monetary credit for remote site meals.
- Return of the IFCs. The unit should return the IFCs immediately after the meal so that dining facility personnel can clean the containers in enough time for the next meal. If the unit cannot return the containers after each meal due to distance or the mission, the unit should provide two sets of containers to the dining facility.

- Food safety. All IFCs must be labeled with the item contained in it, the number of servings, the date/time of pack and the date/time the food must be used by. The use by date/time must be no longer than four hours from the date/time of packing.
- Dining ware. Units are required to purchase and provide their own plates, cups, napkins and flatware for remote site feeding requirements. The dining facility does not provide these items unless the meal request contains Unitized Group Rations.

DEPARTMENT OF THE ARMY
ORGANIZATIONAL NAME/TITLE
STANDARDIZED STREET ADDRESS
CITY, STATE, AND ZIP+4 CODE

REPLY TO
ATTENTION OF

ATSM-CES-OC 20 Sep 09

ROUTING

Individual	Acknowledged/Approved (Signature)	Date
Command Food Advisor	CW2 Billy Hawks	21 Sep 09
FPMO/COR	John A. Ruffins, FPM	22 Sep 09
Contract Project Manager	Karyl Habecken	22 Sep 09
FOMNCO/DFM	SFC Anthony Daucheres	23 Sep 09

SUBJECT: Unit Support Request per DA Pam 30-22, Chapter 4

1. Nature of requirement: Remote Site Feeding.

2. Unit Requiring Support: A Company, 1/32 Infantry.

3. Number of personnel requiring rations:

Meal card holders (SIK)	Field meal cards (DFAS actions)	Cash	Total
115	1	0	127

4. Meals required (5 days maximum). The type of rations required for each meal is:

Day	Date	Breakfast	Lunch	Dinner
1	5 Oct 09		MRE	A
2	6 Oct 09	A	MRE	A
3	7 Oct 09	A	MRE	
4				
5				

5. Pickup information (times):
   a. Breakfast 0530 Lunch 0530 Dinner 1630

   b. Rank and name of individual designated to pick up meals: SFC Joseph Coalson.

6. This memorandum requires certification by the applicable S-1 officer that appropriate DFAS action has been/will be taken for all meals available for all personnel participating in this field training who are required to reimburse the Government for meals. This memorandum does not delete the requirement for the appropriate headcount to be submitted to the dining facility.

James Billington
CPT, IN
S-1

Charles H. Berry
CPT, IN
Commanding

Figure 9-1. Sample remote site feeding request

WARMING AND COOLING BEVERAGES

9-4. Units request warming and cooling beverages to provide additional beverages to their personnel when training in hot or cold environments. Installation SSMO should have an established list of approved items available for ordering within the warming and cooling beverage SOP. Warming and cooling beverages are prepared in the dining facility by food service personnel and then picked up by the unit and taken to the training location. Figure 9-2 is a sample warming beverage request. Considerations for warming and cooling beverage requests include:

- Ordering procedures. The DFM should follow the installation warming and cooling beverage SOP when ordering warming and cooling beverages. Warming and cooling beverage may be requested from the SSMO or through the SPV. Dining Facilities that order warming and cooling beverages directly from the SPV will incur a cost against the dining facility account. Ordering through the SSMO utilizes the installation budget for warming and cooling beverages.
- Issues factors. The installation SOP should indicate the issue factors for warming and cooling beverages. Installations generally use a 100-person or a price-per-person (for instance $.08 per diner) formula when establishing issue factors for warming and cooling beverages.
- Headcount. The unit does not have to provide headcount to the dining facility for warming and cooling beverages.
- Account. The dining facility does not earn monetary credit for warming and cooling beverages. Funds to purchase warming and cooling beverages are budgeted and provided separately at the installation level.
- Accountability. The dining facility must maintain a separate inventory of all warming and cooling beverage items from receipt until issue to the unit. This inventory is not part of the accountable inventory for the purposes of the dining facility account.
- IFCs, unit transportation, unit verification and pick-up of meals, return of IFCs and food safety. The same considerations discussed in paragraph 9-3 for remote site feeding also apply to warming and cooling beverage requests.

TRAVEL RATIONS

9-5. Units request travel rations when their personnel will be in transit between home station and the field site during one or several meal periods. Unit requests for travel rations in excess of a battalion or brigade force, depending upon local procedures, should be coordinated directly with the SSMO. Figure 9-4 is a sample travel ration request. Considerations for travel ration requests include—

- Rations. Units may use the meal, ready-to-eat (MRE) or commercial box meals as a travel ration. Units traveling on aircraft should not use self-heating devices contained in the MRE (flameless ration heater) and in some commercial box meals while on the plane. Box meal considerations are contained in chapter 16. Reserve Component (RC) units may also use commercially prepared meal as a travel ration option.
- Headcount. The unit must provide headcount to the dining facility for each meal provided for the travel ration request. The unit will provide a listing of all personnel who are authorized SIK, require DFAS action or are paying in cash for each meal. If personnel are paying in cash, the DFM should coordinate meal payment procedures with the requesting commander. The unit S-1 officer must verify the request if DFAS action is indicated.
- Account. The dining facility does not earn monetary credit for travel rations.
- Accountability. The MREs and commercial box meals must be maintained on separate DA Forms 5914 (*Ration Control Sheet*) from receipt until issue to the unit.
- Food safety. When issuing perishable box meals, the DFM must consider the time the box meal will be consumed to prevent any food-borne illness.

DEPARTMENT OF THE ARMY
ORGANIZATIONAL NAME/TITLE
STANDARDIZED STREET ADDRESS
CITY, STATE, AND ZIP+4 CODE

REPLY TO
ATTENTION OF

ATSM-CES-OC 20 Sep 09

Routing

Individual	Acknowledged/Approved (Signature)	Date
Individual	CW2 Billy Hawks	21 Sep 09
FPMO/COR	John A. Ruffins, FPM	22 Sep 09
Contract Project Manager	N/A	
FOMNCO/DFM	SFC Anthony Daucheres	23 Sep 09

SUBJECT: Unit Support Request per DA Pam 30-22, Chapter 4

1. Nature of requirement: Warming Beverages.

2. Unit Requiring Support: A Company, 1/32 Infantry Battalion.

3. Required information:

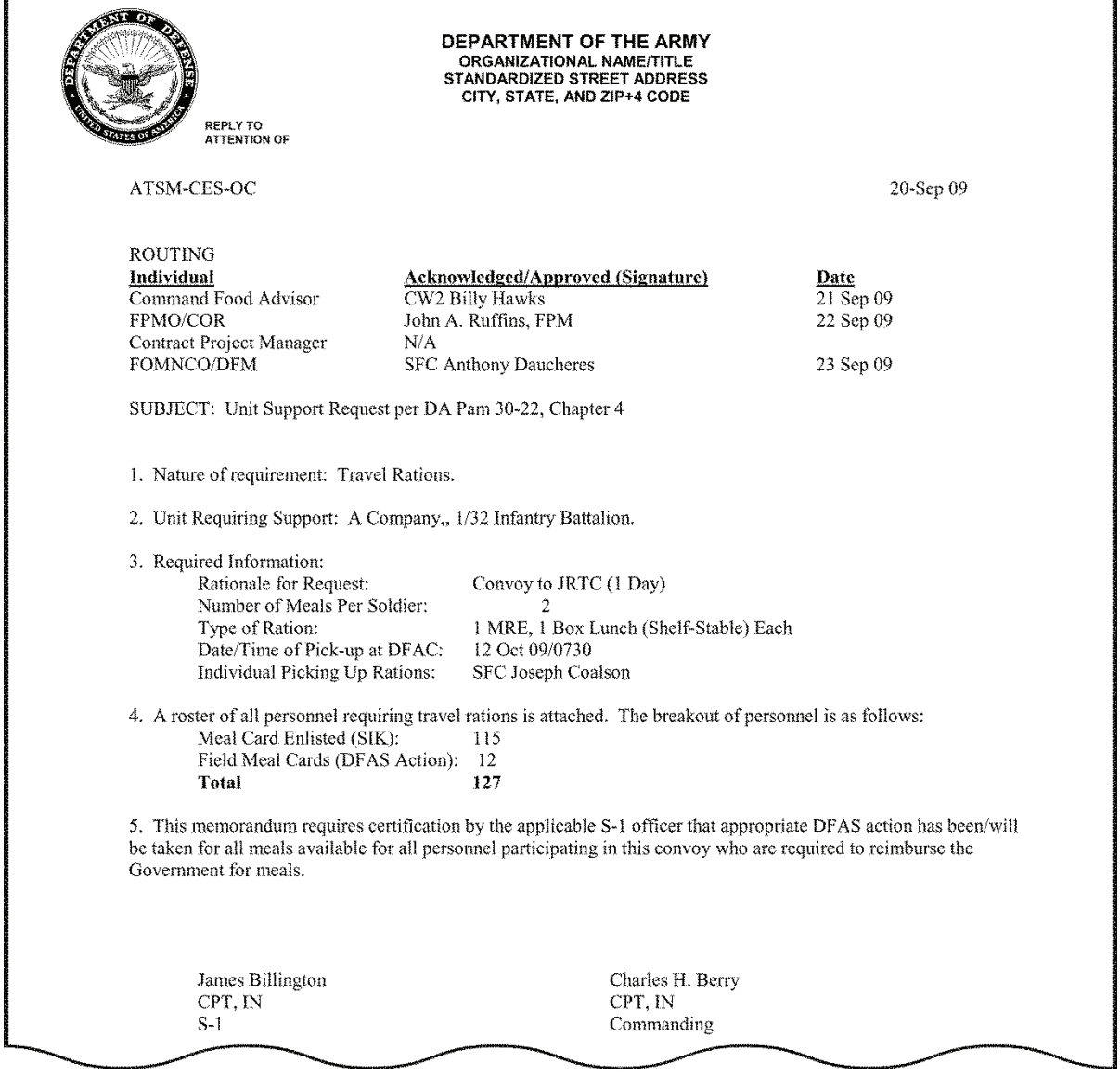
Rationale for Request	M4 Range
Date Required	13 Oct 09
Date/Time of Pick-up at DFAC	13 Oct 09/1030
Individual Picking Up Rations	SFC Joseph Coalson

4. Number of Soldiers requiring support:

Meal Card Enlisted (SIK)	115
Enlisted (BAS)	10
Officer (BAS)	2
Total	**127**

Charles H. Berry
CPT, IN
Commanding

Figure 9-2. Sample warming beverage request



DEPARTMENT OF THE ARMY
ORGANIZATIONAL NAME/TITLE
STANDARDIZED STREET ADDRESS
CITY, STATE, AND ZIP+4 CODE

REPLY TO
ATTENTION OF

ATSM-CES-OC 20-Sep 09

ROUTING

Individual	Acknowledged/Approved (Signature)	Date
Command Food Advisor	CW2 Billy Hawks	21 Sep 09
FPMO/COR	John A. Ruffins, FPM	22 Sep 09
Contract Project Manager	N/A	
FOMNCO/DFM	SFC Anthony Daucheres	23 Sep 09

SUBJECT: Unit Support Request per DA Pam 30-22, Chapter 4

1. Nature of requirement: Travel Rations.

2. Unit Requiring Support: A Company,, 1/32 Infantry Battalion.

3. Required Information:

Rationale for Request:	Convoy to JRTC (1 Day)
Number of Meals Per Soldier:	2
Type of Ration:	1 MRE, 1 Box Lunch (Shelf-Stable) Each
Date/Time of Pick-up at DFAC:	12 Oct 09/0730
Individual Picking Up Rations:	SFC Joseph Coalson

4. A roster of all personnel requiring travel rations is attached. The breakout of personnel is as follows:

Meal Card Enlisted (SIK):	115
Field Meal Cards (DFAS Action):	12
Total	**127**

5. This memorandum requires certification by the applicable S-1 officer that appropriate DFAS action has been/will be taken for all meals available for all personnel participating in this convoy who are required to reimburse the Government for meals.

James Billington
CPT, IN
S-1

Charles H. Berry
CPT, IN
Commanding

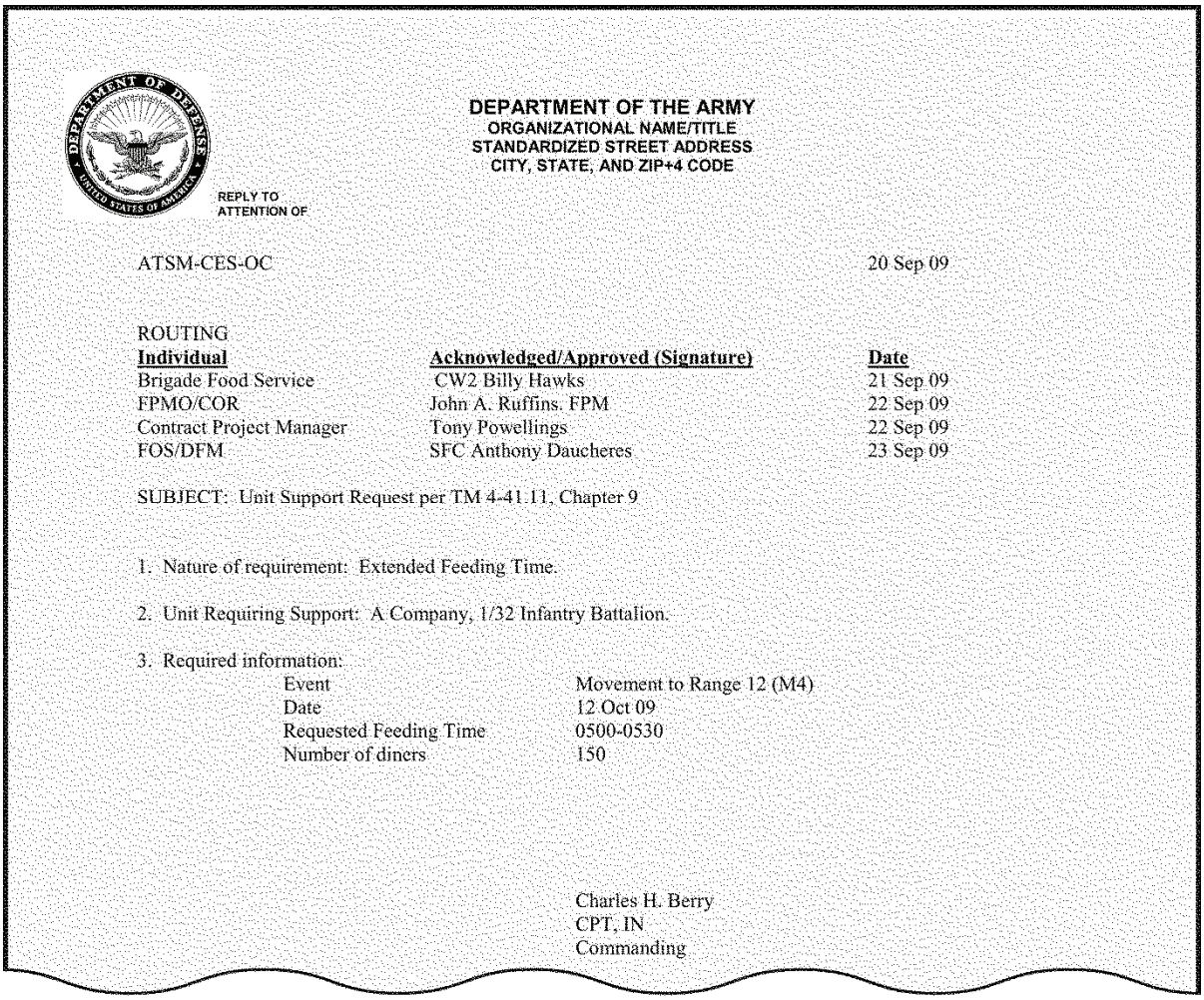
Figure 9-3. Sample travel ration request

EXTENDED MEAL FEEDING TIMES

9-6. Units request extended meal feeding times when their personnel require dining facility feeding support prior to or after the normal meal serving period. Figure 9-4 is a sample extended meal feeding request. Considerations for extended meal feeding requests include—

- Food service contract coordination. Most food service contracts contain additional payment requirements for extended feeding times. Only the KO/COR for the food service contract only can approve these extensions.
- Accurate Projections. Units requesting extended meal feeding times should accurately project the amount of time needed for the extension and the number of diners that will actually eat in the dining facility during the extension. Poor examples of unit projections include requesting 30 minutes to feed five diners or 60 minutes to feed 20 diners. In these instances, the commander may want to coordinate with the DFM to plan for alternate feeding such as using box meals.

- Routine support. Units should not request extended meal feeding times as a way to meet routine training or mission requirements. The dining facility meal serving periods should be aligned with the supported units' training schedules. If a meal serving period does not, the commander should initiate action with justification to change it.



DEPARTMENT OF THE ARMY
ORGANIZATIONAL NAME/TITLE
STANDARDIZED STREET ADDRESS
CITY, STATE, AND ZIP+4 CODE

REPLY TO ATTENTION OF

ATSM-CES-OC 20 Sep 09

ROUTING

Individual	Acknowledged/Approved (Signature)	Date
Brigade Food Service	CW2 Billy Hawks	21 Sep 09
FPMO/COR	John A. Ruffins. FPM	22 Sep 09
Contract Project Manager	Tony Powellings	22 Sep 09
FOS/DFM	SFC Anthony Daucheres	23 Sep 09

SUBJECT: Unit Support Request per TM 4-41.11, Chapter 9

1. Nature of requirement: Extended Feeding Time.

2. Unit Requiring Support: A Company, 1/32 Infantry Battalion.

3. Required information:

Event	Movement to Range 12 (M4)
Date	12 Oct 09
Requested Feeding Time	0500-0530
Number of diners	150

Charles H. Berry
CPT, IN
Commanding

Figure 9-4. Sample extended meal feeding request

ORGANIZATION DAYS

9-7. Units may annually celebrate their organization day by having a "picnic-style" meal outside of the dining facility. A sample organization day request is at figure 9-5. Considerations for organization day planning include—

- Menu planning. The menu should equal the BDFA value of the meal for which it is being served. Menu items such as chicken, ribs, burgers, hot dogs, chips, salads, baked beans and desserts work well for organization day meals. The meats are usually cooked at the organization day site while the rest of the foods are prepared in the dining facility and transported to the site for service.
- Qualified food service personnel. If unit food service personnel are not doing the cooking during the organization day, at a minimum, some should be on hand to monitor the cooking and general food safety requirements. If food service personnel are not part of the organization day, all requirements contained in paragraph 9-3 for remote site feeding should apply.
- Headcount. Established signature headcount procedures will be used for all diners. Units often purchase additional food from outside the dining facility in an effort not to charge BAS diners

for their meal. This is not authorized. Co-mingling of food will not preclude collection for Government meals.

- Account. The dining facility earns monetary credit for organization day meals.
- Dining ware. Units are required to purchase and provide their own plates, cups, napkins and flatware for organization day requirements.

DEPARTMENT OF THE ARMY
ORGANIZATIONAL NAME/TITLE
STANDARDIZED STREET ADDRESS
CITY, STATE, AND ZIP+4 CODE

REPLY TO
ATTENTION OF

ATSM-CES-OC 20 SEP 09

ROUTING

Individual	Acknowledged/Approved (Signature)	Date
Command Food Advisor	W2 Billy Hawks	21 Sep 09
FPMO/COR	John A. Ruffins, FPM	22 Sep 09
Contract Project Manager	Karyl Habecken	22 Sep 09
FOMNCO/DFM	SFC Anthony Daucheres	23 Sep 09

SUBJECT: Unit Support Request per AR 30-22, Chapter 3

1. Nature of requirement: Organization Day.

2. Unit Requiring Support: 1/32 Infantry Battalion.

3. Date, Time and Location:
   Date: 15 Oct 09
   Time: 1100-1400
   Location: Infantry Park

4. Menu requested: Burgers, hotdogs, chicken, ribs, potato salad, macaroni salad, relish tray, buns, potato chips, condiments, beverages, desserts. Exact menu will be coordinated with FOMNCO/Dining Facility Manager.

5. Breakout of personnel:

Meal card enlisted (SIK)	312
Cash Enlisted (BAS)	73
Cash Officer (BAS)	54
Cash Family Members	154
Cash Guests	4
Total	**597**

6. The signature headcount system (DA Form 3032 & DD Form 1544) will be used. I understand that when there is a difference in excess of 10 percent of the meals requested and the actual headcount as reflected on the headcount forms, an investigation will be conducted by the commander having operational control of the dining facility.

Charles H. Berry
LTC IN
Commanding

Figure 9-5. Sample organization day request

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Chapter 10

Diner Feedback

GENERAL

Effective dining facility operations use monitoring tools to ensure they are providing acceptable service and products to their diners. This chapter contains recommended suggestions that have shown to be effective in acquiring group and individual feedback on diner satisfaction. The DFM should use a combination of these methods when establishing the dining facility diner feedback program.

GROUP FEEDBACK

10-1. The primary purpose of the dining facility is to provide subsistence support to the enlisted diner that is authorized SIK. Two methods to solicit group feedback from these diners are through the Better Opportunities for Single Soldiers (BOSS) Program and by establishing an enlisted dining facility advisory council. Use both methods to evaluate Soldiers' satisfaction, identify areas of dissatisfaction or ways to improve service in the dining facility.

BOSS PROGRAM

10-2. The BOSS program provides information on all quality of life issues for single Soldiers. Services provided by the dining facility play a major role in the single Soldiers' quality of life. When utilizing the BOSS Program for diner feedback the DFM should—

- Request to attend the BOSS council meetings to solicit feedback on dining facility support being provided.
- Coordinate with the FPM to extend an invitation to the BOSS council to attend the food service management board.
- Provide copies of food service management board and enlisted dining facility advisory council minutes to the BOSS council.

ENLISTED DINING FACILITY ADVISORY COUNCIL

10-3. It is highly recommended that each DFM establish a formal group forum like this council to routinely gather diner feedback. Key considerations when establishing this council include—

- Coordinate with the units that eat in the dining facility to support the council. Brief unit leadership on what the goal of the council is, who should be attending (enlisted Soldiers authorized SIK) and when/how often meetings will be held.
- Set a regular date and time that the meetings will be held and stick to it as much as possible. For instance, if you are going to conduct a quarterly meeting, you could set the meeting for 0900-1000 on the 3rd Tuesday of the last month of each quarter. Before setting this date/time, ensure it doesn't conflict with other mission requirements that would prevent the enlisted Soldiers and unit leadership from attending. This does not mean the meeting date/time will never have to change; however, it will allow the attending units to plan for it by placing it on their training schedules.
- Don't get hung up on having the same unit representatives attend each meeting, it is not a realistic goal in most cases because of unit missions. The main objective is to get enlisted SIK

Soldiers to attend and voice their opinions relative to the service being offered or not being offered in the dining facility.

10-4. To make enlisted dining facility advisory council meetings more effective use the information contained in the following paragraphs to prepare for and conduct the meetings.

Pre-Planning the Meeting

- Identify the major objective (purpose) of the meeting. There should be no more than three main areas to discuss during each meeting. Ask yourself what information needs to be gathered during the meeting, for example, examining a new service, how an idea will work or to understand how a program is failing.
- Develop a set of group questions to ask. Limit your questions to no more than five around the major objectives of the meeting.
- Develop a meeting agenda (no more than one page in length).
- Remind unit leadership and the members, if you have their contact information, of when/where the meeting will be two weeks out, one week out and the day prior, if possible, to ensure attendance.

Conducting the Meeting

- Limit the length of the meeting from 30 minutes to one hour. Meetings over one hour tend to lose their focus and members start to lose interest. Remember, the major goal is to collect information.
- Hand out and go over the agenda. Facilitate the meeting and keep the members focused.
- Hand out the questions and allow members to record their answers.
- Go over each question and the answers to each question, one at a time. Use the round table method and don't let one member dominate the discussion. Remain positive and objective, listen thoroughly and respectfully, and don't get into a debate with the members. Get closure on each question.
- Designate a recorder for the meeting and get member's contact numbers (email/phone). Thank the members for their participation, close the meeting and let the members know that they will each get a copy of the minutes.

After the Meeting

- Validate member feedback and adjust your menu service based on your meeting. Remember, the goal of having the meeting is to improve your menu service. If you don't change those things that need to improve, there is no sense in conducting the meeting.
- Have the recorder type up the minutes of the meeting no later than 5 days after the meeting. Email a copy to each participating member and thank them again for participating in the meeting. Post a copy on the dining facility bulletin board and send a copy of the minutes to unit leadership.
- Conduct an after action review of your meeting. Jot down some notes on what went right and what could have been better for your next meeting.

INDIVIDUAL FEEDBACK

10-5. Individual feedback is gathered using diner comment cards, surveys, hot lines and through the interactive customer evaluation (ICE) system. Regardless of the method used for gathering individual feedback, follow these basic principles when you receive feedback:

- Take the suggestion seriously and validate the information received. Validating a comment is determining if what the diner said is a required service that should have been performed in the dining facility.
- Contact the individual that provided the comment if they left their contact information. Let them know you received their comment and what action(s) may be or have been taken in relation to

their comment. Clarify any information the diner may not have known when they made their comment.

- Implement suggestions whenever practical, as this will encourage future participation and help avoid the "why bother, nothing is going to change" attitude from diners. When making changes as a result of diner feedback, let your diners know that these changes were a result of the suggestions from them. One way to provide this feedback, especially on anonymous comments, is by posting the comment and the DFM's response on a bulletin board the diners can see.

COMMENT CARDS

10-6. Diner comment cards are a passive method to gain diner feedback. Comment cards may be placed on each dining table or in central locations located throughout the dining room. A locked box should be provided near the exit so the diner can place the comment card in it as they leave after the meal. Ensure that these comment cards and boxes are highly visible for diner access. Diners generally only fill out comment cards when they have a specific positive or negative dining experience. Comment card boxes should be checked daily, since the value of the information will decrease with time.

SURVEYS

10-7. Surveys should be taken both informally (verbally) and formally (a written set of questions). Always take surveys in a non-threatening and non-personal way. Do not intimidate the diner or make them feel that nothing will be done about their complaints. In addition to surveying the diner, the DFM should also periodically survey all dining facility food service personnel. Food service personnel often have valuable comments that can improve dining facility operations but are seldom asked to provide feedback.

Informal Surveys

10-8. The DFM should periodically solicit random verbal comments during meal serving periods. This can be done by walking around the dining room, serving lines or at the tray drop area. Use an ice breaker such as "How are you doing today?" and follow up with a question such as "How was your meal today?" Based upon the diner's comments, you can ask additional specific questions. The DFM should keep a note pad in their pocket and discretely jot down notes of the diner's comments for future reference. This method shows the diner that you care about their dining experience and tends to allow for true diner responses.

Formal Surveys

10-9. Taking formal surveys is not a one-time event. Formal surveys should be taken on a recurring basis periodically throughout the year. The data gathered on the survey should lend itself to easy tabulation so that trends can be compiled and future survey data can be compared to it. This is known as benchmarking. For example, the DFM can administer 50 formal written surveys during a meal serving period semi-annually, once in the spring and again in the fall. After each survey, the DFM should compile the data, validate any suggestions or comments and then compare the new data with the previous survey data compiled to see any positive or negative overall trends. Additionally, formal surveys can be given to potential customers. Contact the commanders of the units you support, and try to find out why Soldiers are not eating in your dining facility.

HOTLINES

10-10. Some installations or dining facilities have set up dedicated telephone hotlines (for instance call 777-FOOD) to gather diner feedback. However, experience has shown that hotlines are generally not effective in gathering diner feedback.

INTERACTIVE CUSTOMER EVALUATION

10-11. ICE is a web site used to gather customer feedback and ratings on installation services. Food service, including dining facilities, is one of these services. Customers may access this web site using any computer connected to the internet. Once in the web site, the customer may rate the service they have

received and input comments relative to this service area. Once submitted the customer evaluation form is automatically forwarded to an installation representative for validation and answering (if required). Like the comment card, ICE is a passive diner feedback method. The only drawback of this system is that one anonymous unhappy customer can input as many dissatisfied comments as they want in any length of time. This tends to skew the validity of the data being received relative to overall diner satisfaction in the dining facility.

PART THREE

FOOD PREPARATION

Chapter 11

Breakfast Foods

GENERAL

Breakfast in the dining facility consists of breakfast meats; hot cooked cereals; potatoes or starches; eggs; French toast, pancakes or waffles; a breakfast bar consisting of assorted breads, fruits, dairy products, dry cereals, condiments; and beverages. Pastries such as sweet rolls, coffee cake or doughnuts are also rotated on the menu. Pastries are discussed in chapter 17 and beverages are discussed in chapter 18.

BREAKFAST MEATS

11-1. Meats served for breakfast include bacon, ham, sausage, breakfast steaks and cream beef. The DFM may requisition either raw or precooked meats. Precooked bacon should be heated to serving temperature only as it will fall apart when overheated. Ham is usually canned and it must be sliced prior to grilling or baking. Sausage is available in preformed patties, links or bulk. Ensure that raw sausage is cooked until it has lost its entire pink tinge on the inside. Precooked cream beef generally comes frozen in a boil-in-the-bag container.

11-2. The dining facility can also serve a variety of sandwiches containing breakfast meats, sliced cheese and eggs. Sandwiches may include bacon, sausage or ham biscuits or English muffins. Each sandwich should contain one serving of meat, one slice of cheese and one or two fried-hard eggs. English muffins should be toasted prior to using.

HOT COOKED CEREALS

11-3. The hot cooked cereals served in the dining facility include farina, rolled oats and hominy grits. These cereals take a relatively short time to prepare. Prepare them in small batches and serve them hot. These cereals also come in individual instant packets so the diner can prepare a single serving just by adding hot water to the cereal in a bowl.

POTATOES OR STARCHES

11-4. Many different types of potatoes can be prepared and served for the breakfast meal including fried fresh diced or slices, fried frozen shredded hash browns, deep-fat fried formed hash brown patties and fried dehydrated sliced. Since potatoes are served with each breakfast meal, the DFM should periodically rotate the type of potato served in order to give the diner a variety. The DFM may also elect to serve rice in addition to potatoes based upon diner preference.

EGGS

11-5. Eggs are an important food, high in nutritional value. Eggs add color, richness and flavor to many other foods in which they are used. The Army procures fresh shell eggs, pasteurized liquid eggs and dehydrated egg mix. Fresh eggs must be stored in a refrigerator and separated from foods which have strong aromas. Pasteurized eggs come frozen in bags and must be thawed in the refrigerator prior to use, while powdered egg solids should be kept in a cool, dry place and used before their expiration date. Other than as a breakfast food, eggs can also be used as follows:

- Lighten batters and dough.
- Thicken soups, sauces, fillings and custards.
- Act as a binding agent for meat loaves, croquettes, muffins, cookies and cakes.
- Garnish salads, cold meats, vegetables and other foods.
- Act as a clarifier for clear soups and other foods.
- Coat chops, chicken and other foods for frying.

11-6. As a breakfast food, eggs may be soft-cooked, hard-cooked, scrambled, poached, fried, baked or made into an omelet. You can make omelets plain or with cheese, meat and assorted chopped vegetables. Use liquid pasteurized or dehydrated eggs for all scrambled eggs, omelets and all baked goods. Raw shell eggs may only be used for soft-cooked, hard-cooked, poached or fried. Over-easy eggs should not be prepared due to salmonella concerns. High temperatures and overcooking toughen the protein in the eggs, so you should cook them at 325 degrees Fahrenheit. Serve them immediately after cooking. Do not let cooked eggs stand for any length of time as they will harden and lose their flavor.

SHELL EGG HANDLING

11-7. Procedures for handling raw shell eggs are—

- Remove eggs from the refrigerator 30 minutes before use to allow them to warm up. This ensures more uniform cooking, especially when the eggs are fried or baked; keeps shells from cracking when eggs are hard-cooked; and increases the volume of stiffly beaten egg whites.
- When cooking two or more eggs together or combining them with other ingredients, break each egg separately in a small dish before combining them. This allows you to discard eggs with a bad odor or poor appearance without spoiling the other eggs or ingredients.
- Beat eggs thoroughly to lighten dough or batters, and beat eggs lightly to thicken, bind or coat foods.
- Add ingredients gradually to stiffly beaten egg whites.
- Hot mixtures, such as hot milk or hot sauce, should be added slowly to the slightly beaten eggs to prevent the eggs from curdling.

PASTEURIZED LIQUID EGGS AND DEHYDRATED EGG MIX

11-8. Pasteurized liquid eggs and dehydrated egg mix can be used in almost the same manner as fresh eggs (for example, scrambled or omelets, pancakes, custards or any type of cooked dessert that calls for fresh eggs).

11-9. Do not reconstitute more than 25 portions of dehydrated egg mix by the hand method at one time. If you are using a mechanical mixer, you can reconstitute up to 100 servings at the same time. However, do not cook more than 25 servings at a time. Use reconstituted egg mix within one hour or discard it. Dehydrated eggs can be reconstituted by the hand method or the mechanical mixer method.

Hand Method

11-10. Reconstitute egg mix by the hand method as follows:

- Remove all lumps.
- Pour one-third of the liquid into the egg powder and blend them together.
- Add remaining liquid gradually. Beat until smooth.

Mechanical Mixer Method

11-11. Reconstitute egg mix using a mechanical mixer as follows:

- Pour dehydrated eggs into mixing machine.
- Pour one-third of the liquid into the egg powder.
- Mix on low speed for one minute, on second speed for two minutes and on high speed for 30 seconds or long enough to remove the remaining lumps.
- Turn mixer to second speed; add remaining water and beat until the egg paste and water are thoroughly combined.

FRENCH TOAST, PANCAKES, AND WAFFLES

11-12. Serve both French toast and pancakes hot from the grill, if possible. Waffles may be prepared in an oven and served on the main service line or provided uncooked on the breakfast bar for the diner to toast their own. Have melted butter and hot syrup available. Syrup is available in various flavors in cans, bottles or individual packets.

BREAKFAST BAR

11-13. Set up and display the breakfast bar in the salad bar self-serve area. Ensure that the foods and their setup give good eye appeal. Plate/bowls and eating utensils should be placed next to the breakfast bar. Some diners may prefer eat to only from the breakfast bar as an alternative to the traditional breakfast menu. Foods that may be served on the breakfast bar are discussed in the following paragraphs.

ASSORTED BREADS

11-14. Pre-made or cook-prepared biscuits and commercial assorted breads such as white, wheat, rye, raisin, bagels and English muffins are generally served for the breakfast meal. Biscuits should be served hot from the main service line. Breads should be removed from their wrappers and attractively arranged in an appropriate container near a toaster so that diners can prepare their own toast. When speed of service is essential due to a limited service period or high diner volume, dry toast may be made ahead of time and served to the diner from the main service line. When self-service toasters are provided for diners' use, ensure that small plates are located near the toaster.

FRESH AND CANNED FRUITS

11-15. All fresh and canned fruits (except bananas) should be chilled for service. Fresh fruits should be neatly arranged together, not placed in individual serving dishes. Use seasonal fresh fruits such as melons, berries and peaches when available. Grapefruits should be cut in half and segmented or the segments should be removed and placed in individual serving dishes. Depending upon the anticipated headcount, canned fruits such as pears, peaches, applesauce, apricots and fruit cocktail should be placed in small serving pans, appropriately garnished and replenished often.

DAIRY PRODUCTS

11-16. Shredded or cubed cheese, low-calorie plain or fruit-flavored yogurts (individual or bulk) and cottage cheese should be served on the breakfast bar.

DRY CEREALS

11-17. Dry cereals are made from barley, corn, oats, rice, wheat or combinations of these grains. The grains have been altered (puffed, toasted, flaked or shredded) during processing so that their flavor, texture and appearance are more appealing. Some have sugar, syrup, molasses or honey added. Dry cereals come in individual boxes or bowls or in bulk. Place bulk cereal in a vendor-provided dispenser for diner self-service. Army menu standards also require that 100 percent foliate-fortified (400 milligrams [MCG] per serving) cereals be served.

CONDIMENTS

11-18. Condiments complement the breakfast foods contained in this chapter and should be provided for diner self-service on the breakfast bar. Condiments may come in individual serving or bulk containers such as cans, bottles, jars, packets or cups. The following condiments should be considered for service on the breakfast bar:

- Hot sauce.
- Picante sauce or salsa.
- Ketchup.
- Creamed cheese.
- Butter or margarine.
- Jams and jellies.
- Peanut butter.
- Brown Sugar, cinnamon and sugar mix for hot breakfast cereals, French toast, pancakes and waffles.

OTHER COMPONENTS

11-19. Other components such as assorted nuts, dried fruits (raisins, prunes), nut and fruit mixes (trail mix), and individually-packaged nutrition bars (fruit, granola or multigrain) may also be served on the breakfast bar. The DFM should carefully consider the portion cost of these foods to ensure they fit within the BDFA reimbursement for the breakfast meal prior to purchasing them.

Chapter 12

Meat

GENERAL

Meats such as beef, pork, poultry and seafood constitute the center of the plate for each meal served in the dining facility. The meat is usually the most expensive component of each meal. Careful preparation must be followed to ensure appetizing quality products are presented for diner service and to prevent food waste.

TYPES OF MEATS

12-1. Several types of beef, pork, poultry and seafood are served in the dining facility. They are discussed in the following paragraphs.

FRESH (FROZEN)

12-2. Dining facilities use mostly portion-controlled, boneless cuts of beef, pork, poultry and seafood. After the meat is boned, it is broken down and ground, cubed, formed into patties or portioned into cuts such as steaks, filets or roasts. Boneless meat requires less storage space, weighs less and is easier to handle and prepare. Fresh meat containing bones served by the dining facility may include pork or beef ribs, steamship round, T-bone steaks, chicken, Cornish hens and some seafood such as trout and catfish.

PRECOOKED

12-3. Dining facilities may order precooked meats such as bacon, beef patties, meat loaf, Salisbury steaks, chicken Cordon Bleu, ribs and chicken. Precooked meats are generally cooked in the dining facility from a frozen state and should be handled and protected from cross contamination just like fresh meats. Cook precooked meats according to the manufacturer's instructions and the recipe.

VARIETY

12-4. Liver and chitterlings, although meat, are classified as variety meat or meat specialties.

PREPARED

12-5. Luncheon meat, frankfurters and sausages are examples of prepared or ready-to-serve meats. Prepared meats may be made from beef, pork or poultry.

CURED OR SMOKED

12-6. Cured meat is treated with salt or with some other natural or chemical curing agent (for example, corned beef). Smoked meat is cured with smoke. Smoking provides shelf life and flavor to the meat. The principal types of smoked meat are ham, bacon and dried beef. (Most dried beef is smoked, although some is cured.) Cured or smoked meat may be made from beef, pork or poultry.

DEHYDRATED

12-7. Dehydrated meat is generally not served in dining facilities. Dehydration is the process of preservation through water removal, such as freeze dehydration. You can rehydrate meat ahead of cooking time and keep it in the refrigerator, or you can cook it immediately after rehydration. Rehydration is done

following the manufacturer's instructions. The temperature of the water used and the time required for rehydration varies with each product. After the meat has been rehydrated, it is drained and handled as a fresh meat to prevent spoilage.

POULTRY

12-8. The two main types of poultry served in dining facilities are chicken and turkey. Broiler-fryer chickens are received frozen, either in whole or cut-up condition. Turkeys are received frozen, in either whole (ready to cook) or boneless condition. The whole, ready-to-cook turkey has the giblets (liver, heart and gizzard) and neck wrapped in the cavity of the carcass. Boneless turkeys are received cooked, molded, encased or raw-tied and netted. Other types of poultry that are served infrequently include duck and Cornish hens.

FISH

12-9. Frozen fish include fish sticks, squares or nuggets, fish fillets and fish steaks. Some come breaded and ready to cook. Others require preparation in the dining facility. Fish steaks are cross sections of a large dressed fish. A fish steak may be boneless or it may contain the cross section of the backbone in the center of the steak. Fillets are the meaty sides of fish cut lengthwise away from the backbone and are practically boneless.

CRUSTACEANS AND SHELLFISH

12-10. Crustaceans and shellfish are delivered frozen. They include shrimp and crab legs (crustacean), oysters and scallops (shellfish).

THAWING AND TEMPERING FROZEN MEAT

12-11. Recipes in TM 10-412 are for thawed or tempered meat unless otherwise indicated. Thawing means to raise, under controlled conditions, the internal temperature of frozen meat to a level above 30 degrees Fahrenheit. Tempering means to raise, under controlled conditions, the internal temperature of frozen meat to about 26 to 28 degrees Fahrenheit. This temperature range allows you to separate and handle frozen meat.

12-12. Thaw or temper meat before cooking it to shorten the cooking time and to improve the quality of the finished product. Meat should be thawed in a manner that does not permit cross contamination according to the procedures in TB MED 530. Considerations for thawing meat include—

- Do not thaw or temper meat at room temperature.
- Keep meat covered while thawing or tempering, and make sure there is ample room between the frozen pieces to permit good air circulation.
- Frozen 3-pound broiler-fryers require 18 to 20 hours to thaw in the refrigerator.
- Frozen turkeys weighing less than 16 pounds require two to three days to thaw in the refrigerator and three to four days for turkeys weighing more than 16 pounds.
- Although complete thawing before cooking is preferable, you may cook meat before it is completely thawed if you lower the oven temperature and allow more cooking time.
- Nonbreaded fish steaks and filets must be tempered in the refrigerator so that the pieces can be separated.

Note. Do not refreeze thawed or tempered meat.

COOKING MEATS

12-13. Meat is an important part of the diner’s diet and nutritional needs. For this reason, it must be prepared, cooked and served properly. Less tender cuts of meats can be highly acceptable when prepared according to the proper recipe. Care must be taken, as meat can be ruined by overcooking, which results in excessive shrinkage and loss of valuable nutrients.

COOKING TEMPERATURES

12-14. Meats must be cooked at the temperature prescribed in the recipe. Use moderate heat to develop maximum flavor, tenderness, color and juiciness. High heat will harden and toughen the meat, result in greater cooking loss, shrink the muscles and drive out the juices. This produces a less palatable product. Table 12-1 presents ranges of cooking temperatures. Appendix D provides the comparison of Fahrenheit and Celsius temperatures.

Table 12-1. Ranges of cooking temperatures

Temperatures	*Category*
250-275°F	Very slow
300-325°F	Slow
350-375°F	Moderate
400-425°F	Hot
450-475°F	Very hot
500-524°F	Extremely hot

DEGREE OF DONENESS

12-15. The desired degree of doneness varies with the type of meat cooked. Beef and lamb can be served rare, medium or well-done; veal can be medium to well-done; and pork and poultry must be well-done. Pork must be cooked well-done to kill the organisms that cause trichinosis. Poultry must be cooked well-done to kill the organisms that cause salmonella. There are three methods of checking the degree of doneness.

Meat Thermometer

12-16. Always use a thermometer, if available, to check the internal temperature of the meat. The exact internal temperature for the required time to which you cook each type of meat will depend on the recipe card, table 5-2, page 5-4, of this manual and the guidelines in TB MED 530.

Time-Weight Ratio

12-17. If a thermometer is not available, doneness can be determined by cooking the product at the prescribed temperature for a given number of minutes for each pound of meat.

Fork Test

12-18. Stick a steel fork into the center of the meat. Note the color of the juices that come out of the meat. Red means the meat is rare and pink means it is medium. Brown means well done. Do not puncture the meat too much or too much juice will be lost. This test is acceptable but is not recommended. It is best used along with the time-weight ratio-method.

SEASONING

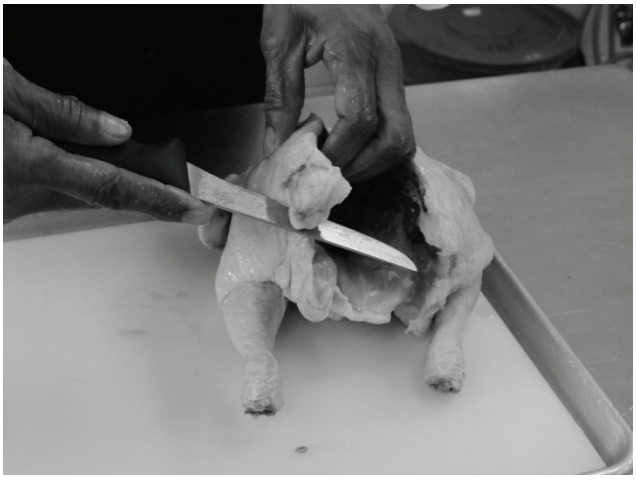
12-19. Some meats are seasoned before cooking, and others are seasoned during the cooking process. Season all meats cooked by moist heat and meat dishes, such as meat loaf and Salisbury steak (cooked with dry heat) before cooking. This allows the seasoning to cook into the meat and improve the flavor of the finished product. Lightly season a roast cooked by dry heat before you cook it. Never season meats to be grilled before you cook it because salt tends to draw out the meat juices. When juices are drawn from the meat, the meat must be overcooked to develop the color. When grilling or frying, season the browned side, then cook the other side and season it.

CUTTING A WHOLE CHICKEN FOR FRYING OR BAKING

12-20. Even though most meats available today from the vendor are already precut into serving-size portions, whole chickens are available. To quarter a chicken follow steps 1 through 5 in figure 12-1. To cut it into individual pieces, follow steps 5 through 8 in figure 12-1.



1. Place the knife alongside the tail and cut close to the backbone from vent to neck, freeing one side of the backbone.



2. Place the knife below the tail and cut close to the backbone from vent to neck. Then remove the backbone.

Figure 12-1. Cutting up a whole chicken



3. Cut the cartilage to the breastbone. Pop out the breastbone.



4. Cut the chicken in half.



5. Cut each half to separate the leg and thigh from the breast and wing.

Figure 12-1. Cutting up a whole chicken (continued)



6. Separate the legs and thighs at the joints.



7. Separate the wings and breasts at the joints.



8. Finished 8-piece cut up chicken.

Figure 12-1. Cutting up a whole chicken (continued)

COOKING MEAT BY DRY HEAT

12-21. Dry-heat cooking is achieved when the product is cooked without the addition of an outside liquid. As a rule, cook meat that is tender by dry heat. Usually, fish is cooked by the dry-heat method. Fry lean fish, such as haddock or flounder, and broil or bake fat fish, such as salmon or mackerel. However, lean fish can be baked if it is basted frequently with melted fat or if it is cooked with a sauce. Cook fish so that the required cooking time ends as close to the serving time as possible. When fish is overcooked or kept warm in an oven or warmer after it has been cooked, it becomes hard and dry and loses its flavor. Fish is done when the flesh separates or flakes easily with a fork. Methods of dry heat cooking are described in the following paragraphs.

ROASTING AND BAKING

12-22. Both of these terms refer to cooking by dry heat in an oven. The meat is usually uncovered in roasting. The meat may be either covered or uncovered in baking. The term used in specific cases depends on the type of meat being cooked. For example, the term baked is used with meat loaf, Salisbury steak and ham (smoked and nonsmoked). Roasting is used with most nonsmoked meats cooked in the oven by dry heat.

12-23. For roasting, place the roast fat-side up so that the fat will baste the meat as it cooks. If possible, cook roasts or hams that are about the same size so that all of them will finish cooking at the same time.

12-24. Insert a meat thermometer in the thickest part of a roast. When it is necessary to cook roasts or hams of varying sizes at the same time, insert the thermometer in the thickest part of the smallest roast. Keep the thermometer probe away from fat pockets and bone. Either may cause an incorrect reading. When the thermometer registers the desired temperature for the required time, remove the smallest roast to prevent overcooking. Then insert the thermometer in the thickest part of the smallest roast remaining in the oven. Repeat this procedure until all of the roasts are done.

GRILLING

12-25. Grilling can be accomplished on a grill, on a range or in a tilting fry pan. The grill should be heated to the temperature prescribed in the recipe for the product being prepared. The temperature is checked by use of a grill thermometer. Drain excess grease and scrape accumulations on the cooking surface frequently for best grilling results.

DEEP-FAT FRYING

12-26. Meat that is to be deep-fat fried is coated with batter or some kind of breading material. It is then cooked in canola oil heated to the temperature listed on the recipe. Some meat items such as breaded veal steaks or cutlets and breaded pork chops are browned in oil, drained and then placed in an oven to finish cooking by baking. For the best results when deep-fat frying—

- Use a wire basket to lower the food into the canola oil and to remove the food when it is done.
- Do not overfill the wire basket because loose breading will fall into the canola oil.
- Always lower a filled basket into the canola oil slowly to prevent chilling the oil.
- If the canola oil is too hot, the outside of the food will scorch and the food will not cook through.
- If the canola oil is not hot enough, the outside of the food will become greasy and unpalatable even though the item may be cooked.
- Use different deep-fat fryers when possible so that food items do not take on the taste of other foods. Fish oil is strong and will stay in the grease and transfer to other products.

12-27. Deep-fat frying cooking oils break down for a variety of reasons. Some of these are—

- Oil is allowed to get too hot during cooking.
- Fatty foods, like bacon, are cooked.

- Breading materials or food particles are allowed to accumulate in the oil. Filter the oil after each meal.
- Oil is allowed to get too old before it is replaced.

PANFRYING

12-28. Panfry meat by cooking it slowly and uncovered on top of the range. Use only enough oil to keep the meat from sticking or burning. Slice meat thinly for frying. Cook it at a moderate temperature and turn it occasionally. Some recipes call for the meat to be rolled in seasoned flour before frying.

COOKING MEAT BY MOIST HEAT

12-29. Simmering is cooking in a liquid at a temperature just below the boiling point. Meat cooked by moist heat is simmered, not boiled. Boiling toughens meat and destroys its flavor, food value and shape. This method is used to cook large, nonbrowned pieces of meat such as corned beef. Moist heat is usually used to cook poultry that is not tender enough to fry or roast.

BRAISING

12-30. To braise meat, first brown it either in its own fat or in a small amount of added fat. Then simmer it in a small amount of additional liquid. The recipe may or may not call for the meat to be rolled in seasoned flour before browning. Meat can be braised on top of the range, in the oven, in a tilting fry pan or in a steam-jacketed kettle. After adding a small amount of liquid, cover the pan to keep in the moisture. Braised liver is an example of braised meat.

STEWING

12-31. For stewing, meat is cut in small, uniform pieces. The recipe specifies if the meat is to be browned before adding the liquid. Browned meat may or may not have to be rolled in seasoned flour. More liquid is required for stewing than for braising. Cover the meat and simmer it on top of the range or in a steam-jacketed kettle. After the meat is tender add diced or sliced raw vegetables as indicated on the recipe, if required.

12-32. When poultry is to be used in recipes such as salad, potpie or a la king, it is stewed first. The item is then cooled and the meat removed from the bones and cut into pieces. The size of the pieces will vary from ½- to 1-inch, depending on the recipe you follow. Keep the stock to use in sauce, gravy or soup. If boneless, frozen, cooked turkey is used, thaw it and dice it into 1-inch pieces.

CARVING RULES

12-33. Let roasts and poultry stand for 15 to 30 minutes before carving them so that the meat will be firm and not fall apart. During carving, meat should be trimmed in the kitchen and carved on the serving line. Follow the rules below:

- Always use clean, sanitized equipment.
- Use the proper knife for the job.
- Keep knives sharp.
- Use a meat fork.
- Arrange meat portions in a serving pan so that you can easily remove slices without breaking them.

CARVING METHODS

12-34. The two carving methods are by hand or by a mechanical device. Hand-carving on the serving line provides the best product presentation but requires skill and training to carve slices of equal size. It is always best to carve and weigh the first portion according to the recipe so the carver knows what the proper serving size should look like.

HAND CARVING

12-35. Meat recipes indicate serving size portions. Always cut across the grain of the meat and away from the body. Steps you should follow when carving a whole roast turkey are shown in table 12-2.

Table 12-2. Carving a whole roast turkey

Step	*Carving Method*
1	Using a carving knife, remove a leg by cutting through the joint.
2	Separate the thigh from the drumstick.
3	Remove a wing by cutting through the joint.
4	Make a cut toward the ribs on a line between the wing and thigh so that slices will fall free when you cut the breast.
5	Slice the breast parallel to the breastbone.

MECHANICAL CARVING

12-36. As an alternate to hand carving, a mechanical slicing machine may be used. Weigh the first slice or portion and adjust the dial-setting to get the correct slice according to the recipe.

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Chapter 13

Starches and Vegetables

GENERAL

Starches and vegetables should complement the meats being served. Starches, such as rice and pasta products, can be used in a variety of hot dishes. Vegetables are a good source of fiber and provide a large part of the vitamins and minerals needed in a well-balanced diet. Therefore, they should be prepared so that they retain maximum nutritive value.

RICE

13-1. Rice can be substituted for potatoes or added to the menu as an alternative starch for diners. Rice is served with dishes such as chili con carne, chop suey and Creole beef balls. It may also be added to some soups. To preserve valuable vitamins and minerals, do not blanch, wash or rinse rice after it is cooked. To prevent gumminess, never uncover the rice cooking pot or pan during the simmering period. There are several ways to prepare and cook rice. The most common is steaming it. Other ways to prepare rice are the oven method, on the range top or by using rice cookers.

PASTA PRODUCTS

13-2. Macaroni, noodles and spaghetti are popular pasta products. They are not substituted for potatoes as often as rice, but they can be used in many different ways. Because pasta products have a bland flavor, they require seasonings or sauces. Macaroni is used in dishes such as chili and macaroni or macaroni and cheese. Noodles are used in beef noodles, chow mein, noodles Jefferson and lasagna. Spaghetti and meat balls or meat sauce are a standard, yet dishes such as Yakisoba provide a highly acceptable alternative. Some rules for cooking and serving pasta products are as follows:

- Cook as close to serving time as possible.
- Slowly add the macaroni, noodles or spaghetti to rapidly boiling water to which salt and salad oil have already been added. Stir constantly until the water begins to boil again.
- Stir the product occasionally.
- Cook the product only until tender. Do not overcook. Overcooking makes the texture soft and unappetizing.
- Test frequently for doneness. To test, press a piece against the side of the pot using a fork or spoon. The piece will break evenly and clearly when done.
- Rinse the macaroni or spaghetti in cold water. Rinsing is not necessary if you serve the macaroni or spaghetti immediately with a sauce or butter.
- To reheat the pasta before serving, place the desired quantity in a wire basket. Lower the basket into boiling water for two to three minutes. Drain well. Place in a lightly-greased steam table insert.

DRESSINGS

13-3. The two basic types of dressings prepared in the dining facility are corn bread dressing and savory bread dressing. Bake dressing in a roasting pan or steam table insert in a moderate oven. Do not stuff the cavity of poultry. Dressing should be moist but never soggy.

Note. To prevent sogginess, never use hot stock.

13-4. Poultry stuffing (dressings), stuffed meats and stuffing containing meat must be cooked immediately after preparation to heat all parts of the food to the required temperature and time listed on the recipe with no interruption of the cooking process. All such products should be cooked separately.

VEGETABLES

13-5. Vegetables are purchased fresh, frozen, or canned for use in the dining facility. Various methods of serving can be used. Table 13-1 contains some of the most popular ways to add variety to vegetables.

Table 13-1. Ways of adding variety to vegetables

Method	*Process*
With Fats	Margarine or bacon or pork is added.
With Sauce	Sauce may be combined with, poured over or served on the side.
Pan-fried	Vegetables, cooked or uncooked, may be pan-fried. Some vegetables may be rolled in seasoned flour before being put in the frying pan.
Scalloped	Layers of raw vegetables are placed in a greased baking dish and sprinkled with seasoning, margarine and flour. Milk is then added, and the vegetables are baked. If vegetables are already cooked, white sauce is used.
Au Gratin	White sauce with cheese added is poured over cooked vegetables in a baking pan. The mixture is sprinkled with buttered bread crumbs and baked at the temperature specified on the recipe.
Fritters	Chopped or diced vegetables are mixed with a thick batter and deep-fat fried.
Glazed	Vegetables are sliced and placed in a baking or roasting pan. Syrup is poured on top. Vegetables are baked in a moderate oven and basted several times during cooking.
Stuffed	Various mixtures may be used to stuff vegetables. Stuffed vegetables are baked until tender or served fresh (for example, stuffed celery and stuffed tomato salad).
Deep-Fat Fried	Vegetables to be deep-fat fried may be raw, precooked, frozen or blanched. They may be sliced, crinkle cut, French-fry cut, sectioned or preformed, depending upon the type of vegetable.

FRESH VEGETABLES

13-6. Follow certain procedures to prepare vegetables for cooking. If there is a delay between the preparation and cooking or serving times, they must be cleaned, prepared, cut and preserved. These procedures are discussed in the following paragraphs.

CLEANING

13-7. Thoroughly clean all fresh vegetables before using them. Trim vegetables and remove all undesirable leaves and coarse stems. Wash usable leaves several times to remove sand and grit if necessary. Wash greens in a sink with enough cool water to cover the vegetables. If greens have insects, add 1 tablespoon of salt per gallon of water. Wash the vegetables by lifting in an up-and-down motion. Since some minerals and vitamins in fresh vegetables are water soluble they should not be left in the water for more than six to seven minutes. Use a vegetable brush to clean celery, carrots and potatoes when they are not peeled. Also, use disinfectant on vegetables purchased in oversea areas where unapproved fertilizers are used. To use the disinfectant, follow the instructions on the disinfectant container.

PREPARING

13-8. Vegetables are prepared for serving by simply washing, peeling or cutting. Vegetables can be peeled manually or with a mechanical vegetable peeler.

CUTTING

13-9. Recipe directions may call for vegetables to be sliced, diced, cubed, chopped, minced, shredded or cut in some other manner before serving or cooking.

PRESERVING

13-10. Do not use sulfating agents to preserve food. Refrigerate vegetables until cooked or served.

FROZEN VEGETABLES

13-11. A variety of frozen vegetables are available year-round. The vegetables come ready to cook. No time is required for cleaning, peeling or other preparation. Frozen vegetables are perishable. Keep them frozen until cooking time except for leafy green vegetables and corn on the cob. Let these vegetables thaw partially so the outside will not overcook before the inside defrosts. Usually, they are boiled or steamed.

CANNED VEGETABLES

13-12. Commercially canned vegetables are harvested at the peak of their maturity and are processed within a few hours of harvesting. The vegetables are high quality; therefore, with proper heating and seasoning, they are highly acceptable. Since canned vegetables require no further cooking, they should be heated only to the proper serving temperature. Prepare them in small batches to keep them from breaking up and becoming discolored.

VEGETABLE COOKING METHODS

13-13. During cooking care must be taken to preserve the color, texture and nutritional value of vegetables. They should be cooked only until tender, at which point nutritional value, flavor and appearance are maximized. Cook them in small batches as close to serving time as possible. Stagger the starting time of each batch to maintain a continuous cooking operation up to and throughout the serving period. Use various seasonings as directed in the recipe.

BOILING AND SIMMERING

13-14. Both boiling and simmering are methods commonly used to cook vegetables. The amount of liquid needed and the approximate cooking time are also given. If cooked vegetables must be held for any length of time, they should be refrigerated. Liquids from cooked vegetables should be used in soups, sauces or gravies for added flavor and to prevent loss of nutrients from the vegetables. Additional hints for cooking vegetables include the following:

- Green vegetables can be cooked covered or uncovered. Follow the cooking times in the appropriate recipe.
- Yellow vegetables such as squash, wax beans and corn should be covered. This reduces the cooking time and reduces the loss of nutritional value and color in the vegetables.
- White vegetables should be cooked covered or uncovered as required by the recipe. Overcooking may cause them to turn a grayish or brownish color.
- Add frozen vegetables to boiling, salted water. Start the cooking time when the water comes to a boil the second time. Break up solid blocks of vegetables by tapping the package lightly before opening. This will shorten defrosting time in the water. Follow the guidelines on the package or in the recipe for the cooking time and the amount of water to use. Do not overcook.

BAKING

13-15. Baking vegetables in their skins preserves their flavor and nutrients. Do not overbake as this destroys nutrients and flavor. Proper peeling of vegetables also helps reduce the loss of nutrients. White potatoes, sweet potatoes and tomatoes are particularly adaptable to baking. Potatoes should be scrubbed thoroughly, dried and pricked with a fork before baking.

PANFRYING OR SAUTÉING

13-16. Panfrying or sautéing is recommended for cooking juicy vegetables, particularly those that are shredded. Place them in a covered pan with a small amount of oil. This way they will cook more or less in the steam from their own juices. Serve the liquid with the vegetables so that any minerals and vitamins are consumed with the vegetables. You may panfry or sauté vegetables such as cabbage, corn, onions, mushrooms, squash, tomatoes and white potatoes on top of the range. Do not overcook or cook at too high a temperature or you will destroy vitamins and lose minerals.

STEAMING

13-17. When vegetables are cooked under pressure in a steamer there is minimal loss of minerals or vitamins. Another advantage of steaming is that the vegetables keep their original shape. Steam them only until they are slightly undercooked. The remaining heat in the vegetables will complete the cooking.

DEEP-FAT FRYING

13-18. Potatoes and coated or battered vegetables are often deep-fat fried. These items may be fried without first partially cooking them. Some recipes, such as rissole potatoes, call for browning the vegetable in oil and then placing them in the oven to finish cooking.

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Chapter 14
Soups, Sauces, and Gravies

GENERAL

Soups, sauces, and gravies accompany and complement the main menu items for the meal they are served with. Each begins with a stock, which may or may not be thickened.

STOCKS

14-1. Stocks form the base for soups, sauces, and gravies. Stocks may be made from scratch or purchased already prepared. A scratch stock can be made by simmering beef, pork, veal, or poultry and vegetables in water. Various prepared soup and gravy bases may also be used to prepare a stock. While freshly prepared stocks are highly perishable and must be refrigerated, commercially prepared soup and gravy bases are more shelf stable. General procedures for preparation and use of in-house prepared stock are described in the following paragraphs.

MAKING STOCK

14-2. Proper preparation and use of stocks is vital to a quality product. Simmer beef, ham, or veal trimmings; chicken or turkey bones; or vegetables with seasonings added to make stock. Cooking times will vary according to the ingredients used. Strain the stock, cool it as quickly as possible, and remove the surface layer of hardened fat before you use the stock.

USING STOCK

14-3. Stock that has been seasoned and thickened with cornstarch produces a sauce. Stock that has been thickened with a cooked oil and flour mixture called a roux produces gravy. Juices or pan drippings from meats are often used in gravy preparation. It is imperative that the right stock be used for a particular soup, gravy or sauce. For example, a poultry stock would produce the best chicken or turkey rice soup, while a stock produced from ham would produce the best base for bean soup.

SOUP

14-4. Soup provides nourishment and stimulates the appetite. There are soups that should be served hot and others that should be served cold. Soups may be made from scratch or purchased in dehydrated, frozen or condensed forms. Dehydrated, frozen and condensed soups are normally quick and easy to prepare. They should be prepared according to the manufacturer's instructions for best results. Some specific types of soup are described in the following paragraphs.

MEAT AND VEGETABLE SOUPS

14-5. These soups are normally composed of a natural stock with or without a very limited quantity of a thickening agent to provide a base.

BEAN AND POTATO SOUPS

14-6. These soups are normally self-thickened by the main ingredient (bean or potato).

CREAM SOUPS

14-7. These are normally thickened with a flour and milk mixture. These soups require special handling as overheating or improper mixing procedures can cause curdling. When making a cream soup, add the milk just before serving. Heat the soup only to serving temperature. Do not let the mixture boil. Boiling causes the milk to curdle. When making cream of tomato soup, add the tomato mixture to the milk base to prevent curdling.

GRAVIES

14-8. Gravy is an important part of meat and poultry dishes. It brings out the flavor of the meat and provides many nutrients from the meat drippings and stock that make up its base. Good gravy has the characteristic flavor of the meat with which it is served. Serve gravy hot. Never keep gravy as a leftover.

ROUX

14-9. The recommended thickening agent for gravies is a roux. The type of gravy you are making will determine how long the roux is cooked. The roux gets darker in color the longer it is cooked. Chicken or turkey gravy roux is cooked approximately two minutes, cream gravy roux is cooked approximately five minutes and brown gravy roux is cooked approximately thirty minutes.

GRAVY WITH BRAISED OR STEWED MEAT

14-10. If the braised or stewed meat was dredged in flour before it was browned, you will need little or no thickening in the gravy.

BROWN GRAVY

14-11. Make brown gravy from the drippings left from roasted meat following the steps in the recipe. There are many variations of the basic recipe for brown gravy. For example, to make onion gravy, add sliced onions to the brown particles and fat, and cook the mixture slightly before adding the flour. Make cream gravy by substituting warmed, reconstituted nonfat dry milk for the stock which is usually added to the drippings. Make tomato gravy by substituting hot tomato juice for part of the stock.

PAN GRAVY (AU JUS)

14-12. Make pan gravy from drippings left from roasted or fried meat. Add hot water to the drippings. Scrape the browned particles from the sides and bottom of the pan. Heat and stir the gravy until the particles are dissolved. Season the gravy as necessary, but do not thicken the liquid.

SAUCES

14-13. Sauces are served as components of meat dishes, as meat accompaniments, and with vegetables and desserts. Sauces are used mainly to bring out the flavor and to improve the appearance of foods. Often they add nutritive value. As a rule, the color, flavor and consistency of the sauce should contrast with the food with which it is served.

WHITE SAUCE

14-14. White sauce has many uses. Its consistency may be thin, medium or thick depending on the amount of flour you use in proportion to the other ingredients. Use medium white sauce in creamed dishes and casseroles and as a base for cheese sauce and egg sauce. Use thick white sauce with croquettes. Because white sauce is perishable, make it close to serving time. Discard leftover white sauce or leftover dishes containing white sauce because they are considered a PHF.

Chapter 15
Fruits and Salads

GENERAL

Fruits and vegetables provide a balance of nutrients in our diet and should be a part of each meal. Fruits and vegetables are vitamin-rich, high in fiber, low in calories and they add color to the meal. Salad bars are an excellent way to provide a wide variety of fresh or canned fruits and vegetables and permit diners to select those that they desire.

FRUITS

15-1. Fruits are a large part of the breakfast and salad bars. When certain fresh fruits are out of season, canned or frozen fruits can be served for variety. Water-packed or unsweetened fruits should be offered when possible.

FRESH FRUIT

15-2. Fresh fruit is normally served whole or processed into a dessert.

CANNED FRUIT

15-3. Canned fruit can be served just as it comes from the can or used as a component of a dessert. When used as a dessert, chill for several hours or overnight before serving them. Open cans as needed and place the fruits in individual dishes or serving pans.

SALAD FRUITS

15-4. You can use canned, frozen, dried and fresh fruits in salads. Most fruit can be used peeled or unpeeled. Follow the procedures in the following paragraphs for using canned, frozen, dried and fresh fruits.

CANNED AND FROZEN

15-5. Canned and frozen fruits should be drained before use. Use the fruit and liquid as specified in the recipe.

DRIED

15-6. Wash and drain raisins, prunes and other dried fruits thoroughly. Prepare them according to the recipe.

FRESH

15-7. Fresh fruits should be ripe, firm and unblemished. The fruit, except bananas, should be washed, drained thoroughly and chilled before use.

Apples and Bananas

15-8. Cut apples and bananas into bite-size pieces or slices or as specified in the recipe. Follow the recipe carefully and keep the fruit from becoming discolored by using a natural antioxidant, such as lemon juice, as detailed in the applicable recipe.

Citrus Fruit

15-9. Oranges and grapefruit can be peeled more easily if placed in hot water for a few minutes. Use a sharp knife to cut through the rind vertically in several places, and then pull off the rind a few sections at a time. The fruit should then be sliced or diced according to the specific recipe.

GELATIN FRUIT SALADS

15-10. Gelatin salads are eye-catchers for almost any meal and are easy to prepare. Follow recipe directions for dissolving the gelatin. Add fruit (except fresh pineapple) when the gelatin has thickened slightly. Fresh pineapple contains a chemical substance that inhibits jelling. If ingredients are added before the gelatin has partially thickened, some of the ingredients will settle to the bottom. Gelatin salads can be molded in muffin tins and turned out as individual servings. To free the salad, dip the bottoms of the muffin tins in hot water (150 to 160 degrees Fahrenheit) for about one minute. If muffin tins are not available, mold the salad in flat pans and cut them into individual servings.

SALADS

15-11. Salads increase the variety, acceptability and nutritional content of the meal. Salads and salad bars should be offered in the dining facility as an accompaniment to the main course. Some general rules for preparing salads are—

- Make salads simple, but orderly and neat.
- If the recipe calls for ingredients to be sliced, make the slices thin and even. If the recipe calls for the ingredients to be cut in wedges or chunks, cut all the pieces the same size.
- Do not mince the principal ingredients. Dice or chop them into pieces approximately one-fourth of an inch long to give texture to the salad.
- Use highly flavored foods such as green peppers and onions sparingly. The strong flavors tend to overpower the more delicate flavors of the other ingredients.
- Store and chill salad ingredients in covered containers.
- Have the dressing compliment the salad, both in type and flavor. Use a rich dressing for a light salad and a light dressing for a heavy salad. Coleslaw may have either a light or heavy dressing, depending on how it best compliments the rest of the menu.
- Avoid over garnishing.

15-12. See that the foods in salads contrast in color, shape, texture and flavor. Consider flavor and color combinations from the standpoint of palatability and attractive appearance. For example, the color of tomatoes does not combine attractively with the color of beets. A cherry gelatin salad served on fresh lettuce is an example of an attractive food contrasting in color, shape, texture and flavor.

SALAD VEGETABLES

15-13. Both raw and cooked vegetables can be used in salads. Cooked or canned vegetables are normally drained according to the recipe. Some suggestions for preparing commonly used raw vegetables are given in the following paragraphs.

GREENS, LETTUCE AND CABBAGE

15-14. These items should be culled, washed gently but thoroughly. Place them in ice water, if wilted, to help restore crispness. Items should then be drained, torn or cut into bite size pieces according to the specific recipe.

CELERY

15-15. Stalks should be separated and washed thoroughly. There is a tendency to trim excessive portions of the stalks and discard them. In most cases only the root portion should be discarded. The leafy portion can be used in tossed salads or for soup stock. The main stalk is then cut or diced in accordance with the intended use. For example, stuffed celery would be cut approximately 2 to 3 inches long using the full width, while celery sticks would be in 2-inch-long strips.

CUCUMBERS

15-16. The cucumber can be served with or without the peeling. Cucumber slices for tossed salad, for a relish tray or cucumber salad would normally be served pared. Cucumber sticks would normally be peeled first.

CARROTS

15-17. Carrots should be washed thoroughly and peeled. They can also be used raw or cooked depending on the type salad being prepared.

ONIONS

15-18. Dry onions are always peeled and sliced, diced, chopped or minced according to the specific recipe being used. Whole rings are used primarily as garnish or for use on hamburgers. Green onions are diced for salads and served whole for relish trays.

PEPPERS

15-19. Peppers (Green, Red, Yellow and Orange) can be served in slices for relish trays or diced for salads. In all cases the stem and seeds are removed and the item washed prior to processing.

RADISHES AND TOMATOES

15-20. These items are washed and sliced, diced, chopped or wedged depending on whether they will be used in a salad or as a relish tray.

COMBINING INGREDIENTS

15-21. How you combine salad ingredients will determine whether the end result is an appealing fresh-looking salad or not. To combine salad ingredients, you should—

- Handle the ingredients carefully. Over handling results in an unattractive salad.
- Mix or toss the salad lightly to avoid crushing or mashing the ingredients.
- Use a fork and spoon to toss the salad. Use a container large enough to toss the salad without crushing it or spilling it.
- Use a basting spoon for blending soft ingredients such as fruit pieces and cottage cheese or potato salad.
- Mix the ingredients as close to serving time as possible.
- Use fresh, crisp lettuce leaves as a base for individual salads.
- Use an ice-cream scoop to transfer cottage cheese and other soft salads to the salad bowls.
- Arrange fruit sections neatly.
- Use a food-turner or pie- and cake-server to place gelatin salad on the salad plate.
- Arrange garnishes neatly. Never try to rearrange a salad.

SALAD DRESSINGS

15-22. Salad dressing is an indispensable compliment to a salad. It adds flavor, color and nutrients. Serve dressings suitable in flavor and consistence. Give the diner a choice of many different varieties of dressings. Always include low-calorie, low-fat dressings for fresh salads. When preparing French dressing, use a wire whip to beat the combined ingredients. Store the dressing in a covered container and heat or shake well before serving. The appearance of the salad dressing is just as important as the appearance of any other item on the serving line. The dressing must look fresh and appetizing and should be served in compressible dispensers, closed dispensers or individual packages. Identify each dressing so that diners can make a choice. Ensure dispensers are checked, refilled and cleaned often during the serving period.

SALAD BARS

15-23. Salad bars provide an excellent method to merchandise fresh fruits and vegetables and permit diners to build their own salad. Salad bars must be properly set up and maintained throughout the meal serving period. Do not overstock fresh items on the bar. Use small serving pans and replenish the items often. Do not forget salads such as potato, macaroni and so forth. Sort, trim, core, stem, separate and wash salad bar ingredients. Discard damaged or decayed items. Besides fruits and vegetables discussed earlier, green onions, jalapenos, croutons, legumes, bacon bits, mushrooms, olives, grated cheeses, chopped eggs and many other items may be included to add variety and enhance the salad bar.

Chapter 16

Short-Order and Box Meals

GENERAL

The short-order meal is popular and many diners prefer a short-order meal rather than a mainline entrée. The short-order meal is served with the regular lunch or dinner meal to give the diner another choice. Box meals are primarily used to feed diners who must be away from the dining facility during the scheduled meal period.

SHORT-ORDER MENU

16-1. The short-order meal consists of grilled sandwiches, deli bar, hot short-order entrees, starches, vegetables, accompaniments and condiments. Short-order menu items are discussed in the following paragraphs.

GRILLED SANDWICHES

16-2. Grilled sandwiches include hamburgers, cheeseburgers, grilled ham and cheese, grilled cheese, frankfurters, bratwurst, knockwurst, polish sausage, steak subs, Reuben, etc. just to name a few. Grilled sandwich items should be prepared at a rate that is about the same as the customer flow. Since preparing and serving short-order items require speed and dexterity, food service personnel may need training. Never speed up service by making up plates of food and placing them on the serving line in advance.

DELI BAR

16-3. The deli bar consists of sandwich filling choices such as tuna, chicken, ham or egg salad; deli meat choices such as ham, turkey and roast beef; sliced cheese choices; and bread choices. Planning considerations for the deli bar include—

- The deli bar should not be self-service. Deli meats and sliced cheeses are costly and when offered for self-service, diners have a tendency to make an excessive portion or take a sandwich in addition to another main entrée.
- For self-service deli bars, place small amounts of meat and cheese out initially and replenish often. This will cut down on food waste since all self-service food items must be discarded at the end of the serving period.
- Include other variations of sandwiches such as wraps. Tortilla wraps come in different varieties other than flour including jalapeno, tomato basil and whole wheat.

16-4. Sandwiches can be made-to-order or pre-prepared. Made-to-order sandwiches are those prepared for an individual customer for immediate consumption and will not be retained. All sandwiches not made to order are considered pre-prepared sandwiches. Remember the following about made-to-order and pre-prepared sandwiches:

- Pre-prepared sandwiches must be individually wrapped.
- All pre-prepared sandwiches should be individually labeled with the production date and time using a 24-hour system.
- Leftovers shall not be used in the preparation of pre-prepared sandwiches.
- Pre-prepared sandwiches must not be reworked, rewrapped, remarked, relabeled or otherwise treated to extend their shelf life.

HOT SHORT-ORDER ENTREES

16-5. Hot short-order entrees should be served in addition to grilled sandwiches and the deli bar. Entrees may include other hot sandwiches such as the Sloppy Joe, Cannon Ball, and Fishwich or other popular short-order entrees such as pizza, chicken wings, corn dogs and chicken nuggets/fillets.

STARCHES

16-6. Starches may be served hot or cold and may include French fries, onion rings, baked macaroni and cheese, baked beans and assorted individual packaged chips.

VEGETABLES

16-7. Vegetables that are offered for service to the customer on the main line should be made available on the short order line for those customers that want short order and would like to have a choice of vegetables with their meal.

ACCOMPANIMENTS

16-8. Accompaniments are commonly referred to as the relish tray and include toppings for sandwiches such as lettuce leaves, sliced tomatoes, sliced onions and pickles.

CONDIMENTS

16-9. Condiments should complement the short-order menu items being served. Condiments should be located in a central self-service area which is generally near or at the salad bar area. Based upon the menu items being served, short-order condiments may include ketchup, mustard, mayonnaise, relish, tartar sauce and dipping sauces.

BOX MEALS

16-10. Box meals may be prepared by dining facility personnel in-house or purchased commercially-prepared. The box meal is to be used as a travel ration or for short duration field training events such as a rifle or chemical, biological, radiological and nuclear (CBRN) range. The box meal is not intended to be used as a substitute for an operational ration meal during field feeding. The dining facility account gets monetary credit for box meals prepared in-house but does not for commercial box meals.

16-11. The DFM must issue box meals according to food safety time and temperature requirements if the box meal contains PHFs. For instance, box meals containing PHFs cannot be issued to the unit at 0700 if the unit intends to eat the box meal for the lunch meal and does not have adequate refrigeration to store the box meals until the lunch meal. Issuing the box meal much closer to the lunch meal period or using a commercial shelf-stable box meal would be more appropriate in this instance.

IN-HOUSE BOX MEALS

16-12. When planning in-house box meals, the DFM should plan the box meal menu components based upon the meal BDFA that the box meal will replace. Each box meal should have an entrée item such as a sandwich or fried chicken; side items such as potato chips, boiled eggs or fresh fruit; accompaniments such as sliced tomato, onion, lettuce or vegetable sticks; condiments such as salt, pepper, mustard and mayonnaise packets; and a fruit juice or soda drink. Do not forget to also include dining utensils and a napkin.

16-13. When you are preparing 10 or more sandwiches for box meals, use an assembly-line technique to reduce preparation time and produce uniform quality in the finished product. Sliced bread dries out quickly. Therefore, do not make more than 10 sandwiches at a time. Do not make sandwich fillings for box meals from foods mixed or spread with salad dressing, ground meat, chopped or sliced eggs, seafood or any item that is potentially hazardous. Filling for sandwiches in box meals is limited to sliced, cooked or preserved meats and poultry; cheeses; jams or jellies; and peanut butter.

COMMERCIAL BOX MEALS

16-14. Commercial box meals may contain fresh or shelf-stable products. Commercial box meals containing fresh products may arrive at the dining facility either refrigerated or frozen. Frozen box meals should be placed in refrigeration in advance of unit pick-up to ensure all components of the box meal are adequately thawed prior to issue. Shelf-stable box meals do not need to be stored under refrigeration.

16-15. Commercial box meals must be reviewed for fiscal and nutritional adequacy and approved by the JCCoE Quality Assurance Division prior to use. Approved commercial box meals are added to a master listing contained on the JCCoE website and loaded into the AFMIS decision support system for installation use.

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Chapter 17
Desserts and Baked Goods

GENERAL

Desserts should be served with each meal. Desserts are sometimes classified as heavy or light. They can be served hot or cold. The standard is to offer a variety of choices to the diner at each meal. Baked products provide a wide range of items to increase customer satisfaction and contribute to well-balanced meals. Section I of this chapter provides an overview of some common desserts served in the dining facility. Section II of this chapter discusses the preparation of pies, cakes, cookies, quick breads and yeast-raised products. Although most pastries are available for purchase pre-prepared, the DFM should schedule an adequate amount of scratch baking into the menu cycle so food service specialists can maintain their baking skills and the DFM can balance the dining facility account. Purchasing pre-prepared pastries are generally more expensive than products prepared from scratch.

SECTION I — DESSERTS

ICE CREAM

17-1. Current equipment authorizations and support from commercial vendors provides the DFM a wide variety of choices to satisfy diner desires. Home-made ice cream is not permitted, because the raw eggs used as an ingredient may contain harmful bacteria. Choices include soft serve and specialty ice creams.

SOFT SERVE

17-2. Soft serve ice cream comes in several flavors, such as vanilla, chocolate and strawberry and low fat options. If you have the equipment available, you can offer milk shakes. Another highly accepted option is yogurt. It comes in many flavors. In addition, the soft serve products can be enhanced with various toppings (for example, chocolate, strawberry, cherry, butterscotch, caramel, coconut, nuts or sprinkles).

SPECIALTY ICE CREAMS

17-3. There is a wider variety of specialty (hard) ice creams. There are many flavors in individual serving cups, on sticks and in cones. They must be kept frozen and removed from the freezer a few servings at a time. Ice cream freezers may be located so that the diner can remove the product themselves.

SHORTCAKES

17-4. Peach, strawberry and raspberry shortcakes are made using shortcake biscuits or cake, fresh or frozen fruit and dessert topping. Thaw frozen fruit unopened in the refrigerator. Place the biscuits or cake and fruit and topping in separate containers. When possible make individual shortcakes as they are needed.

PUDDINGS

17-5. Use individual pudding cups or make butterscotch, chocolate and vanilla puddings from dessert powders and nonfat dry milk. After making bulk pudding, pour it into serving pans and refrigerate it until serving time. Close to serving time, spoon the pudding into individual dishes and place the dishes on the cold-food counter. Serve puddings, such as rice pudding or pudding cakes, hot or cold in individual serving dishes.

DESSERT SAUCES AND TOPPINGS

17-6. You may serve dessert sauces with puddings, non-frosted cakes or ice cream. Sauces include butterscotch, chocolate, lemon, orange, vanilla and pineapple. Close to serving time, spoon the sauce over the desserts which are served in individual dishes. You can also use dessert topping. When using dehydrated powdered dessert topping reconstitute it following the directions on the package. Then cover the topping and refrigerate it until you are ready to use it.

CRISPS AND CRUNCHES

17-7. Make crisps and crunches by arranging sliced fruits, such as apples, apricots, cherries, peaches or pineapples on sheet pans. Sprinkle dry ingredients on the fruit to form a topping. Bake crisps and crunches until the topping is golden brown and the fruit is tender. Serve them either warm or chilled. You may also serve them with ice cream.

SECTION II — BAKED GOODS

PRODUCTION SCHEDULING

17-8. The schedule for production of baked goods depends on the availability of personnel, ovens and preparation space. Schedule baking during the morning or afternoon cooking shifts if there is enough ovens and space. Cakes and pies can be baked in the same ovens in which roasts are being cooked. This saves time and energy. Ovens are also less full during the serving of the meal. As a last resort, schedule baking at night. Detail one or more cooks as night bakers, and let them prepare baked goods when the kitchen is not busy.

RECIPE CONVERSION

17-9. Army recipes are designed to make 100 portions. Normally, you will not be baking for exactly 100 persons and you will have to adjust ingredient amounts. TM 10-412 explains how to convert recipes that list ingredients by weight. To convert recipes that list ingredients by true percentage, perform the following steps:

- Determine the number of portions required.
- Figure the weight per portion. Do this by dividing the total weight of the dough or batter in the recipe by 100.
- Multiply the weight per portion by the number of portions required. The result is the amount of batter you need.
- Determine the amount of each ingredient needed. Multiply the amount of dough or batter needed by the ingredient percentage of each ingredient.
- Check your work. Add the weights of all the ingredients together.

PIES

17-10. The preparation of pies is discussed in the following paragraphs. It describes the crust, wash, filling and meringue.

PIE CRUST PREPARATION

17-11. You can mix pie dough by hand or by machine. First blend the dry ingredients with the shortening. As the shortening is divided and coated with flour, it forms lumps. The lumps become smaller as blending continues. For a flaky crust, blend ingredients until lumps are between ½- and ¼-inch wide. Half-inch lumps make a crust with a long flake while ¼-inch lumps make a short-flake crust. The recipe for pie dough in TM 10-412 produces a crust with a very short flake. For a mealy crust, use either oil or hydrogenated shortening. Blend until the mixture forms into small crumbs. Table 17-1 shows how to produce different crust textures.

Table 17-1. Types of pie crust

Type	*Method of Combining Dry Ingredients with Shortening*	*Amount of Water to Use (Percentage of flour weight)*
Long flake	Mix until particles are ½-inch in diameter.	42
Short flake	Mix until particles are ¼-inch in diameter.	36
Mealy	Mix thoroughly.	28

17-12. After dry ingredients and shortening have been blended, add cold water and mix. More water is used for a flaky crust than for a mealy crust. The water should be added slowly and in increments as the recipe does not always require all of the water listed in the recipe to reach the desired consistency.

17-13. Roll the dough into cylinders and keep the dough cylinders in the refrigerator for at least one hour. Then divide the dough. Pie tins vary in size, so you may have to experiment to find out what size pieces to use. Generally, top crusts require 6 to 8 ounces of dough, and bottom crusts require 7 to 9 ounces. Shape each piece into a ball and roll out crusts using a lightweight rolling pin. Dough that is overworked becomes tough. Figure 17-1 shows how to roll pie crust.

PIE WASHES

17-14. A pie wash is a liquid brushed on the top of a two-crust pie to give it a golden brown color. The liquid may be water, milk, a starch solution or thin syrup. The wash may be applied either before baking or about 10 minutes before the pie is done. If you brush it on before baking, be sure to let it dry before you put the pie in the oven. Do not use too much wash or the crust may have a varnished appearance or soggy spots. The rim or outer crust should never be washed or it may look burnt.

PIE FILLINGS

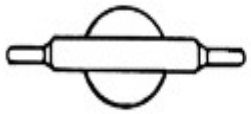
17-15. Two-crust and lattice-crust pies are usually filled with fruit which has been combined with water or juice, sugar and other ingredients. Starch is added to thicken the filling. TM 10-412 explains how to prepare fruit fillings using either pre-gelatinized (cold water) starch or cornstarch. Pre-gelatinized starch fillings are easier to make because they are mixed cold. Cornstarch fillings must be boiled.

17-16. One-crust pies may be filled with cream, chiffon, lemon, meringue, pecan, walnut, pumpkin, sweet potato or mincemeat fillings. You may use pudding mixes to make cream fillings and lemon filling for lemon meringue pie or you may make them from scratch with cornstarch as a thickener. Gelatin provides fruit flavor and thickening to chiffon fillings. Fillings which have been heated must be cooled before they are poured into the crust. You can make fillings ahead of time and refrigerate them until they are needed.

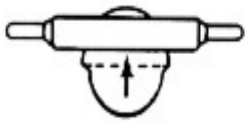
Meringue

17-17. You may use meringue with one-crust pies in prebaked pie shells. Meringue is made with egg whites or meringue powder as described in TM 10-412. Use the correct portions of egg whites and sugar and a bowl that is free of grease. Even a slight trace of grease can keep the egg whites from whipping properly. Do not underbeat or overbeat meringue. Beat it only until it stands in peaks. Then spread it evenly with the pie filling, covering it completely to the outer edge of the crust. Cover the filling and rim, or the meringue may pull away and shrink during baking.

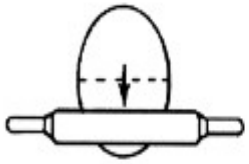
1. Put the rolling pin horizontally in the center of the shaped dough ball.



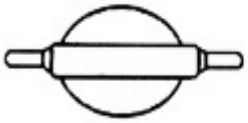
2. Roll away from the body to the edge of the dough. Lift the pin.



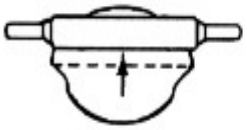
3. Put the rolling pin horizontally in the center of the dough. Roll towards the body to the edge of the crust. Lift the pin.



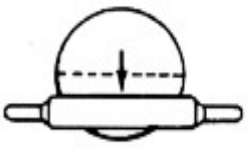
4. Turn the dough piece 90 degrees and put the rolling pin horizontally in the center of the dough.



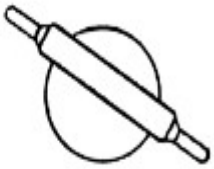
5. Roll away from the body to the edge of the dough. Lift the pin.



6. Put the rolling pin horizontally in the center of the dough. Roll towards the body to the edge of the dough. Lift the pin.



7. Without moving the dough piece, place the rolling pin diagonally in the center of the dough at a 45 degree angle.



8. Roll to the upper right to the edge of the dough. Lift the pin.



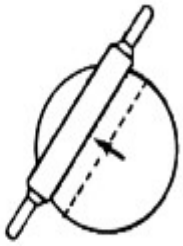
9. Put the rolling pin diagonally in the center of the dough at a 45 degree angle. Roll towards the lower left to the edge of the dough. Lift the pin.



10. Put the rolling pin diagonally in the center of the dough at a 45 degree angle.



11. Roll to the upper left away from the body to the edge of the dough. Lift the pin.



12. Put the rolling pin diagonally in the center of the dough. Roll to the lower right towards the body. Lift the pin. Measure for size, and place in the pan.

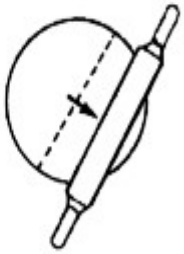


Figure 17-1. Procedures for rolling pie crust

PIE PREPARATION

17-18. Each type of pie or related pastry is prepared differently.

One-Crust Pies

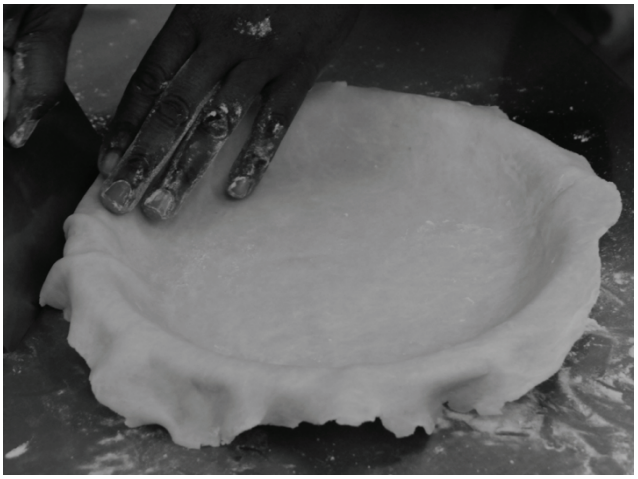
17-19. After you have made the pie crust, pan it and add the desired fillings, such as pecan, walnut, pumpkin, sweet potato or mincemeat to the unbaked pie shell. With these pies, you bake the filling and shell together. However, with cream, chiffon and lemon fillings, you dock and bake the shell before you add the filling.

Fruit Pies

17-20. Pan the bottom crust. Then pour the fruit filling into the unbaked shell. Dock the top crust, and place it over the filling. Bake crust and filling together. For a two-crust pie, the top crust is a solid layer of dough. For a lattice-crust pie, the top crust is formed by laying strips of dough across the filling in a criss-cross pattern. Figure 17-2 shows the process with a two-crust pie.



1. Fold the dough circle in half, pick up and place it on an ungreased pie pan.



2. Unfold the dough and fit it in the pan.

Figure 17-2. Procedures for panning a two-crust pie



3. Add the desired filling.



4. Brush the outer rim of the crust with water.

-



5. Fold the circle to be used for the top crust in half and then half again and dock it to allow steam to escape during baking.

Figure 17-2. Procedures for panning a two-crust pie (continued)



6. Place the folded top crust over the filling and unfold it.



7. Crimp the edges together and trim the excess crust.

Figure 17-2. Procedures for panning a two-crust pie (continued)

Cobblers

17-21. Bake a fruit filling between two large pieces of pie dough in a sheet pan. The process is the same as the two-crust pie except that the cobbler is made in a sheet pan.

Turnovers

17-22. Fold small squares of pie dough corner to corner over a fruit filling. Seal the edges, and bake the crust and filling together.

FAULTS

17-23. Table 17-2 lists common faults in pie crusts, describes possible causes and suggests solutions. Table 17-3 lists common faults for pie fillings.

Table 17-2. Faults in pie crust; causes and corrections

Fault	*Causes*	*Remarks*
Shrinks too much	Dough undermixed in first step, overmixed in final step, overworked or stretched.	If dough has been rolled properly and excessive shrinkage still occurs, check recipe, ingredient amounts and oven temperature.
Tough	Too much water, flour too strong, shortening too stiff or not enough shortening. Dough undermixed in first step, overmixed in final step or overworked.	
Not flaky	Shortening too soft. Flour and shortening rubbed too much during mixing.	Use chilled water and shortening for a firmer consistency; keep dough in a cool place until it is used.
Soggy	Too much shortening or wrong type of flour. Fruit filling too hot or too thin.	To seal crust and keep it from absorbing liquid from the filling, wash crusts with egg whites before baking. Make crusts a day ahead of use and store in a clean, well-ventilated room to dry out.
Sticks to pie tin	Filling boiled over. Pan new, wet or dirty.	Heat oven to proper temperature.
Pale	Not enough top heat in oven.	Improve color by adding up to 5% dry skim milk powder and about 3% sugar to formula. You may also use egg wash to add color.
Prebaked pie shell draws up		Dough overmixed or too lean, scrap dough used, or too much water.

Table 17-3. Faults in pie fillings; causes and corrections

Fault	*Causes*	*Remarks*
Fruit boils out	Filling too hot, slightly fermented or too much filling. Lack of holes in top crust.	Steam pressure may build up in a double-crust pie. If crust breaks open, filling may spill out.
Pumpkin pie cracked	Too many eggs, not enough liquid or pie overbaked.	
Pumpkin pie blistered	Pie overbaked or baked in oven that is too hot.	
Lemon or cream pie cracked	Filling cooked too long. Filling contains excess starch, too many eggs or too little butter or margarine.	
Filling off-flavored	Improper ingredients or excess starch.	Make sure flavoring is good quality. Add it in proper proportions.

Table 17-3. Faults in pie fillings; causes and corrections (continued)

Fault	*Causes*	*Remarks*
Filling broken	Filling cooled too slowly after cooking or not stirred often enough while cooking. Too much acid in fruit filling.	Add more starch and if possible, reduce acidity.
Flat or bland	Lacks salt or fruit acids.	Add citric or tartaric acid.
Poor color	Too much thickening.	Make sure fruit does not stand exposed to air because it may oxidize. A small amount of food coloring may be added.
Too thin	Too little starch or too few eggs. Filling undercooked.	
Too thick	Too much starch, too little sugar or not enough liquid. Filling overcooked.	
Meringue broken down	Egg whites whipped in container with oily surface. Too much moisture in egg whites.	Add small amount of cornstarch to egg whites to absorb excess moisture.

TYPES OF CAKES

17-24. Cake is a baked batter. It is made from flour, sugar, salt, leavening, shortening, milk, eggs and flavoring. TM 10-412 has recipes for two types of cakes—batter cakes and foam cakes.

BATTER CAKES

17-25. Batter cakes include chocolate cake, white cake, yellow cake, spice cake, fruitcake and gingerbread. These cakes contain shortening. They may be made with either general-purpose shortening or bakery emulsifier shortening. Make sure you use the type of shortening called for in the recipe. (Use general-purpose shortening unless the recipe requires otherwise.)

FOAM CAKES

17-26. Foam cakes, such as applesauce cake, are made without shortening. They contain less baking powder than batter cakes. They are leavened mainly by beating.

CAKE MIXES

17-27. Cake mixes for angel food, banana, cheese, devil's food, pound, white and yellow cakes and for gingerbread are available through the prime vendor. You can vary these mixes by adding other ingredients or by combining two mixes as suggested in TM 10-412.

CAKE FORMS

17-28. You may prepare cakes in different forms. Both batter and foam cakes may be prepared as sheet cakes, layer cakes or cupcakes. The sheet cake is a flat, one-layer cake which is baked in a sheet pan. The layer cake is made by stacking 9-inch layers, two sheet cakes, or one sheet cake cut in half, with frosting in between. Cupcakes are baked in a muffin tin which has been lined with paper cups for easy removal.

OTHER CAKES

17-29. Other forms of cake include upside-down cake, jelly roll and Boston cream pie. Upside-down cake is made from batter poured over fruit. When the cake is turned out of its pan, the fruit becomes the topping. Jelly roll is a thin layer of cake coated with jelly and rolled into a spiral. You can vary them by using chocolate or vanilla cream in place of jelly. Boston cream pie is a cake made from a split layer with a cream filling in the center and chocolate frosting or powdered sugar on top.

PREPARATION OF BATTER

17-30. When making batter from cake mix, follow the manufacturer's directions on the container. When making it from scratch, follow the recipe instructions. The temperature of ingredients is very important in batter preparation. Shortening should be workable, neither very cold nor warm enough to liquefy. In general, all ingredients should be at room temperature unless the recipe specifies otherwise. Water should be cool and eggs should be removed from the refrigerator 30 minutes before use. Weigh or measure all ingredients accurately. Follow the mixing procedure in the recipe. Do not overbeat or underbeat. Follow very closely the correct length of time for beating at each stage shown on the recipe card.

PREPARATION OF PANS

17-31. For most cakes, the cake pans must be greased before the batter is poured in. Each recipe tells how to prepare pans. If a cake is to be served from the pan, coat the pan with a cooking spray and light dusting of flour. If the cake is to be removed from the pan, coat the pan with grease and line it with paper.

PROCEDURES FOR PANNING BATTER

17-32. The recipe tells you what size cake pan to use and how much batter to pour into it. If you use a different size pan, you will have to use a different amount of batter. Pan batter as follows:

- Pour amount specified in recipe into the pan.
- Spread batter evenly with a spatula.
- Remove air bubbles by tapping pan lightly on a table or by cutting through batter with a knife.
- Place batter-filled pan into preheated oven immediately.

BAKING PROCEDURES

17-33. Preheat the oven for at least 10 minutes to ensure that it has reached the proper temperature. The recipe shows what temperature to use and how long the cake should be baked. Follow recipe instructions closely. Space the pans in the oven evenly to allow heat to circulate between them. Do not let pans touch each other or the sides of the oven. Do not jar the pans while the cakes are baking or they may fall. Baking time will vary, depending upon the temperature of the oven. There are two ways to find out if a cake is done. One is to touch the top of the cake near the center. If the cake springs back, it is done. The other is to insert a toothpick near the center. The cake is done if the toothpick comes out clean.

REMOVAL OF CAKES FROM PANS

17-34. Jelly rolls and upside-down cakes must be removed from the pans while they are still hot. Allow other kinds of cake to cool in the pans for 10 minutes before you turn them out. Place pans on racks to let air circulate freely around them, but keep them out of drafts. Layer cakes should be turned out onto paper dusted lightly with cornstarch or powdered sugar. Sheet cakes may be turned out or frosted in the pans. Turn them out onto an inverted pan covered with paper that has been dusted with cornstarch or powdered sugar. Allow cakes to cool thoroughly before frosting.

FROSTINGS

17-35. Frosting makes cakes look and taste better. It also makes them last longer by keeping moisture in. Choose one that will go well with the cake you have prepared. (For example, use mildly-flavored, fluffy frostings on light cakes such as sponge or angel food cakes.) Finished frosting should be smooth and thin

enough to spread easily. To color white frosting, add food coloring to a small amount of frosting. Then mix parts of the colored frosting with the plain frosting until you get the desired color. Do not use too much food coloring. Deeply colored frostings lack eye appeal.

FILLINGS

17-36. TM 10-412 tells how to make banana cream, chocolate cream, lemon cream, pineapple cream, and vanilla creams. You may make cream fillings from pudding mixes or from scratch. Bacteria grow rapidly in cream fillings, so you must either serve them immediately or keep them refrigerated. Table 17-4 shows safe keeping times for cream fillings at different temperatures.

Table 17-4. Safe keeping times for cream fillings

Internal Temperature	*Maximum Time Before Serving*
45 degrees	36 hours
40 degrees	5 days
0 degrees	45 days

FINISHING PROCEDURES

17-37. Different types of cakes may be finished in different ways. You may leave sheet cakes in a pan and frost them only on the top or finish them with a topping of nuts, coconut, chocolate chips or cherries. Frost the cake as soon as possible after it is cool.

CAKE FAULTS

17-38. Baking is as much an art as it is a science. Cakes and frostings are subject to numerous faults with even more numerous causes. Table 17-5 lists common faults in cakes along with their possible causes and suggested remedies. Table 17-6 lists frosting faults, causes, and remedies.

Table 17-5. Faults in cakes; causes and correction

Fault	*Causes*	*Remarks*
LAYER CAKE:		
Falls during baking	Too much leavening, sugar, or baking shortening, not enough eggs, too little water; or wrong type of flour. Batter overcreamed. Baking temperature too low or cake jarred while baking.	
Lacks volume	Not enough leaving or leavening of poor quality. Ingredients faulty. Batter too stiff, too soft, or too warm; or too little batter for the size of pan.	Do not use strong flour (bread flour). Use hydrogenated shortening. Do not add eggs to batter when they are too cold.
Crust too thick	Too much sugar or flour too strong. Cake over baked oven temperature too high or too low. Baking pan too deep.	
Too tender	Too much shortening, sugar or leaving; flour too weak; or too few eggs. Batter not mixed well enough.	

Table 17-5. Faults in cakes; causes and correction (continued)

Fault	*Causes*	*Remarks*
Tough	Too little sugar or shortening, flour too strong, or too many eggs. Eggs overbeaten. Batter overbeaten or underbeaten.	
Cracks on top	Too little leavening, shortening, or sugar. Batter too stiff. Batter overbeaten. Oven temperature too high.	
Crust too dark	Too much sugar. Cake overbaked or oven too hot.	
Coarse grain	Too much sugar or leavening; or wrong type of leaving, flour or shortening. Ingredients improperly mixed.	Avoid overmixing or undermixing. Use speed indicated on recipe. Ingredients should be at room temperature when mixed.
Uneven holes or tunnels	Oven temperature too low. Too much or too little sugar, or wrong type shortening, flour too strong or too many eggs. Ingredients improperly mixed.	
Excessive shrinkage	Too much leavening, wrong type shortening or flour. Batter overmixed. Formula too lean. Pan greased too much or too little batter in pan. Cake baked improperly.	Add more sugar or shortening. Do not over bake. Do not use oven that is too hot or too cold.
Spots on top crust	Sugar too coarse. Ingredients mixed improperly. Too much steam in oven.	Make sure that sugar is dissolved.
Develops mold	Utensils or storage area not sanitary, or personnel not clean. Too many moisture retaining ingredients used. Cake underbaked.	
Off-colored (white cake)	Oven too cool.	Do not allow cake to bake too slowly. Add a small amount of cream of tartar to improve color.

Table 17-5. Faults in cakes; causes and correction (continued)

Fault	*Causes*	*Remarks*
Poor flavor	Poor quality ingredients. Ingredients used in incorrect proportions. Pan dirty or pan grease rancid.	Use flour, eggs, shortening and flavoring as called for in formula.
Crust peels off	Too much shortening or sugar, flour too weak. Cake cooled improperly.	Allow cake to cool slowly in place that is free of drafts.
Hollow spots on bottom	Egg content too high. Batter too stiff. Pans damp or overgreased. Too much bottom heat.	Decrease eggs or increase milk and leavening. Use enough liquid to allow batter to flow properly. If air pockets form under paper liner, use perforated liner. When making sheet cake, use double pan. When making layer cake, put layer pans in sheet pan. Increase sugar and shorting.
Center peaks	Formula too lean or too many eggs. Batter overmixed. Oven too hot.	Use fewer eggs or more milk and leavening.
Crust pale	Sugar too course or not enough sugar used. Wrong type of shortening or too little leavening. Batter mixed improperly. No enough batter in pan. Cake underbaked.	
Unevenly baked	Batter improperly mixed. Pan dented or uneven. Too much batter in pan or batter not spread evenly. Oven faulty.	

Table 17-5. Faults in cakes; causes and correction (continued)

Fault	*Causes*	*Remarks*
POUND CAKE:		
Lacks volume	Too little leavening or too many moisture retaining ingredients. Wrong type of shortening. Batter too stiff, too soft, or too warm. Eggs too cold. Sugar and shortening improperly creamed. Not enough batter for size of pan. Oven too hot.	If cocoa or chocolate is added, formula may have to be adjusted. Use hydrogenated shortening. Let eggs reach room temperature before beating. Cream thoroughly; use bowl of proper size and use speed indicated in recipe. Too much heat causes the cake structure to form before the leavening has time to produce desired volume.
Sugary top	Too much sugar or not enough moisture for amount of sugar used. Too little in formula. Sugar too coarse. Too much time between mixing and baking. Steam in oven.	Dissolve sugar completely. Crust will form on top of batter if it is allowed to stand exposed to air.
Falls during baking	Too much sugar, shortening or leavening; or not enough eggs. Batter overcreamed. Cake jarred during baking. Oven temperature too low.	
Crust too thick	Too much sugar. Too much batter in pan. Baking pan not lined. Overbaked or oven temperature incorrect.	
Tough	Not enough sugar or shortening or too many eggs. Batter overmixed or ingredients not blended properly.	When cocoa or chocolate is used, formula may have to adjusted.
Crust too dark	Too much sugar, cake overbaked or oven too hot.	

Table 17-5. Faults in cakes; causes and correction (continued)

Fault	*Causes*	*Remarks*
Uneven holes or tunnels	Too much or too little sugar or too many eggs. Tough chalazas in eggs. Batter blended or mixed improperly.	Use frozen eggs. Follow recipe carefully. Have ingredients at proper temperature for creaming. Avoid overmixing, undermixing or mixing at high speed. Remove any lumps of sugar or shortening that stick to bowl bottom or creaming arms and blend lumps into batter. Do not allow batter to become stiff.
Too tender	Not enough eggs or too much sugar, shortening or leavening.	
Cracks on top	Not enough leavening, sugar or shortening; too many eggs; or failure to adjust formula when cocoa or chocolate was added. Fruit not soaked properly. Batter overmixed. Batter too stiff. Batter scaled improperly. Oven too hot or too much top or bottom heat.	If raisins or other fruit are added, soak them as specified in recipe.
Open grain	Too little liquid in batter, too much inert syrup, too many eggs, not enough leavening or formula not adjusted when cocoa or chocolate was used. Leavening old. Batter too stiff. Batter undermixed.	
Excessive shrinkage	Too much leavening or moisture. Batter overcreamed or overmixed, or eggs overbeaten. Pan greased too heavily or not enough batter in pan. Cake overbaked or underbaked or temperature too low. Cake cooled improperly.	
Spots on top crust	Sugar too coarse or not completely dissolved. Flash heat or too much steam in oven.	
Develops mold	Cake handled carelessly or stored improperly. Dirty utensils used.	

Table 17-5. Faults in cakes; causes and correction (continued)

Fault	*Causes*	*Remarks*
Off-colored (white or yellow cake)	Too much leavening. Low acidity. Fruit not mixed well with other ingredients. Oven too cool. Batter too warm.	Increase acidity; add cream of tartar to mix.
Poor flavor	Too much flavoring or leavening or not enough salt. Pan dirty or pan grease rancid. Cake overbaked. Cake cooled or stored improperly.	
Hollow spot on bottom	Egg content too high. Batter too stiff. Baking pan not properly prepared.	Add moisture. Dry pan before using. Place liner in pan so that no air pockets form under the batter. Use perforated liners. Do not use too much pan grease.
Center peaks	Formula too lean or egg content too high. Batter overmixed. Batter scaled improperly. Oven too hot.	Use fewer eggs or increase milk and leavening.
Poor texture	Too much leavening, sugar, shortening, acid or soda. Eggs not handled properly. Wrong type of shortening. Batter creamed improperly. Mixing speed too high. Cake overbaked, underbaked or jarred while baking.	Avoid over beating or under beating. For best results, use hydrogenated shortening at a temperature of 70°F to 75°F. Use bowl of proper size for amount of ingredients being creamed. Adjust machine so that creaming arm reaches bottom of bowl. Scrape creaming arm down so that no lumps of shortening remain.
Crust peels off	Too much shortening or sugar. Too much top heat or too much steam in oven. Cake cooled improperly.	
Crust pale	Low sugar or leavening content or too much flour. Wrong type of shortening or sugar used. Batter mixed improperly. Oven too cool.	Use hydrogenated shortening and fine sugar.

Table 17-5. Faults in cakes; causes and correction (continued)

Fault	*Causes*	*Remarks*
Bakes unevenly	Leavening not distributed evenly. Batter not spread evenly in pan. Pan dented. Oven heat uneven or racks uneven.	Mix batter thoroughly. Eliminate excessive top or bottom heat and cool spots in oven. Make sure that racks are even in oven.
FRUITCAKE:		
Falls during baking	Too much shortening, sugar or leavening or not enough eggs. Batter overcreamed. Cake jarred during baking.	
Lacks volume	Not enough leavening. Wrong ingredients. Fruit content high. Batter too stiff. Not enough batter in pan. Oven too hot or cake baked at too low a temperature for too long a time.	Use eggs at room temperature. Use hydrogenated shortening. Cake with high percentage of fruit mixture and low percentage of batter will be smaller than cake of equal weight with less fruit and more batter. Add water.
Crust too thick	Too much sugar in batter. Too much batter in pan. Oven too hot or cake baked at too low a temperature for too long a time.	
Too tender and crumbly	Too much shortening, sugar or leavening; not enough eggs; lack of moisture retaining ingredients. Batter undermixed or overcreamed. Batter too warm. Fruit not soaked.	 Prepare fruit as specified in recipe.
Tough	Not enough sugar or shortening or too many eggs.	
Cracks on top	Not enough leavening, sugar or shortening. Wrong type of shortening. Fruit not soaked properly. Batter overmixed or too stiff. Cake baked improperly.	 Use hydrogenated shortening. Prepare fruit as directed in recipe. Add water. Use some steam in oven, do not have oven too hot.
Crust too dark	Too much sugar. Oven too hot.	

Table 17-5. Faults in cakes; causes and correction (continued)

Fault	*Causes*	*Remarks*
Coarse grain	Too much sugar or leavening. Ingredients mixed improperly. Batter too stiff. Oven not hot enough.	Avoid creaming at a high speed and make sure that ingredients are thoroughly mixed and not too warm.
Excessive shrinkage	Too much leavening. Batter overcreamed. Not enough batter in pan. Oven too hot or too cool.	
Develops mold	Utensils or storage area not sanitary or personnel not clean. Too many moisture retaining ingredients used. Cake underbaked. Cake stored improperly.	Cool cake thoroughly before storing. Store in a clean, dry, well-ventilated place.
Spots on top crust	Sugar too coarse or not completely dissolved. Racks not clean.	
Off-colored	Too much inert sugar or malt syrup or acid content too low. Ingredients of poor quality or not prepared properly. Sugar crystals rub metal from bowl during mixing. Cake baked improperly.	Make sure that flour and shortening are white. Drain fruit thoroughly before using it. Cream shortening before adding any sugar. White fruitcakes will darken if baked too slowly.
Poor color (dark fruitcake)	Poor grade of molasses used. Acid content too high.	Prepare fruit as specified in recipe.
Poor flavor	Too much flavoring or too little salt. Ingredients rancid or of poor quality. Ingredients not properly mixed. Baking pan not clean or pan grease rancid. Cake overbaked. Cake stored improperly.	
Poor keeping quality	Too much leavening or not enough sugar or shortening. Incorrect amount of moisture retaining ingredients. Batter overcreamed. Cake baked too long in oven that is too cool.	Add moisture retaining ingredients.

Table 17-5. Faults in cakes; causes and correction (continued)

Fault	*Causes*	*Remarks*
Center peaks	Formula too lean or egg content too high. Fruit not soaked properly. Batter overmixed or undermixed. Batter too stiff. Oven temperature too high. Too much sugar or shortening. Batter overcreamed. Too much steam in oven.	Increase amount of sugar and shortening, use fewer eggs, or increase amount of milk and leavening.
Crust peels off	Too much leavening or not enough eggs.	Structure cannot hold weight of the fruit. Use more eggs to strengthen cake structure. Decrease fruit according to recipe.
Fruit sinks to bottom of cake	Fruit not properly prepared. Batter overcreamed or too soft. Oven temperature too low.	Process fruit according to recipe.
Bakes unevenly	Ingredients mixed improperly. Uneven oven heat.	Follow mixing procedure in recipe and make sure that ingredients are mixed.

Table 17-6. Faults in frostings; causes and corrections

Fault	*Causes*	*Remarks*
Does not spread easily	Frosting too thick.	Add water or simple syrup[1] to uncooked frostings. Warm cooked frostings.
Granular (dried out)	Frosting exposed to air too long.	Replace sugar in recipe with syrup.
Separates from cake	Cake frosted before it has cooled.	
Soggy cake crust	Cake frosted before it has cooled.	
Curdled	Too much liquid used in recipe with hydrogenated shortening.	
Tastes bad	Wrong amounts of ingredients used. Ingredients spoiled.	

Note:
1. To make simple syrup, boil 12 pounds of sugar with 4 pounds of water and ¼ ounce of cream of tartar. For smaller portions, reduce quantities.

COOKIES

17-39. There are three basic types of cookies. They are drop cookies, sliced cookies and bar cookies. All may be made from cookie mixes or from scratch.

DROP COOKIES

17-40. Drop soft dough from a spoon or ice cream scoop onto a sheet pan. You can also use a pastry bag to drop the dough.

SLICED COOKIES

17-41. Handle the dough as little as possible and use a minimum amount of dusting powder. Roll the dough into a long cylinder, and slice it with a sharp knife or a baker's scraper. Use a marked stick as a cutting guide for consistent size. Figure 17-3 shows how to make up sugar cookies. This type of cookie can also be rolled out and cut with a cookie cutter, but this takes longer and results in leftover dough. Some cookies must be refrigerated before they are cut. When the recipe calls for refrigeration, remove the roll from the refrigerator about 5 to 10 minutes before slicing so that the dough will not crumble.



1. Roll dough into cylinder.



2. Cut the dough into 2 ounce pieces.

Figure 17-3. Sugar cookie makeup



3. Dip the pieces in sugar, and place them, sugar side up, on lightly greased sheet pan.



4. Flatten the cookies to about 1/2 inch thickness. Place in oven.

Figure 17-3. Sugar cookie makeup (continued)

BAR COOKIES

17-42. Form bar cookies from rolls of dough flattened in a sheet pan. Brownies and gingerbread, which are made from dough spread into a sheet pan before baking, are also classified as bar cookies. They are usually cut while warm to keep them from breaking.

BAKING PROCEDURES

17-43. Preheat ovens to required temperature. Turn out brownies like a layer cake, score lightly and then cut when they are cool. Do not stack warm cookies or they will stick together. Frost cookies when they have cooled or leave them plain. You may use a dusting of powdered sugar instead of frosting.

FAULTS

17-44. Table 17-7 lists common faults found in cookies, causes and corrective actions.

Table 17-7. Faults in cookies; causes and corrections

Fault	*Causes*	*Remarks*
Lack spread	Wrong type of sugar.	Use sugar of regular granulation which will not dissolve readily during spreading.
	Wrong type of flour.	Bread flours are not suitable for baking cookies which need to spread.
	Too much binding material. Not enough leavening.	Amounts of binding ingredients in formula (flour, moisture, milk solids) should be reduced or offset by an increase in one or more tenderizing ingredients (sugar, shortening, egg yolks and leavening).
	Batter or dough mixed improperly.	Avoid overcreaming sugar and shortening.
	Dough overworked or too much scrap dough used.	Avoid overmixing batter or dough after flour and other ingredients are added. Grease pan lightly. Cut cookies to reduce scrap dough. Handle dough as little as possible.
	Too much dusting flour or cookies washed with wrong type.	Retards spread.
	Oven too hot.	Egg washes, which contain high percentage of eggs, prevent cookies from spreading properly. Use milk, sour cream, sugar and water, or a light egg wash.
Too much spread	Wrong type of sugar.	Use fine granulated or powdered sugar for little or no spread.
	Wrong type of flour.	Use bread flour for no spread.
	Too much tenderizing material.	Amounts of binding ingredients in formula (flour, moisture, milk solids) should be increased.
	Too much leavening.	Reduce leavening.
	Cookies deposited in warm pan.	Pan not prepared properly.
	Too much pan grease.	Grease pan lightly.
	Oven too cool.	
Poorly shaped	Dull or bent cutter. Pan bent or dented. Oven too hot or too cool.	
Break during handling	Formula rich in shortening.	Use bleached cake flour when handling: formula contains large amount of shortening.
	Not enough eggs of flour. Too much sugar. Lack of pan grease. Cooled too rapidly. Oven too cool.	

Table 17-7. Faults in cookies; causes and corrections (continued)

Fault	*Causes*	*Remarks*
Off-flavored	Ingredients faulty. Pan dirty. Over baked. Too much or wrong type leaving.	Store ingredients properly. Pan grease becomes rancid and is absorbed by the cookies.
Poor keeping qualities	Not enough moisture retaining ingredients. Dough aerated too much. Cookies stored improperly.	Add ingredients such as honey, molasses, and brown sugar to prolong keeping time. Opened-grained cookies tend to dry out and become stale quickly. Store in clean, dry, well-ventilated place.

QUICK BREADS

17-45. Quick breads are similar to yeast-raised products. However, they are easier to prepare because they are leavened with baking powder or soda instead of yeast.

TYPES

17-46. Some quick breads are biscuits, muffins, corn bread and coffee cake.

Biscuits

17-47. Baking powder biscuits are made from flour, milk, baking powder, shortening and salt, or from biscuit mix. They are baked in sheet pans and come out round with flat tops.

Muffins

17-48. Muffins are made from batter that includes all the ingredients used in biscuits plus sugar and eggs. They are baked in muffin tins. Muffins have rounded tops and are sweeter than biscuits.

Corn Bread

17-49. Corn bread is made from batter which contains cornmeal. It may be baked in a sheet pan or in muffin tins. Corn bread is yellow with a granular texture.

Coffee Cake

17-50. Many varieties of coffee cake are made with baking powder or biscuit mix. Coffee cake is made from dough which contains a high percentage of sugar. It is baked in a cake/sheet pan.

MIXING PROCEDURES

17-51. You may make quick breads from scratch or from mixes. Some quick breads come frozen and only require reheating prior to serving. Biscuit mix can be used to make coffee cake as well as biscuits. You can make muffins from cake mix. There is also a mix to make corn bread. Mix the batter or dough only long enough to moisten dry ingredients and distribute liquid evenly. Even if the batter looks lumpy, you have mixed it properly when no dry ingredients are showing.

MAKEUP

17-52. Make up and pan quick breads are described in recipes. Be sure that your biscuit cutter is sharp. A dull cutter will pinch the edges of the dough and leave an uneven product. Place biscuits in an ungreased or

slightly greased sheet pan. Add leftover dough to fresh dough before you knead it. Biscuits may be made up early and refrigerated until you are ready to bake them.

BAKING PROCEDURES

17-53. Follow baking time and temperature given in the recipe or on the box. Serve quick breads hot.

FAULTS

17-54. Table 17-8 lists common faults found in quick breads and their causes.

Table 17-8. Faults in quick breads and causes

	Causes	*Faults*
BISCUITS	Tough crumb	Too little shortening, too little baking powder, or too much liquid. Dough too cold or overmixed. Baking temperature too low.
	Coarse crumb	Too little liquid or too much baking powder. Dough too warm or improperly mixed.
	Dry	Too little sugar or shortening. Dough too stiff. Biscuits overbaked or oven was not hot enough.
	Flat and heavy	Wrong ingredient proportions. Dough too stiff, too cold, or not mixed properly. Oven temperature too low.
	Hard crust	Biscuits overbaked or oven too hot.
	Crumbly texture	Too much sugar or baking powder or not enough liquid.
	Pale crust	Not enough sugar. Dough too stiff. Oven temperature too low.
MUFFINS	Tough crumb	Wrong ingredient proportions. Batter overmixed.
	Dry	Too much baking powder or too little sugar or shortening. Batter too stiff. Muffins overbaked.
	Holes or tunnels	Not enough liquid or shortening. Batter overmixed.
	Heavy uneven grain	Not enough leavening. Not enough shortening.
	Muffins peak	Batter too stiff. Batter overmixed. Pans too full. Oven too hot.
	Unevenly browned	Wrong ingredient proportion. Batter not mixed thoroughly. Oven temperature uneven or too high.
	Poor flavor	Too much soda. Batter mixed improperly.

YEAST-RAISED PRODUCTS

17-55. Yeast-raised products include bread, rolls, baking-powder and yeast biscuits, English muffins, coffee cakes and Danish pastries. Timing and scheduling are very important with these products. Preparation time must allow for fermentation. Also, you must have oven space available without delay when the item is ready to be baked.

PREPARATION OF DOUGH

17-56. When using active dry yeast, follow the steps described below to prepare the dough. Skip the first step when you use instant active dry yeast. Instant yeast does not have to be suspended. Add instant yeast along with the other dry ingredients.

17-57. Suspend active dry yeast when it is used as the leavening agent. Sprinkle the yeast into a portion of the water which has been heated to between 105 degrees Fahrenheit and 110 degrees Fahrenheit. The recipe tells you how much water to use. Stir and allow the solution to stand for about five minutes. Then stir the solution again before adding it to the other ingredients. (Temperature control is vital. Temperatures above 110 degrees Fahrenheit will kill yeast. Temperatures below 105 degrees Fahrenheit will slow fermentation.)

17-58. Temper the water. Temperature of the dough should be 80 degrees Fahrenheit when it comes out of the mixer. You can control the dough temperature by controlling the temperature of the water that goes into it. To control water temperature, first you must figure out the proper temperature. Follow the steps in Figure 17-4 to determine proper temperature. Heat or cool the water to the desired temperature.

Add the room temperatures, the flour temperature and the friction factor. The friction factor varies from 10°F to 30°F. It depends on the stiffness of the dough, the speed of the mixer and the mixing time. Use 20°F as the friction factor for your first dough. For other dough, adjust the friction factor as described in a later step.

EXAMPLE:		Room temperature	75°F.
	+	Flour temperature	73°F.
		Friction factor	20°F.
		Total	168°F.

Subtract the total degrees above from 240°F. The difference is the proper temperature.

EXAMPLE:		*(Constant)*	240°F.
		Total from first step	168°F.
		Proper water temperature	72°F

Adjust the friction factor for succeeding dough. To do this, first measure the temperature of the dough when it comes out of the mixer. The desired temperature is 80°F. If the dough temperature is more than 80°F, add the difference to the original friction factor to get the new factor. If the dough temperature is less than 80°F, subtract the difference. Use the new factor to recompute the proper water temperature.

EXAMPLE:		Actual dough temperature	83°F.
	-	Desired dough temperature	80°F.
		Friction factor adjustment	3°F.
		Original friction factor	20°F.
	+	Friction factor adjustment	3°F.
		New friction factor	23°F.

Figure 17-4. Steps to follow to determine proper water temperature

17-59. After scaling and preparing the ingredients, mix them by machine with a dough hook until all the flour is mixed into the liquid. Continue mixing the dough until it is smooth and elastic. You must mix thoroughly to distribute the yeast cells and the food for the yeast, to remove lumps, and to form and develop the gluten. To determine if the gluten is developed, stretch a piece of dough between your fingers. If the gluten has developed properly, you can stretch the dough so thin that you can almost see through it. Stop mixing at this stage or the dough will become sticky and inelastic. You should mix only until hard-roll dough is of a medium consistency, soft-roll dough is soft and sweet-roll dough is fairly soft and slightly sticky. Then place the dough in a lightly greased bowl and smooth it by folding. Use a bowl about three times the size of the dough to allow room for expansion. Do not grease the bowl too heavily or the excess grease may cause streaks in the baked items.

FERMENTATION

17-60. Cover the bowl with a clean, damp cloth, put it in a warm place (about 80 degrees Fahrenheit), and let it stand for the amount of time required in the recipe. Test the dough from time to time by inserting your fingers into the dough. When the dough sinks slowly around the depression, it is ready to be punched. If it springs back, it is not ready. If the dough sinks rapidly, it has already fermented too long. Punch it and make it up at once. Punch the dough by pressing it down by hand and folding it from side to side. After you have punched the dough, cover the pan with a cloth and let the dough rest for the amount of time called for in the recipe. Danish pastry dough is produced by rolling layers of fat into the dough. Do not punch Danish pastry dough. Instead, after mixing the dough, roll in butter or shortening. Roll and fold the dough four times. Refrigerate the dough for about half an hour between each roll, or until it is loose enough to be pliable when rolled.

MAKEUP

17-61. Makeup procedures for yeast-raised dough depend on whether the dough is to be used for plain rolls, sweet rolls or Danish pastry.

Plain Rolls

17-62. Plain rolls may be made up in a number of different shapes. First, divide and cut the dough as shown in Figure 17-5. Then make it up as hot rolls (figure 17-6), cloverleaf rolls, frankfurter rolls, hamburger rolls, cluster rolls or Parkerhouse rolls.



1. Scale the dough into 3 to 4 pound pieces and shape dough into long pieces of uniform thickness.



2. Cut the long pieces of dough into pieces of desired weight.

Figure 17-5. Preparation of dough for makeup of plain rolls



1. Shape 1 ½ to 2-ounce pieces of dough into balls by rolling with a circular motion on the worktable.



2. Dough balls should be uniform in shape when rolled.



3. Place the dough balls in a greased muffin tin or sheet pan. Brush the dough balls with butter or egg wash and proof until double in size.

Figure 17-6. Preparation of hot rolls

Sweet Rolls and Danish Pastry

17-63. Sweet rolls and Danish pastry may be made up in a variety of shapes and may include many different types of fillings and toppings. Make the rolls up as cinnamon rolls (Figure 17-7), folded dough rolls or wedge roll-ups.



1. Roll dough into a rectangular sheet about 1/4 inch in thickness.



2. Brush the dough with melted butter.



3. Sprinkle the dough with cinnamon and sugar. Add raisins if desired.

Figure 17-7. Preparation of cinnamon rolls



4. Roll the dough to make a long, slender roll.



5. Cut the roll into uniform pieces about 1-inch wide.



6. Place cut side down on a greased pan. Proof until double in size.

Figure 17-7. Preparation of cinnamon rolls (continued)

PROOFING PROCEDURES

17-64. Proof panned rolls until they double in size. If you do not have a proofing cabinet, cover the panned items with a damp cloth to prevent crusting. Make sure the cloth does not touch the dough. The recipe will tell you how long and at what temperature the item should be proofed. However, you may have to adjust proofing time on the basis of other factors. Table 17-9 shows what conditions require adjustments in proofing time. Sweet dough may be made up ahead of time and stored in the refrigerator. You may store made-up sweet dough for 24 hours at 40 degrees Fahrenheit and for up to 60 hours at 32 degrees Fahrenheit. When you are ready to use it, remove the dough from the refrigerator and proof the pieces until they double in size.

Table 17-9. Proofing time adjustment

Condition	*Adjust*
Too much sugar. Too little yeast. Old yeast. Dough not warm enough.	Increase proofing time.
Too much yeast. Dough too warm.	Decrease proofing time.

BAKING AND FINISHING PROCEDURES

17-65. Bake the proofed items for the time and at the oven temperature specified in the recipe. If you overbake rolls, they will be tough or crusty. If the oven is not hot enough, they will be too pale or soft. Maintain a proper baking temperature for Danish pastry. If you bake it at too low a temperature, the rolled-in fat will melt and leak out of the layers. Finish rolls as directed in each recipe.

FAULTS

17-66. Table 17-10 lists faults in rolls, their causes, and corrections.

Table 17-10. Faults in rolls; causes and corrections

Fault	*Causes*	*Remarks*
Lack of volume	Too much salt. Dough too old, too young or too stiff. Dough underproofed. Oven temperature too high.	Salt may slow or halt yeast activity. Proof until about double in size.
Too much volume	Not enough salt. Dough overproofed. Oven too cool.	
Pale crust	Not enough sugar, salt or milk. Dough hot and overfermented. Dough old. Dough underproofed. Oven too cool.	
Dark crust	Too much salt, sugar or milk. Dough too young. Dough overproofed. Flash heat in oven.	

Table 17-10. Faults in rolls; causes and corrections (continued)

Fault	*Causes*	*Remarks*
Crust blistered	Dough too slack. Dough too young. Dough overproofed. Oven too hot or too cool, or flash heat in oven.	Follow formula carefully.
Shelling of top crust	Dough too young, too old, or too stiff. Dough underproofed. Not enough humidity in proofing cabinet. Flash heat in oven.	Flash heat will frequently cause rolls to bake too quickly on top and loosen crust.
Crust tough and brittle	Not enough shortening, salt, or sugar. Dough old. Dough overproofed. Oven too hot or flash heat in oven.	
Crust rubbery	Too much milk or salt, or too little shortening. Dough young. Too much steam in oven.	
Grain open or irregular	Dough underproofed or overproofed. Not enough fermentation. Oven too cool.	
Poor texture	Too much salt or hard water used. Not enough sugar, shortening or milk. Dough too stiff, hot, young or old. Dough underproofed or overproofed. Too much flour.	Sometimes the product forms a crust during intermediate proofing. This causes poor texture.
Acidic taste	Not enough salt. Dough too old or too hot.	
Flat taste	Not enough salt or sugar. Off-flavored ingredients or alkaline water used. Dough under fermented. Rolls underbaked or overbaked.	

Chapter 18

Beverages

GENERAL

Beverages add enjoyment to the meal and provide liquids that help regulate the bodily processes. Coffee, cappuccino, tea and soda are of little value nutritionally, but they are stimulants which temporarily remove the feeling of fatigue. Hot cocoa has nutritional value and is also stimulating. Chilled juices, milk and eggnog are refreshing and nutritious beverages.

BEVERAGE DISPENSERS

18-1. A variety of vendor-provided beverage dispensers are available when the dining facility purchases the vendor's beverage product. Beverages including coffee, tea, cappuccino, juice, soda and flavored water are dispensed in cold or hot individual portions which reduce waste at the end of the serving period. The dispensers must be kept clean and sanitary. The dispensers must contain a backflow prevention device to minimize the potential for carbon dioxide and other ingredients to backflow into copper lines, potentially causing an acute illness.

COFFEE

18-2. Coffee can be prepared in an urn, a coffeemaker, a pot or a kettle. Instant coffee can be used to make coffee in quantity or by the cup. Both caffeinated and decaffeinated coffee should be available to the diner. Some general rules for brewing coffee are as follows:

- Use fresh coffee.
- Follow the manufacturer's instructions for the preparation methods best suited to the equipment in your facility.
- Always measure coffee and water accurately.
- Make only the amount needed for a meal. Use 6 ¼ gallons of coffee to make 100 8-ounce servings.
- Coffee should be ready not more than 15 minutes before serving.
- Hold the brew as near 185 degrees Fahrenheit as possible for not more than one hour, keeping it covered at all times.
- Do not reheat coffee.
- Remove coffee grounds as soon as brewing is complete. Do not reuse them.
- Keep coffee-making equipment clean, as coffee oils cling to the equipment and become rancid upon contact with oxygen in the air. Clean equipment according to instructions in the manufacturer's guide.

18-3. Brewed coffee should have the following qualities:

- Clear and sparkling appearance.
- Delicious flavor.
- Good aroma.
- No bitterness.
- Little or no sediment.
- Proper temperature (hot or iced).

18-4. When making iced coffee, use only half as much water as you do for hot coffee. Cool the hot brew with cold water and serve in glasses containing ice. Always pour the hot brew into the cold water to prevent

clouding. For special occasions or for variety, you can top both hot and cold coffee with a tablespoon of whipped cream. You can also top iced coffee with ice cream.

TEA

18-5. Store tea bags or leaves in a closed container to keep out foreign odors. Also, protect the tea from high temperatures. Excessive heat destroys the oils and causes the tea to have a flat taste. Avoid rough handling as this will crush the tea leaves. Tea can be made in an urn or a kettle or with individual tea bags or instant tea. Observe the same quality standards for tea as for coffee. Instant tea may be procured in both packages and jars. Use clean, cold water to make instant tea and ensure lemon wedges are available for diner use. Be sure to follow the manufacturer's directions for preparation and dispensing of the tea and cleaning of the tea dispenser. Some general rules for steeping tea are—

- Use freshly boiled water.
- Measure tea and water accurately, and steep them about 5 minutes.
- Make tea close to serving time and keep it covered.
- If a cloth bag is used to hold the tea leaves, make sure that after the bag is tied, it is large enough to hold three times the amount used. The extra space is needed for the leaves to expand and for the water to circulate freely.

COCOA

18-6. Dining facilities generally provide individual instant cocoa packets for diner use. For cocoa that is prepared in bulk, store cocoa in a clean, cool, dark place—heat and light can cause it to become rancid. An airtight container will slow the rancidity rate and prevent the cocoa from picking up foreign odors. Combine and cook ingredients as stated in the recipe to avoid a starchy flavor and settling of undissolved cocoa. To prevent film from forming, prepare the cocoa close to serving time in a narrow-topped container. Shake it during serving so that air bubbles form on the surface. For variety, top each serving of hot cocoa with a marshmallow or whipped cream. Properly prepared cocoa should be prepared according to the following general rules:

- Have no undissolved cocoa in the bottom of the container.
- Be free of top film.
- Be free of starchy taste.
- Be the proper temperature.

FRUIT JUICES

18-7. A variety of fruit juices are served in the dining facility. Fruit juices generally come concentrated and are either manually mixed or automatically dispensed from a dispenser like carbonated beverages. Chill manually mixed canned juices overnight, and open the cans as needed. Mix frozen juices and instant juices according to the manufacturer's directions. Chill and serve them from juice dispensers.

ICED FRUIT DRINKS

18-8. Iced fruit drinks are usually served during the summer months. Iced fruit drinks include lemonade, orangeade, grapeade, limeade, fruit punch and variations of fruit punch. Make lemonade, orangeade, grapeade and limeade from one specific fruit juice (frozen, canned or fresh). Make fruit punches from two or more different fruit juices. For variation, a tea base and slices of sections of fresh fruits can be added. Imitation fruit-flavor drinks are available in numerous flavors. When preparing imitation fruit-flavored drinks, be sure to use clean, cold water and follow the package directions. General instructions for preparing iced fruit drinks are—

- Measure all ingredients accurately.
- When using fresh juices, strain the juices to remove pulp and seeds.
- When using slices or sections of fresh fruit in punches, wash the fruit and remove all seeds.
- Prepare drinks far enough ahead of serving time to allow for chilling. Use ice.

18-9. Iced fruit drinks may be garnished with green or red maraschino cherries, banana slices, strips of pineapple, raspberries or strawberries, sprigs of mint, lemon wedges and melon balls.

CARBONATED AND ELECTROLYTE BEVERAGES

18-10. Carbonated and electrolyte beverages are refreshing, highly acceptable and available in many flavors. Use ice-making machines along with carbonated-beverage dispensers that do not have built-in ice dispenser.

WATER AND FLAVORED WATERS

18-11. Cool water should be available for each meal. A water tap for diner use may be located on an ice dispensing machine, a soda machine or juice dispenser. Flavored waters may also be dispensed from the juice or soda dispensers.

MILK

18-12. Milk is an essential element of good nutrition. One percent bulk, skim, whole and soy milk may be served at all meals. Since these products absorb odors easily, they should be stored separately from foods that produce strong odors.

EGGNOG

18-13. Eggnog is available for serving during the holiday season. The eggs, milk and sugar used in preparing eggnog make it highly nutritious. Requisition only enough for one meal and refrigerate it until it is used. Cartons opened during the meal should be discarded at the end of the meal.

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Appendix A

Dining Facility Management Changeover Checklist

Figure A-1 is a sample checklist that can be used when DFMs changeover in the dining facility. When changing DFMs, the changeover should be completed at the end of an accounting period. This checklist may also be used when changing from military to contractor management or vice versa due to unit deployment or redeployment.

DINING FACILITY MANAGEMENT CHANGEOVER CHECKLIST

PERSONNEL
- Counseling's Completed
- NCO Evaluations Completed
- Training Records Updated
- Subsistence Requesting and Receiving Authorizations Updated

AUTOMATED INFORMATION SYSTEM
- Incoming DFM Access Granted
- Outgoing DFM Access Revoked

CASH COLLECTION
- DD Form 1131 Books/Sheets Turned-In or Revalidated
- Last Cash Turn-In Completed
- Dining Facility Cash Count Verified

PROPERTY
- Key Control Completed
- Equipment Inventory Completed
- Hand Receipts Completed

ACCOUNT STATUS
- Accountable Inventory Complete
- End of Accounting Period Actions complete
- Relief for Loss Actions Initiated (if required)

Outgoing DFM (Initials):

Incoming DFM (Initials):

Date Completed:

SAMPLE

Figure A-1. Sample dining facility management changeover checklist

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Appendix B

Dining Facility Safety Checklist

Figure B-1 is a sample checklist to be used to check the dining facility for possible safety hazards.

DINING FACILITY SAFETY CHECKLIST

VENTILATION

1. Is the ventilation adequate in receive, storage, pot and pan and dishwashing areas, and in walk-in coolers and freezers?
2. Are vent filters and fresh-air intakes provided in food-preparation, serving and dining areas?
3. Are all fans and their moving parts shielded or guarded?
4. Is gas equipment properly vented?

ELECTRICAL EQUIPMENT

1. Are ground fault circuit interrupters installed near sinks and work areas?
2. Is electrical equipment properly grounded, wired and fused?
3. Is electrical equipment of approved type and installed properly?
4. Does electrical equipment meet the National Electrical Code specifications or local ordinances and bear the seal of the Underwriter's Laboratories?
5. Are regular inspections of equipment and wiring made by an electrician?
6. Are electrical switches readily accessible in emergencies?
7. Are switches located so that employees do not have to lean on or against metal when reaching for them?
8. Are cords maintained without splices, cracks or worn areas?
9. Is wiring kept off surfaces subject to vibration, off floors and out from under equipment?
10. Are service cords long enough to eliminate the need for extension cords? Is the kitchen equipped with retracting reel cords from the ceiling?
11. Are all switches, junction boxes and outlets covered?
12. Does all equipment with cord-and-plug connections have grounded connections?

LIGHTING

1. Is all lighting adequate in all areas?
2. Are light fixtures, bulbs and tubes protected with protective shields or shatterproof?
3. Is proper heat-proof lighting provided over cooking areas, in vent hood and so on?

SAMPLE

Figure B-1. Sample dining facility safety checklist

EMPLOYEE PRACTICES

1. Are all employees award of hazards in their work areas?
2. Are employees properly instructed on placement of hands to avoid injury when handling potentially hazardous devices such as slicers?
3. Do employees make use of all guards, hot pads, railings and other protective devices available to them?
4. Do employees wear proper shoes which are nonskid and will protect feet from injury?
5. Do employees wear clothing that cannot get caught in mixers, cutters, grinders, fans or other equipment?
6. Is at least one employee on each shift trained emergency first aid techniques?
7. Is care exercised when using plastic aprons or gloves near open flames or extreme heat?

FIRE PREVENTION EQUIPMENT

1. Are fire extinguishers conveniently located where fires are most likely to occur?
2. Are extinguishers the proper type and size to control a fire?
3. Have employees been instructed in the effective use of extinguishers and automatic wash down systems?
4. Are extinguishers in plain sight?
5. Are extinguishers kept fully charged and inspected weekly for damage?
6. Are sprinklers or automatic alarms installed in required?
7. Does all fire prevention equipment comply with local fire prevention agency requirements?

SAMPLE

FLOORS

1. Are all floors in safe condition-free from broken tile and defective floorboards, worn areas and items that may cause people to trip or fall?
2. Are spills and debris removed from the floor immediately?
3. Where floors are frequently wet, are heavy traffic areas proved with nonskid mats?
4. Are floors mopped adequately and provide with a protective or nonskid finish to prevent slipping?
5. Are adequate floors drains provided and properly covered with gratings?
6. Are carpets securely tacked otherwise fastened in place to prevent people from tripping over raised edges?

SERVING AREA AND DINING ROOM

1. Are serving counters and tables free of broken parts, wooden or metal slivers, and sharp edges or corners?
2. Is all tableware regularly inspected for chips, cracks or flaws? Are defective pieces discarded in a safe manner?
3. Is the traffic flow coordinated to prevent collisions while people are carrying trays or obtaining food?
4. Are pictures and wall decorations securely fastened to walls?
5. Are ceiling fixtures firmly attached and in good repair?

Figure B-1. Sample dining facility safety checklist (continued)

DOORS AND EXITS

1. Are sidewalks and entrance and exit steps kept clean and in good repair?
2. Will all exits open from the inside without keys to allow escape from the building?
3. Can an exit be reached from every point in the building without having to pass through an area of high potential hazard?
4. Are routes to exits and the exits themselves clearly marked?
5. Are passages to exits kept free of equipment and materials?
6. Are all exits outward opening?
7. Are doors hung so they do hung so they do not open into passageways where they could cause accidents?
8. Are doors installed between kitchen and dining areas?
9. Are exits properly marked (signs)?
10. Do electrical exit signs operate properly?

RECEIVING AREA

1. Are employees instructed in correct opening, lifting and storing materials?
2. Are adequate tools available for opening and moving supplies?

SAMPLE

STORAGE AREAS

1. Is there sufficient storage space so that nothing is stored on floors, behind doors, in corridors or on stairways?
2. Are shelves adequate to bear the weight of the items stored?
3. Are heavy items stored on lower shelves and light material above?
4. Is a safe ladder or step stool provided for reaching higher shelves?
5. Are portable and stationary storage racks in safe condition-free from broken or bent shelves and standing solidly on legs?
6. Is there a safety device in walk-in coolers to permit exit from the inside and is there a light switch inside?

WASTE STORAGE AREAS

1. Are garbage and waste containers constructed of leak proof material?
2. Are containers adequate in number and size?
3. Are containers on dollies on other wheeled units to eliminate lifting by employees?
4. Are disposal-area floors and surroundings kept clean and clear of refuse?

HAZARDOUS MATERIALS

1. Are toxic materials and hazardous substances stored and handled properly?
2. Are combustible and flammable materials stored and handled properly?

Figure B-1. Sample dining facility safety checklist (continued)

FOOD PREPARATION AREA

1. Is adequate aisle space provided between equipment to allow reasonable work movement and traffic?
2. Are hot pads, spatulas or other equipment provided for use with stoves, ovens and other equipment?
3. Is proper storage provided for knives and other sharp instruments?
4. Are machines properly safe-guarded?
5. Do employees make use of hot pads, safe knife-storage devices and machines guards provided for their protection?
6. Are knives and other blades kept sharp?
7. Are employees properly instructed in the operation of machines, mixer, grinders, choppers, dishwashers and so on?
8. Are mixers in safe operating condition?
9. Are steam tables regularly maintained by competent employees?

SAMPLE

UNTENSIL-WASHING AREA

1. If conveyor units are used to move soiled items, are edges guarded to avoid catching people's fingers or clothing?
2. Are portable racks in safe operating condition – wheels and caster working, shelves firm?
3. Are dish racks kept off the floor to prevent people from tripping over them?
4. Are racks, hooks, and gloves provided so that employees do not have to put their hands into sanitizing baths of hot water or chemicals?
5. Are drain plugs mechanically operated or provided with chains so that employees can drain sinks without placing hands in sanitizing solutions?

Figure B-1. Sample dining facility safety checklist (continued)

Appendix C

Sample SOP for Menu Items Not Listed in TM 10-412

This appendix provides a basic dining facility SOP format that you can tailor to fit your dining facility. Remember that the starting amounts and the replenishment amounts will vary between facilities, as will the types of equipment being used. The starting amounts listed in this appendix are only an example. When you are developing your own SOP, be sure to include those items not shown in this appendix that your facility needs. Figure C-1 contains instructions that will assist you in tailoring this SOP to your local operation. Figure C-2 is a sample SOP.

COLUMNS	A SOP NUMBER	B MENU ITEM	C INSTRUCTIONS
	1. a.	ORANGE JUICE, FROZEN	
		1. PREPARATION TIME	- 1 hour prior to serving
		2. STARTING AMOUNT	- 15 each, 32 fluidounce cans
		3. REPLENISH AMOUNT	- 5 each as needed
		4. TYPE OF CONTAINER	- juice dispenser
		5. WHERE	- self-service line
		6. SPECIAL INSTRUCTION	- Follow directions on can; prepare night before, place in 15-gallon pot under refrigeration.

1. COLUMN A, SOP NUMBER: When assigning SOP numbers, start with number 1, and continue until all SOPs have a number. If more than one like item falls under the same category, subdivide by assigning a letter to the same number to better identify the item. For example, if SOP 1.a. is for orange juice, frozen, SOP 1.b. might be for grape juice, frozen. If your facility is using AFMIS, assign SOP numbers using the numbers already assigned in AFMIS.

2. COLUMN B, MENU ITEM: Place the name of the item for which you wish to create a SOP for (such as ORANGE JUICE, FROZEN) in this column.

3. COLUMN C, INSTRUCTIONS: Place the instructions here that you want your cooks to follow. Information should be direct and to the point. For example: "follow directions on can" is easier to understand than "look at the can and read and follow the directions."

   a. 1. Column C, PREPARATION TIME: Allow cooks enough time to read the SOP, gather the ingredients, and prepare the product; leaving at least 15 minutes to place it on the line. Use backward planning when deciding times. For example, suppose the product (orange juice) requires 5 minutes to prepare three cans and 30 minutes to prepare 25 cans. The backward planning is as follows: 15 minutes to set up the serving line, 30 minutes to prepare the orange juice, and 15 minutes for gathering the ingredients and reading the SOP and production schedule. Therefore, the total preparation time is approximately one hour.

   b. 2. Column C, STARTING AMOUNT: This is the amount of an item that you want to start the meal with (for example, 16 each, 1 pound, or one container of an item). You also need to state the size or weight of the items, such as: 32-fluid ounce can, bottle 6-ounce, or 2-pound box. This will give your cooks specifics as to the quantity and different types of containers to be used.

Figure C-1. SOP instructions

c. 3. Column C, REPLENISH AMOUNT: This is where you tell the cook exactly what amount you want them to back up the line with. Along with the written instructions you should also tell the cooks and other food service workers to use common sense when replenishing the line. For example, although the SOP may call for a replenishment amount of five gallons of soft serve ice cream; 1 gallon should be enough if the dinner meal ends in 15 minutes. They should replenish only with the quantity needed to complete the meal.

d. 4. Column C, TYPE OF CONTAINER: Explain what size serving pan to place the item in, or indicate the piece of equipment that the product goes with. For example, 1/3 line pan, 1/2 line pan, 1/3-inch line pan 6 inches deep, juice dispenser, or soft-serve ice cream machine).

e. 5. Column C, WHERE/SERVING UTENSIL: Most items prepared using SOPs are for self-service and should be positioned on the self-service line or salad bar. Be sure to indicate on the SOP the exact location. The words "SERVING UTENSIL" will be added to this line when needed. For example, when lettuce is in a SOP for a salad bar, include tongs here. Also, if you are using syrup from a #10 can you will need to say what size ladle to serve it with.

f. 6. Column C, SPECIAL INSTRUCTIONS: Special instructions tell the cooks anything that may help them understand what must be done with the item. For example: prepare night before, follow heating instructions on the package, etc. You may also refer the cook to the special instructions on the production schedule when required. For an example, see assorted salad dressing (SOP 23).

Figure C-1. SOP instructions (continued)

ATSM-CES-OA 23 September 2009

MEMORANDUM FOR FOOD ADVISOR/FOOD SERVICE PERSONNEL

SUBJECT: Standing Operating Procedures (SOP) (Garrison Operations) HHC, 1/63 INF, Fort Wright, KY 00000

SOP NO		MENU ITEM	INSTRUCTIONS
1.	a.	ORANGE JUICE, FROZEN	
		PREPARATION TIME	- 1 hour prior to serving time
		STARTING AMOUNT	- 15 each, 32-fluid ounce cans
		REPLENISH AMOUNT	- 5 each as needed, 32-fluid ounce cans
		TYPE OF CONTAINER	- juice dispenser
		WHERE	- self-service line
		SPECIAL INSTRUCTIONS	- Follow directions on can; prepare night before, place in covered 15-gallon pot under refrigeration.
	b.	GRAPE JUICE, FROZEN	
		PREPARATION TIME	- 1 hour prior to serving time
		STARTING AMOUNT	- 12 each, 32-fluidounce cans
		REPLENISH AMOUNT	- 4 each as needed, 32-fluid ounce cans
		TYPE OF CONTAINER	- juice dispenser
		WHERE	- self-service line
		SPECIAL INSTRUCTIONS	- Follow directions on can; prepare night before, place in covered 10-gallon pot under refrigeration.
2.	a.	ASSORTED CANNED JUICES	
		PREPARATION TIME	- 45 minutes prior to serving time
		STARTING AMOUNT	- 6 each, no 3 cylinder cans
		REPLENISH AMOUNT	- 1 each as needed, no 3 cylinder can
		TYPE OF CONTAINER	- juice dispenser
		WHERE	- self-service line
		SPECIAL INSTRUCTIONS	- Chill overnight, shake cans prior to opening. See special instructions on the production schedule for type(s) to be used.
	b.	ASSORTED CANNED JUICES, EZ OPEN	
		PREPARATION TIME	- 45 minutes prior to serving time
		STARTING AMOUNT	- 48 each, 6-fluidounce cans
		REPLENISH AMOUNT	- 12 each as needed, 6-fluid ounce cans
		WHERE	- salad bar
		SPECIAL INSTRUCTIONS	- Chill overnight; see special instructions on the production schedule for type(s) to be used.

3.	a.	ASSORTED FRESH FRUIT	APPLES	ORANGES	PEARS
		PREPARATION TIME	- 1 hour prior	1 hour prior	1 hour prior
		STARTING AMOUNT	- 35 pounds	30 pounds	20 pounds
		REPLENISH AMOUNT	- 10 pounds	10 pounds	10 pounds
		TYPE OF CONTAINER	- 8" line pan	8" line pan	8" line pan
		WHERE	- salad bar	salad bar	salad bar
		SPECIAL INSTRUCTIONS	- Wash fruit thoroughly before placing in line pan, see special instructions on the production schedule for type(s) to be used.		

Figure C-2. Sample SOP

ATSM-CES-OA
SUBJECT: Continuation of Standing Operating Procedures

b.	ASSORTED FRESH FRUIT	BANANAS	TANGERINES	GRAPES
	PREPARATION TIME	- 1 hour prior	1 hour prior	1 hour prior
	STARTING AMOUNT	- 40 pounds	30 pounds	30 pounds
	REPLENISH AMOUNT	- 10 pounds	10 pounds	10 pounds
	TYPE OF CONTAINER	- 8" line pan	8" line pan	8" line pan
	WHERE	- salad bar	salad bar	salad bar
	SPECIAL INSTRUCTIONS	- Do not place bananas in refrigeration, wash fruit prior to placing in serving pan, see special instructions on the production schedule for type(s) of fruit(s) to be used.		

4.	CANTALOUPS AND HONEYDEW MELONS	
	PREPARATION TIME	- 45 minutes prior to serving
	STARTING AMOUNT	- 2 each
	REPLENISH AMOUNT	- 1 each as needed
	TYPE OF CONTAINER	- 6" line pan
	WHERE/SERVING UTENSIL	- salad bar/tongs
	SPECIAL INSTRUCTIONS	- See special instructions on the production schedule for type(s) to be used. Wash and cut in half, remove the seeds in, slice into 1/2-inch thick wedges.

5.	JAMS AND JELLIES, INDIVIDUAL	
	PREPARATION TIME	- 30 minutes prior to serving
	STARTING AMOUNT	- 100 each, 1/2-ounce cup 100 count
	REPLENISH AMOUNT	- 50 each as needed
	TYPE OF CONTAINER	- separate 1/3 line pans for different types
	WHERE	- salad bar
	SPECIAL INSTRUCTIONS	- See special instruction on production schedule for type(s) to be used.

6.	MAPLE SYRUP CANNED	
	PREPARATION TIME	- 1 hour prior to serving
	STARTING AMOUNT	- 1 each, no 10 size can
	REPLENISH AMOUNT	- 1 each as needed, no 10 size can
	TYPE OF CONTAINER	- 1/2 line pan
	WHERE/SERVING UTENSIL	- last slot on the hot line/1-ounce ladle
	SPECIAL INSTRUCTIONS	- Heat syrup in covered half pan for 10 minutes in steamer.

7.	MAPLE SYRUP INDIVIDUAL	
	PREPARATION TIME	- 1 hour prior to serving
	STARTING AMOUNT	- 100 each, 100 count individual-size bags
	REPLENISH AMOUNT	- 50 each as needed
	TYPE OF CONTAINER	- 1/2 line pan
	WHERE/SERVING UTENSIL	- last slot on the hot line/tongs
	SPECIAL INSTRUCTIONS	- Follow heating instructions on bag.

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Figure C-2. Sample SOP (continued)

ATSM-CES-OA
SUBJECT: Continuation of Standing Operating Procedures

8.	WAFFLES, FROZEN, BROWN AND SERVE	
	PREPARATION TIME	- 1 hour prior to serving, preheat oven
	STARTING AMOUNT	- 15 pounds, 1-pound package or box
	REPLENISH AMOUNT	- 1 pound as needed
	TYPE OF CONTAINER	- 4" line pan
	WHERE	- hot line
	SPECIAL INSTRUCTIONS	- Follow the directions on the package.
9.	MELTED BUTTER	
	PREPARATION TIME	- 1 hour prior to serving
	STARTING AMOUNT	- 3 pounds, 1-pound prints
	REPLENISH AMOUNT	- 1 pound as needed, 1-pound print
	TYPE OF CONTAINER	- 1/2 line pan
	WHERE/SERVING UTENSIL	- last slot on the hot line/basting brush
	SPECIAL INSTRUCTIONS	- Melt slowly in large frying pan.
10.	BUTTER PATTIES, READY TO SERVE	
	PREPARATION TIME	- 30 minutes prior to serving
	STARTING AMOUNT	- 3 pounds, 90 patties per pound
	REPLENISH AMOUNT	- 1 pound as needed
	TYPE OF CONTAINER	- butter dispenser
	WHERE	- self-service line, next to juice machines
	SPECIAL INSTRUCTIONS	- Clean dispenser after each meal.
11.	MILK, LOW-FAT, 6 GALLON CONTAINER	
	PREPARATION TIME	- 1 1/2 hour prior to serving time
	STARTING AMOUNT	- 1 container per empty container
	REPLENISH AMOUNT	- 1 container per empty container
	TYPE OF CONTAINER	- milk machine
	WHERE	- self-service line
	SPECIAL INSTRUCTIONS	- Milk tubes will be cut diagonally approximately 1/2 inch from the base of the cutoff valve.
12.	MILK, 1/2 PINT	
	PREPARATION TIME	- 30 minutes prior to serving
	STARTING AMOUNT	- 100 white, 50 chocolate, 25 skim
	REPLENISH AMOUNT	- 25 each as needed
	TYPE OF CONTAINER	- 4" deep line pan
	WHERE	- salad bar
	SPECIAL INSTRUCTIONS	- Do not add ice to the pans; ensure the salad bar is plugged in 45 minutes prior to serving time. See special instructions on the production schedule for type(s) to be used.
13.	ASSORTED YOGURTS	
	PREPARATION TIME	- 15 minutes
	STARTING AMOUNT	- 25 each, 8-ounce containers
	REPLENISH AMOUNT	- 25 each as needed, 8-ounce containers
	WHERE	- salad bar
	SPECIAL INSTRUCTIONS	- See special instruction on the production schedule for the different type(s) to be used.

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Figure C-2. Sample SOP (continued)

ATSM-CES-OA
SUBJECT: Continuation of Standing Operating Procedures

14.	ASSORTED BREADS	
	PREPARATION TIME	- 30 minutes prior to serving
	STARTING AMOUNT	- 3 loaves of sliced white, 1 wheat, 1 rye
	REPLENISH AMOUNT	- 1 loaf each as needed
	TYPE OF CONTAINER	- bread dispenser
	WHERE	- self-service line
	SPECIAL INSTRUCTIONS	- Use freshest bread on hand for each meal.
15.	HAMBURGER BUNS	
	PREPARATION TIME	- 1 hour prior to serving, turn on bun warmer
	STARTING AMOUNT	- use amount needed for hamburgers
	REPLENISH AMOUNT	- as needed, 8 buns per package
	TYPE OF CONTAINER	- bread warmer
	WHERE	- behind short-order serving line
	SPECIAL INSTRUCTIONS	- Place buns in warmer 30 minutes prior to serving.
16.	FRANKFURTER ROLLS	
	PREPARATION TIME	- 1 hour prior to serving, turn on bun warmer
	STARTING AMOUNT	- use amount needed for frankfurters
	REPLENISH AMOUNT	- as needed, 8 rolls per package
	TYPE OF CONTAINER	- bread warmer
	WHERE	- behind short-order serving line
	SPECIAL INSTRUCTIONS	- Place rolls in warmer 30 minutes prior to serving.
17.	ICE CREAM CONES	
	PREPARATION TIME	- 20 minutes
	STARTING AMOUNT	- 1 box, 100 servings per box, wafer type
	REPLENISH AMOUNT	- 1 box as needed, 100 servings per box
	WHERE	- next to soft-serve ice cream machine
	TYPE OF CONTAINER	- 6" line pan with lid
18.	SOFT-SERVE ICE CREAM	
	PREPARATION TIME	- 2 hours prior to serving
	STARTING AMOUNT	- 6 gallons each, chocolate and vanilla
	REPLENISH AMOUNT	- 3 gallons each as needed
	TYPE OF CONTAINER	- soft-serve ice cream machine
	WHERE	- self-service line
	SPECIAL INSTRUCTIONS	- Operation and cleaning instructions are located on the side of the machine.
19.	TEA BAGS	
	PREPARATION TIME	- 1 hour prior to serving
	STARTING AMOUNT	- 1 box, 100 count individuals per box
	REPLENISH AMOUNT	- 1 box, 100 count individuals per box
	TYPE OF CONTAINER	- serve from the original box
	WHERE	- self-service line, next to coffee urn
	SPECIAL INSTRUCTIONS	- Close box after each meal.

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Figure C-2. Sample SOP (continued)

ATSM-CES-OA
SUBJECT: Continuation of Standing Operating Procedures

20.	CARBONATED BEVERAGES			
	PREPARATION TIME	- 2 1/2 hours prior to serving		
	STARTING AMOUNT	- 1 metal container per empty container		
	REPLENISH AMOUNT	- 1 metal container per empty container		
	TYPE OF CONTAINER	- carbonated-beverage dispenser		
	WHERE	- self-service line		
	SPECIAL INSTRUCTIONS	- Lock beverage machine after each meal. See special instructions on the production schedule for type(s) to be used. Hookup and cleaning instructions are located on the side of the dispenser.		
21.	DECAFFEINATED COFFEE, INSTANT			
	PREPARATION TIME	- 1 hour		
	STARTING AMOUNT	- 1 each, 100 count box, per empty box		
	REPLENISH AMOUNT	- 1 each, 100 count box, per empty box		
	TYPE OF CONTAINER	- leave in original box		
	WHERE	- next to the coffee urn		
	SPECIAL INSTRUCTIONS	- Close the lid on the box at the end of the serving period.		
22.	BEVERAGE BASE			
	PREPARATION TIME	- 3 hours prior to serving		
	STARTING AMOUNT	- 3 packages		
	REPLENISH AMOUNT	- 1 package each type(s) as needed		
	TYPE OF CONTAINER	- juice dispenser		
	WHERE	- self-service line		
	SPECIAL INSTRUCTIONS	- Follow directions on package; see special instructions on the production for the type(s) to be used.		
23.	ASSORTED SALAD DRESSINGS, INDIVIDUAL			
	PREPARATION TIME	- 1 hour		
	STARTING AMOUNT	- 100 each, 100 count individual servings		
	REPLENISH AMOUNT	- 50 each type(s) as needed		
	TYPE OF CONTAINER	- 1/3 line pan		
	WHERE	- salad bar		
	SPECIAL INSTRUCTIONS	- See special instructions on the production schedule for type(s) to be used (including low-calorie).		
24.	INDIVIDUAL CONDIMENTS	HOT SAUCE	STEAK SAUCE	WORCESTERSHIRE
	PREPARATION TIME	- 1 hour	1 hour	1 hour
	STARTING AMOUNT	- 3 bottles, 6-ounce	3 bottles, 10-ounce	3 bottles, 10-ounce
	REPLENISH AMOUNT	- 1 bottle each as needed		
	WHERE	- salad bar		
	SPECIAL INSTRUCTIONS	- Wash all bottles after each meal, store partial bottles under refrigeration. See special instructions on the production for the type(s) to be used.		

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Figure C-2. Sample SOP (continued)

ATSM-CES-OA
SUBJECT: Continuation of Standing Operating Procedures

25. COFFEE CREAMER, NONDAIRY, INDIVIDUAL

PREPARATION TIME	- 90 minutes prior to serving
STARTING AMOUNT	- 100 packages each, 100 packages per box
REPLENISH AMOUNT	- 100 packages each as needed
TYPE OF CONTAINER	- 1/3 line pan
WHERE	- Next to coffee urn, by tea bags.

26. CEREAL, PREPARED, PACKAGE ASSORTMENT

PREPARATION TIME	- 1 hour prior to serving
STARTING AMOUNT	- 72 servings, 72 servings per box
REPLENISH AMOUNT	- 20 packages as needed, 72 servings box
WHERE	- place on top of the salad bar
SPECIAL INSTRUCTIONS	- Place soup bowls (inverted) next to the cereal packages.

27. POTATO CHIPS, INDIVIDUAL BAGS

PREPARATION TIME	- 20 minutes
STARTING AMOUNT	- 25 bags each, 1-1/2-ounce packages
REPLENISH AMOUNT	- 25 bags each as needed
TYPE OF CONTAINER	- 4" line pan
WHERE	- self-service line

28. APPLESAUCE

PREPARATION TIME	- 1 hour
STARTING AMOUNT	- 3 each, no 303 size cans
REPLENISH AMOUNT	- 1 each as needed, no 303 size can
TYPE OF CONTAINER	- 1/3 line pan
WHERE/SERVING UTENSIL	- salad bar/2-ounce ladle
SPECIAL INSTRUCTIONS	- Chill overnight.

29. CATSUP, MUSTARD, SALAD DRESSING, AND PICKLE RELISH

PREPARATION TIME	- 1 hour
STARTING AMOUNT	- 100 each, 100 count individual servings
REPLENISH AMOUNT	- 50 each as needed
TYPE OF CONTAINER	- 1/3 line pan for each type
WHERE	- salad bar

30. CRACKERS, SODA, SALTED, INDIVIDUAL WRAPPED

PREPARATION TIME	- 1 hour prior to serving
STARTING AMOUNT	- 1/2 pound, from 2-pound box
REPLENISH AMOUNT	- 1/4 pound as needed, from 2-pound box
TYPE OF CONTAINER	- 1/3 line pan, 6" deep
WHERE	- self-service line next to soup pot

31. LEMON WEDGES

PREPARATION TIME	- 45 minutes prior to serving
STARTING AMOUNT	- 1 pound lemons
REPLENISH AMOUNT	- 1/2 pound lemons as needed
TYPE OF CONTAINER	- 1/3 line pan
WHERE/SERVING UTENSIL	- next to coffee urn/fork
SPECIAL INSTRUCTIONS	- Wash, cut in half, slice into four wedges per half.

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Figure C-2. Sample SOP (continued)

ATSM-CES-OA
SUBJECT: Continuation of Standing Operating Procedures

32.	RELISH TRAY, SHORT ORDER	LETTUCE	TOMATOES	ONIONS
	PREPARATION TIME	- 90 minutes	90 minutes	90 minutes
	STARTING AMOUNT	- 4 pounds	5 pounds	4 pounds
	REPLENISH AMOUNT	- 2 pounds	2 pounds	2 pounds
	TYPE OF CONTAINER	- 2" line pan	2" line pan	2" line pan
	WHERE/SERVING UTENSIL	- salad bar/tongs		
	SPECIAL INSTRUCTIONS	- Wash produce per recipe M-G-1, shred lettuce, slice tomatoes thin on slicing machine, peel onions and slice thin on slicing machine.		

33.	SALAD BAR	
	PREPARATION TIME	- 3 hours
	STARTING AMOUNT	- see quantities stated below
	REPLENISH AMOUNT	- see quantities stated below
	TYPE OF CONTAINER	- 1/3 line pan
	WHERE/SERVING UTENSIL	- salad bar/tongs or tablespoon, as appropriate
	SPECIAL INSTRUCTIONS	- See recipe cards M-G-1 and M-G-2 for washing, preparation, and storage instructions for fresh vegetables.

SALAD BAR ITEMS	STARTING AMOUNTS	REPLENISH AMOUNTS
lettuce, bite-size pieces	10 pounds	5 pounds
cabbage, shredded	2 pounds	2 pounds
tomatoes, wedge	4 pounds	2 pounds
green peppers, strips	3 pounds	1 pound
carrot strips	3 pounds	1 pound
celery strips	3 pounds	1 pound
cucumbers, pared, sliced	3 pounds	1 pound
onions, chopped	1 pound	1 pound
olives green whole	1 ea, no 303 size can	1 ea, no 303 size can
olives ripe	1 ea, no 303 size can	1 ea, no 303 size can
ham, pear-shaped, chopped	3 pounds	2 pounds
jalapeno peppers	1/2, no 10 size can	1/2, no 10 size can

CHARLES H. BERRY
SFC, USA
Dining Facility Manager

FOOD ADVISOR_____ Approved/Disapproved _____/_____
(name and rank) Date Ext

Reviewed _____/_____
Reviewed _____/_____
Reviewed _____/_____

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Figure C-2. Sample SOP (continued)

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Appendix D

Comparison of Fahrenheit and Celsius Temperatures

Figure D-1 is the comparison of Fahrenheit and Celsius temperatures. Dining facility equipment and recipes may use Celsius temperatures in overseas areas.

°F	*°C*	*°F*	*°C*	*°F*	*°C*	*°F*	*°C*	*°F*	*°C*	*°F*	*°C*	*°F*	*°C*
-20	-28.89	14	-10.00	48	8.89	82	27.78	116	46.67	150	65.56	184	84.45
-19	-28.34	15	-9.45	49	9.45	83	28.37	117	47.23	151	66.12	185	85.01
-18	-27.78	16	-8.89	50	10.00	84	28.89	118	47.78	152	66.67	186	85.56
-17	-27.22	17	-8.33	51	10.56	85	29.45	119	48.34	153	67.23	187	86.12
-16	-26.67	18	-7.78	52	11.11	86	30.00	120	48.89	154	67.78	188	86.67
-15	-26.11	19	-7.22	53	11.67	87	30.56	121	49.45	155	68.34	189	87.23
-14	-25.56	20	-6.67	54	12.22	88	31.11	122	50.00	156	68.89	190	87.78
-13	-25.00	21	-6.11	55	12.78	89	31.67	123	50.56	157	69.45	191	88.34
-12	-24.45	22	-5.56	56	13.33	90	32.22	124	51.12	158	70.01	192	88.90
-11	-23.89	23	-5.00	57	13.89	91	32.78	125	51.67	159	70.56	193	89.45
-10	-23.34	24	-4.44	58	14.45	92	33.34	126	52.23	160	70.12	194	90.01
-9	-22.78	25	-3.89	59	15.00	93	33.89	127	52.78	161	71.67	195	90.56
-8	-22.22	26	-3.33	60	15.56	94	34.45	128	53.34	162	72.23	196	91.12
-7	-21.67	27	-2.78	61	16.11	95	35.00	129	53.89	163	72.78	197	91.67
-6	-21.11	28	-2.22	62	16.67	96	35.56	130	54.45	164	73.34	198	92.23
-5	-20.56	29	-1.67	63	17.22	97	36.11	131	55.00	165	73.89	199	92.79
-4	-20.00	30	-1.11	64	17.78	98	36.67	132	55.56	166	74.45	200	93.34
-3	-19.45	31	-.56	65	18.33	99	37.23	133	56.12	167	75.01	201	93.90
-2	-18.89	**32**	**0**	66	18.89	100	37.78	134	56.67	168	75.56	202	94.45
-1	-18.33	33	.56	67	19.45	101	38.34	135	57.23	169	76.12	203	95.01
0	**-17.78**	34	1.11	68	20.00	102	38.89	136	57.78	170	76.67	204	95.56
1	-17.22	35	1.67	69	20.56	103	39.45	137	58.34	171	77.23	205	96.12
2	-17.67	36	2.22	70	21.11	104	40.00	138	58.89	172	77.78	206	96.67
3	-16.11	37	2.78	71	21.67	105	40.56	139	59.45	173	78.34	207	97.23
4	-15.56	38	3.33	72	22.22	106	41.11	140	60.00	174	78.90	208	97.78
5	-15.00	39	3.89	73	22.78	107	41.67	141	60.56	175	79.45	209	98.34
6	-14.45	40	4.44	74	23.34	108	42.23	142	61.12	176	80.01	210	98.90
7	-13.89	41	5.00	75	23.89	109	42.78	143	61.67	177	80.56	211	99.45
8	-13.33	42	5.56	76	24.45	110	43.34	144	62.23	178	81.12	212	100.00
9	-12.78	43	6.11	77	25.00	111	43.89	145	62.78	179	81.67		
10	-12.22	44	6.67	78	25.56	112	44.45	146	63.34	180	82.23		
11	-11.67	45	7.22	79	26.11	113	45.00	147	63.89	181	82.78		
12	-11.11	46	7.78	80	26.67	114	45.56	148	64.45	182	83.34		
13	-10.56	47	8.33	81	27.22	115	46.11	149	65.01	183	83.90		

Figure D-1. Fahrenheit and Celsius temperatures

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Glossary

SECTION I – ACRONYMS AND ABBREVIATIONS

Acronym	Definition
ACF	American Culinary Federation
AFFS	Army field feeding system
AFMIS	Army Food Management Information System
AIS	automated information system
ALFOODACT	Department of Defense hazardous food and non-prescription drug recall system
AR	Army regulation
ARCS	Army ration credit system
ARNG	Army National Guard
ARNGUS	Army National Guard of the United States
BAS	basic allowance for subsistence
BDFA	basic daily food allowance
BLDG	building
BOSS	better opportunities for single Soldiers
C	cup
°C	degrees Celsius
CBRN	chemical, biological, radiological and nuclear
COR	contracting officer's representative
CPT	captain
CS/DFA	cook-support/dining facility attendant
DA	Department of the Army
DA PAM	Department of the Army pamphlet
DFA	dining facility attendant
DFAS	Defense Finance and Accounting Service
DFM	dining facility manager
DLA - TS	Defense Logistics Agency – Troop Support
DOD	Department of Defense
°F	degrees Fahrenheit
FIFOFE	first-in, first-out, first-to-expire
FM	field manual
FOMNCO	food operations management noncommissioned officer
FPM	food program manager
FPMO	food progam management office
FSCM	food service contract management
FY	fiscal year
GAL	gallon
HACCP	hazard analysis and critical control point

HAZCOM	hazardous communication
HC	headcount
HHC	headquarters and headquarters company
HQ	headquarters
ICE	interactive customer evaluation
IFC	insulated food container
IN	infantry
JCCoE	Joint Culinary Center of Excellence
KO	contracting officer
LIFO	last-in, first-out
MCG	micrograms
MG/L	milligrams per litre
MOA	memorandum of agreement
MOI	memorandum of instruction
MOS	military occupational specialty
MRE	meal, ready to eat
MSDS	material safety data sheet
NCO	noncommissioned officer
NSF	NSF International
OZ	ounce
PH	potential of hydrogen
PHF	potentially hazardous food
PPM	parts per million
PT	pint
PWS	performance work statement
QT	quart
RC	reserve component
SIK	subistence in kind
SFC	sergeant first class
SGT	sergeant
SMCT	Soldiers Manual of Common Tasks
SOP	standing operating procedure
SPV	subsistence prime vendor
SSG	staff sergeant
SSM	subsistence supply manager
SSMO	subsistence supply management office
STP	Soldier training publication
TDZ	temperature danger zone
TB MED	technical bulletin medical
TBSP	tablespoon
TSP	teaspoon

TM	technical manual
UIC	unit identification code
USAR	United States Army Reserve
USATRADOC	Unites States Army Training and Doctrine Command
VSP	veterinary services personnel

SECTION II – TERMS

bake

To cook by dry heat in an oven, either covered or uncovered.

barbecue

To roast or cook slowly, basting with a highly seasoned sauce.

baste

To moisten food with liquid or melted fat during cooking to prevent drying of the surface and to add flavor.

batch preparation

A predetermined quantity or number of servings of food that is to be prepared at selected time intervals in progressive cookery for a given meal period to ensured fresh, high quality cooked food to diners.

beat

To make a mixture smooth by using a fast regular circular and lifting motion which incorporates air into a product.

blanch

To partially cook in deep fat, boiling water or steam.

blend

To mix two or more ingredients thoroughly.

boil

To cook in liquid at boiling point (212°F.) in which bubbles rise and break at the surface.

braise

To brown in small amount of fat, then cook slowly in small amount of liquid below the boiling point in a covered utensil.

bread

To cover with crumbs or other suitable dry coating ingredient; or to dredge in a mixture of flour seasonings, and/or condiments, dip in a mixture of milk and slightly beaten eggs and then dredge in crumbs.

broil

To cook by direct exposure to heat.

brown

To produce a brown color on the surface of food by subjecting it to heat.

chop

To cut food into irregular small pieces.

cream

To mix until smooth, so that the resulting mixture is softened and thoroughly blended.

crimp

To pinch together in order to seal.

cube

To cut any food into square-shaped pieces.

dice

To cut into small cubes or pieces.

dock

To punch a number of vertical impressions in a dough with a smooth round stick about the size of a pencil to allow for expansion an permit gases to escape during baking.

dredge

To coat with crumbs, flour, sugar or corn meal.

fermentation

The process by which yeast acts on a sugar and starches in the dough to produce carbon dioxide gas and alcohol, resulting in expansion of the dough. During this period, the dough doubles in bulk.

flake

To break lightly into small pieces.

flow rate

The number of diners that can be served from each serving line per minute or the number of diners that the headcount can process per minute.

fold

To blend two or more ingredients together with a cutting and folding motion.

fry

To cook in hot fat.

garnish

To decorate with small pieces of colorful food.

glaze

A glossy coat given to foods, as by covering with a sauce or by adding a sugary syrup or icing.

gluten

A tough elastic protein that gives dough its strength and ability to retain gas.

grate

To rub food on a grater and thus break it into tiny pieces.

grill

To cook, uncovered, on a grill, removing grease as it accumulates. No liquid is added.

knead

To work dough by folding and pressing firmly with palms of hands, turning between foldings.

marinade

A preparation containing spices, condiments, vegetables, and aromatic herbs, and a liquid (acid or oil or combination of these) in which a food is placed for a period to time to enhance its flavor or to increase it tenderness.

marinate

To allow to stand in a marinade to add flavor or tenderness.

mince

To cut or chop into very small pieces.

panbroil

To cook uncovered in a hot frying pan, pouring off fat as it accumulates.

pare

To cut away outer covering.

peel

To remove the out layer of skin of a vegetable or fruit.

progressive cookery

The continous preparation of food in successive steps during the entire serving period. (continious preparation of vegtables, cook-to-order hamburgers, steaks, fried eggs, pancakes). This procedure ensures fresh, high quality cooked food to diners on a continuous basis. See batch preparation.

progressive replenishment

The placement of food on the serving lines that is not excessive and the continous replenishment of these foods during the entire serving period. This procedure ensures fresh food to diners on a continuous basis and reduces the amount of food leftover or discarded at the end of the serving period.

proof

To allow shaped and panned yeast products like bread and rolls to double in size under controlled atmospheric conditions.

punch

To press down on the dough by hand and folding it from side to side or from back to front.

reconstitute

To restore to liquid state by adding water. Also to reheat frozen prepared foods.

rehydrate

To soak, cook, or use other procedures with dehydrated foods to restore water lost during drying.

roast

To cook by dry heat; ususally uncovered, in an oven.

roux

A French word for a mixture of flour and fat, cooked to eliminate the raw, uncooked taste of flour.

saute

To brown or cook in small amout of fat.

scald

To heat a liquid over hot water or direct heat to a temperature just below the boiling point.

scale

To measure a portion of food by weighing.

scant

No quite up to stated measure.

score

To make shallow cuts across top of a food item.

seasoned flour or crumbs

A mixture of flour or crumbs with seasonings.

shred

To cut or tear into thin strips or pieces using a knife or a shredder attachment.

sift

To put dry ingredients through a sieve.

simmer

To cook gently in a liquid just below the boiling point (190°F - 210°F); bubbles will form slowly an break at the surface.

slurry

A lump-free mixture made by whipping cornstarch or flour into cold water or other liquids.

steam

To cook over or surrounded by steam.

stew

To simmer in enough liquid to cover solid foods.

stir

To mix two or more ingredients with a circular motion.

stock

The broth from simmering meat or vegetables in water with seasoning. Used as a base for soups, sauces and gravies.

temper

To remove from freezer and place under refrigeration for a period of time sufficient to facilitate separation and handling of frozen product. Internal temperature of the food should be approximately 26°F to 28°F.

thaw

To remove from freezer and place under refrigeration approximately 18-48 hours. Internal temperature should be above 30°F.

toss

To mix ingredients lightly.

trim

To cut or tear away wilted or damaged portions from produce, such as celery, lettuce, or cabbage, or to cut away fat from meat.

wash

The liquid brushed on the surface of unbaked pies or turnovers to give a golden brown color to the crust or on the surface of proofed breads and rolls before baking and on baked bread and rolls to give a shine to the crust.

whip

To beat rapidly with wire whip to increase volume by incorporating air.

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DOCUMENTS NEEDED

These documents must be available to the intended users of this publication.

None

READINGS RECOMMENDED

These readings contain relevant supplemental information.

None

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TM 4-41.11
23 April 2012

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