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MICROBIOLOGICAL ANALYSIS OF THE FOOD PREPARATION AND DINING FACILITIES AT FORT MYER AND BOLLING AIR FORCE BASE

by

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20. ABSTRACT *(Continue on reverse side if necessary and identify by block number)*

Two feeding facilities, Ft. Myer and Bolling Air Force Base were studied for the microbial quality of their products and the state of their sanitation.

With the exception of a cream pie, produced and served at Bolling Air Force Base, all food samples were well within the recommended microbial constraints. Sanitation at Ft. Myer was superior to that at Bolling Air Force Base, whereas the incidence of improper cooking and serving temperatures noted were comparable.

Two additional monitoring aids, a paper thermometer "thermo-label", used to determine the adequacy of the rinse water temperature of the warewasher and a swab technique capable

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of being used in the field were found to be useful aids in evaluating sanitary practices.

FORWARD

The U. S. Army Natick Laboratories (NLABS) was requested by the U. S. Army Troop Support Agency, Fort Lee, Va. (USATSA Letter, DALO-TAD-T, 9 August 1973) to evaluate the Food Service Contractual Operations at the Tri-Service Dining Facility at Fort Myer, Arlington, Va., and the Consolidated Dining Facility at Bolling Air Force Base in Washington, D.C. The Food Microbiology Group of the NLABS was subsequently assigned the following responsibilities:

1. To evaluate the sanitation of the facilities.

2. To determine the microbiological quality of foods on the serving line.

3. To obtain time-temperature profiles of the food during preparation and serving.

This study was conducted under the O and MF Program, Modern Army Food Service Systems.

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1. Mr. Edward J. MacGlone, Mr. Elzie I. Nelson, and Captain David Donofrio at the Veterinary Division, 1st U.S. Army Medical Laboratory, Ft. George Meade, Maryland, for conducting the microbiological analyses in their laboratory.

2. The personnel at both Ft. Myer and Bolling Air Force Base who cooperated with our efforts to make this study more effective.

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INTRODUCTION

An effort was made to determine the microbiological quality of some foods being served at the Tri-Service Dining Facility at Ft. Myer and the Consolidated Dining Facility at Bolling Air Force Base. At the same time the time-temperature profiles of the food during preparation and serving was determined and sanitation was evaluated.

An attempt was made to evaluate facilities and clean-up procedures visually and, wherever feasible, to corroborate these observations with more quantitative techniques. These studies also involved an evaluation of innovative monitoring procedures such as a modified swabbing technique and the use of paper thermometers for the warewashing operation.

Ft. Myer and Bolling Air Force Base represented two very dissimilar operations and physical plants. The facility at Ft. Myer was more elaborate and had a spacious, clean and airy appearance. At Ft. Myer approximately 2600 meals were served per day as compared to about 1000 at Bolling Air Force Base (Table 1). There were always one supervisor and at least 2 cooks on duty at all times, plus a stable and adequate clean-up crew with well designated duties; and the contractor was allowed to purchase menu ingredients on the commercial market.

At Bolling Air Force Base the housekeeping was inferior to that at Ft. Myer. The equipment was inadequate, and periodically malfunctioning; there was a large dependency upon part-time high school students for clean-up operation. The contractor at Bolling Air Force Base prepared government furnished food.

EXPERIMENTAL PROCEDURE

The study was conducted over a 6 day period, 28 April through 2 May 1974. The initial three days were spent at Ft. Myer and the remaining 3 days at Bolling Air Force Base. Each base was notified beforehand of the investigators' arrival but no attempt was made by the investigators to describe testing procedures nor the routine to be followed. While it is difficult to evaluate the influence of the monitors on normal activities, any obvious deviations either in procedures or in results which can be ascribed to the monitors activities will be noted.

Microbiological Analysis

All analyses were conducted by personnel of the Microbiological Laboratory, Veterinary Division, 1st U.S. Army Medical Laboratory, Ft. George Meade, Maryland, following procedures prescribed by the authors. Samples for analysis at each facility were placed in sterile plastic Whirl-Pak bags (Scientific Products) and packed in ice chips in an insulated container until delivered to Ft. Meade. The samples were never more than 30 hr. old and usually less than 24 hr. old, at the time of analysis.

Table 1

Percentage of Meals Served at Ft. Myer and Bolling Air Force Base

	Percentage	
	Ft. Myer	Bolling Air Force Base
Breakfast-regular	27.2	21.1
Breakfast-continental	0.6	—
Lunch-regular	27.3	31.0
Lunch-short order	5.2	8.6
Dinner-regular	19.8	35.3
Dinner-short order	3.4	—
Dinner-late	9.9	—
Breakfast-early	6.6	4.0
Average number of meals served per day	2,596	984

The media employed in this study were prepared, packaged and sent to the laboratory by Hospital Supply Corporation, Andover, Ma. Shipment was by Air Freight, the time for delivery being less than 12 hr. Upon receipt the media were, with the exception of RODAC (replicate organism detection and counting) plates, stored and maintained at 5 C or lower. RODAC plates were stored at room temperature for 24 hr before use.

Analyses of Food Items

The food items were analyzed for the following indices:

1. Aerobic Plate Count (APC; CFU/g)
2. Confirmed Coliform (MPN/g)
3. Fecal Coliform (MPN/g)
4. Coagulase Positive Staphylococci (Organisms/g)

The analysis for specific indices was as described in the Bacteriological Analytical Manual (BAM) for Foods of the Food and Drug Administration except as follows: The food samples were homogenized in 0.1% peptone, pH 7 and 0.1 ml aliquots of several dilutions were spread on prepoured plate count agar. To determine coliform and fecal coliform MPN/g 10 ml of the 1:10 food slurry was placed in 20 ml of double strength lauryl sulfate broth for the initial dilution.

Analysis by RODAC Plates

In addition, as noted above, to tempering RODAC plates for 24 hrs. prior to use, excessive moisture on the cover was removed by removing the cover and shaking. After use the plates were usually incubated for 24 hr. at room temperature, whereupon, they were transported to the laboratory and incubated at 35 C for an additional 24 hr. before counting. The number of plates used for an evaluation of the sanitation of a surface was related to the area under consideration with the following guide being employed:

No. of square feet	No. of RODAC plates
$\leqslant 1$ ($\leqslant 0.093$ m^2)	1
1–2 (0.093 – 0.186 m^2)	2
2–5 (0.186 – 0.465 m^2)	4
5–25 (0.465 – 2.323 m^2)	8
25–100 (2.323 – 9.290 m^2)	12

Analysis by Swabs

The use of swabs was introduced into the study to enable the examination of surfaces not suitable for testing by RODAC plates. Using the conventional swab technique,requiring serial dilution and plating, would have placed an additional burden on the laboratory.

In collaboration with Millipore Corporation, Bedford, Ma., a field test was devised. This entailed the use of swabs (Swabtube, Lab-Tek, Scientific Products), a buffered rinse solution (Standard Methods: For the Examination of Dairy Products, 12th Ed. pp 142-147, ALPHA N.Y., N.Y.) and the Millipore Total Count Water Tester (MT 00 00025). The procedure for swabbing was to place 10 ml of the rinse solution into the Swab-tube, moisten the swab with diluent and swab an estimated area of 4 in^2 (25.8 cm^2), 25 times, in each of two directions; the two directions being at right angles. The tip of the swab was broken into the 10 ml of rinse solution and shaken 25 times. After the rinse solution was poured into the case of the water tester and the volume adjusted with sterile rinse water to a volume of 18 ml, the water tester was immersed for 30 sec. to allow the absorption of 1 ml. The tester was removed from the case, the rinse solution was discarded, and the tester shaken to remove adhering droplets and reinserted into its case. After use, the testers were kept at room temperature overnight followed by incubation for 24 hr at 35 C. The number of colonies on the tester was multiplied by 18 to give CFU/swab/4 in^2 (25.8 cm^2).

Temperature Monitoring

The temperature of raw materials, and foods during cooking, storage, and serving were measured with Weston dial thermometers (Model 2292), having scale divisions of 2 F (1.1 C) and which were calibrated in boiling water.

Thermolabel temperature indicators (Paper Thermometer Company, Inc., Natick, Mass.) were used to determine the highest temperature attained by china and pots and pans in warewashers and pot and pan washers. The pressure-sensitive adhesive papers were randomly located on china dishes or on a pot or pan. Only those thermolabel papers which completely turned black were considered positive.

Microbiological and Temperature Criteria

The following criteria were employed as a guide:

Aerobic Plate Count:

Entree items, cooked vegetables
and cooked salads: Not more than 1×10^5 Cfu/g
Raw salad ingredients: No criteria
Cream pie: Not more than 5×10^4 CFU/g

Coliform MPN Count:

Cooked items: Not more than 1×10^2/g
Raw salad ingredients: No criteria

Fecal Coliform MPN Count:

Cooked items: None in 1 g
Raw salad ingredients: No criteria

Coagulase Positive Staphylococci (*Staphylococcus aureus*):

Cooked items: No criteria
Raw salad ingredients: No criteria

Sanitation

RODAC Plates

A satisfactorily sanitized surface is one for which half or more of the total number of plates used for an evaluation must contain 50 CFU/4 in^2 (25.8 cm^2) or less with no plate exceeding 100 CFU/25.8 cm^2. This is equivalent to allowing an average of not more than 75 CFU/25.8 cm^2 when an even number of plates are used for an evaluation. The average of 75 CFU/25.8 cm^2 is an appropriate but inexact guide when an odd number of plates are used, since the maximum average which can be obtained using an odd number of plates approaches 75 CFU/25.8 cm^2.

Swab

No criterion proposed at this time.

Temperature Monitoring

The following constraints were also monitored:

Cooking temperature (Internal): 165 F (74 C) except for roasts (beef and pork) which may be cooked to 150 F (66 C).

Serving temperature of chilled items: 45 F (7 C) or below is preferrable; the food temperature should not exceed 55 F (13 C) at any time during the display period.

Temperature of the surface of china during the final rinse in the warewasher and of a pan in the pot and pan washer: 160 F (71 C).

RESULTS

Microbiological Analyses of Meat Items

The analyses of cooked and uncooked meat items served at Ft. Myer is presented in Table 2. The reasons for their selection are presented in Table 5. In most instances the internal temperature of the item after cooking or during serving did not meet the criteria. In some instances samples were obtained of items for which both the cooking and serving temperature were too low. Sixteen entree items, 2 frankfurter samples (served at too low a temperature) and 1 inadequately refrigerated sandwich meat sample were selected for analyses. In no case did the APC exceed 100,000 CFU/g and only 2 samples exceeded 50,000 CFU/g. In only one sample were coliforms detected (sample 28) but at less than the tentative criterion of 100 MPN/g. Fecal coliforms were absent in all samples analyzed.

The same temperature criteria were used to select samples for analyses at Bolling Air Force Base (Table 3). Six meat entree items, 3 potatoes, 1 frankfurther and 1 cream pie were analyzed. The cream pie contained an APC in excess of 50,000 CFU/g (260,000 CFU/g) but had less than 100 coliforms and no fecal coliforms were present. The remaining samples had aerobic plate counts below 10,000 CFU/g and were devoid of coliforms.

Microbiological Analyses of Salad Items

The data in Table 4 indicates the wide variations in microbial counts to be encountered when examining raw vegetables. In all instances the display temperature of raw and cooked salad items was in excess of 45 F (7 C) and 12 out of the 14 samples were above the recommended temperature of 55 F (13 C).

The APC of 8 samples of raw vegetables prepared at Ft. Myer varied from 13×10^4 CFU/g (Sample 10) to 13×10^6 CFU/g (Sample 4). Sample 4 consisted of outer leaves which had been separated and made available to customers for sandwiches and were usually displayed with a minimum of refrigeration. Of the 8 samples consisting of lettuce and/or cabbage and carrots, 6 contained coliforms in excess of 100 MPN/g. A carrot (Sample 11) that had not been properly washed and trimmed was found to possess fecal coliforms. The chopped onion was a commercial product, purchased in a dehydrated form, and was of excellent microbiological quality.

The APC of 8 samples of raw salad items from Bolling Air Force Base varied from 1×10^5 to 5.7×10^6 CFU/g. Seven samples had coliforms in excess of 100 MPN/g and three samples contained fecal coliform organisms. Three cooked salad items, even though subjected to temperature abuse during preparation and/or display had an APC of less than 100,000 CFU/g, less than 10 coliforms/g and no fecal coliforms per gram.

Table 2

Microbiological Analyses of Meat[a] Items Sampled at Fort Myer

Sample No.	Item	Temperature Cooking °F	Temperature Cooking °C	Temperature Serving °F	Temperature Serving °C	Aerobic Plate Count (CFU/g)	Coliform[c] (MPN/g)
1	Swiss steak			132	56	400	0
2	Corned beef			118—134	48—57	<100	0
5	Ham			110—115	43—46	700	0
6	Corned beef			116-124	47-51	1,800	0
7	Fried chicken			100	38	900	0
13	Meat loaf	138-170	59-77	121-144	49-62	13,000	0
14	Breaded hamburger			136-142	58-61	800	0
15	Meat loaf	138-170	59-77	122	50	21,500	0
16	Meat loaf	138-170	59-77	113-124	45-51	22,500	0
17	Roast beef	128-140	53-60	120	49	94,500	0
20	Corned beef			——		300	0
21	Macaroni and beef			——		300	0
23	Roast pork	172-186	78-86	——		44,000	0
24	Roast pork	172-186	78-86	128-132	53-56	250	0
26	Creamed chicken					9,300	0
28	Roast pork					28,500	46
9	Frankfurter			98	37	2,200	0
15	Frankfurter			104	40	3,900	0
18	Ham, Salami[b]			70	21	77,000	0

[a]Unless otherwise noted these items were cooked.

[b]Uncooked.

[c]None of the samples contained fecal coliforms and all had less than 100 *Staphylococcus aureus*/g.

Table 3

Microbiological Analysis of Entree Items[a] and Other Menu Items Sampled at Bolling Air Force Base

Sample No.	Item	Temperature				Aerobic Plate Count (CFU/g)	Coliform[c] (MPN/g)
		Cooking		Serving			
		°F	°C	°F	°C		
35	Roast pork	150-170	66-77	120-130	49-54	8,800	0
37	Roast pork			122	50	<400	0
42	Ham	126-142	52-61			600	0
43	Baked chicken	188	87	134	57	300	0
45	Pork			114	46	200	0
48	Turkey roll	168	76	160	71	1,000	0
12	Rehydrated potatoes					900	0
25	Fried potato puff	108-114	42-46	124	51	2,100	0
39	Mashed potato			110-116	43-47	900	0
41	Frankfurter			160	71	800	0
40	Cream pie			RT[b]		260,000	24

[a]Unless otherwise noted the items analyzed were cooked.

[b]Room temperature.

[c]None of the samples had fecal coliforms and all had less than 100 *Staphylococcus aureus*/g.

Table 4

Microbiological Analysis[a] of Raw and Cooked Salad Items Sampled at Fort Myer and Bolling Air Force Base

Sample No.	Item	Serving Temperature °F	Serving Temperature °C	Aerobic Plate Count (CFU/g x 10^6)	Coliform (MPN/g)	Fecal Coliform (MPN/g)
	Fort Myer					
3	Salad - lettuce, cabbage, carrots	58	14	1.9	>1100	0
4	Lettuce - outer leaves	62-66	16-19	13.0	>1100	0
8	Salad	58-64	14-18	2.5	>1100	0
10	Lettuce	–		0.13	0.73	0
11	Carrot	–		0.44	>1100	2.3
10A	Salad - lettuce and tomato	66	19	0.27	21	0
19	Salad - lettuce	52-60	11-16	–	>1100	0
22	Lettuce	–		0.84	240	0
27	Chopped onions	84	29	0.011	0	0
	Bolling Air Force Base					
31	Lettuce	82	28	0.64	15	0
32	Salad - lettuce	60	16	5.70	>1100	0
33	Lettuce, tomato, mayonnaise	–		1.40	1100	0
36	Salad - lettuce	60	16	0.14	210	3.9
38	Salad - lettuce	–		0.29	>1100	15
44	Salad - lettuce	–		4.7	>1100	2.8
46	Salad - lettuce	60	16	2.3	1100	0
47	Salad - lettuce	54	12	0.10	460	0
34	Potato salad	54	12	0.058	2.3	0
49	Macaroni-Cheese salad	88	31	0.014	9.3	0
50	Macaroni-Cheese salad	86	30	0.004	2.3	0

[a]All samples had less than 100 *S. aureus*/g.

Table 5

Reasons for Selecting Particular Food Items for Analysis

Sample No.	Time Sampled	Comment
Cooked Items		
1	1100	Serving temperature (ST) too low
2	1100	ST too low
5	1700	ST too low
6	1700	From dinner, ST too low, sliced
7	1700	From dinner, ST too low
13	1020	ST too low, sliced, no gloves
14	1020	Deep-fat fried
15	1700	From dinner, ST too low
16	1700	From dinner, ST too low
17	1700	Thawed at room temperature, ST and cooking temperature (CT) too low
20		From previous day
21		Stored in refrigerator 3-4 days
23	0810	From slicing machine
24	1010	ST too low
26		Taken off serving line, placed while hot in refrigerator (covered) overnight
35	1630	After slicing
37	0830	From previous day, taken off serving line at 124 F (51 C) covered and refrigerated overnight
42	1500	Immediately after slicing
43	1540	Cooked to a high temperature, ST too low
45	1700	Prepared previous day (sample 35), reheated
48	1500	Sliced on uncleaned machine previously used for raw vegetables
12	0845	Rehydrated at room temperature
25	0010	Breaded, fried in deep fat
39	1115	ST too low
Salad		
3	1100	ST too high, from serving line
4	1100	Lettuce-outer leaves
8	1730	

Table 5 (cont'd)

Reasons for Selecting Particular Food Items for Analysis

Sample No.	Time Sampled	Comment
Salad (cont'd)		
10	0645	Lettuce – in the sink, washed
11		Carrot, from Hobart, unwashed
10A	1040	Immediately after display
22	0800	In the sink
31	1000	In the sink – did not wash well
36	1700	Same batch as sample 31
47		Very good appearance
49	1400	Macaroni made in salad area, mixed with vegetables at 100 F (38 C) left at room temperature cooked and displayed
50	1645	Sample 49 displayed on ice
27,32,33,38, 44,46,34		Display temperatures too high

There did not appear to be any direct relationship between the higher APC ($> 1 \times 10^6$/g) and the presence of fecal coliforms in salads. Three out of 4 samples containing fecal coliforms had an APC of less than 3×10^5 CFU/g. While there was a tendency for the higher coliform count to be associated with the higher APC counts ($> 1 \times 10^6$/g), there were a number of exceptions (samples 11, 22, 38, 47). All 4 samples (11, 36, 38, 44) containing fecal coliforms also had coliform counts of greater than 100 MPN/g. However, the converse of this was not true.

Coagulase Positive Staphylococci

No coagulase positive staphylococci (*S. aureus*) were found in any food sample. Presumptive isolates from Baird-Parker agar were isolated from salad (sample 8), raw carrots (sample 11), corned beef (sample 20), and shredded pork (sample 28). Representative isolates after purification proved to be either rods or coagulase negative, DNase negative, catalase positive cocci.

Cooking and Serving Temperatures

The cooking and serving temperatures monitored at both facilities are presented in Table 6. Of the 8 items monitored at Ft. Myer for cooking, 5 (63%) were not consistently heated to the recommended internal temperature. Of the 54 cooked items monitored on the serving line, 32 (59%) were found to be below the recommended serving temperature of 140 F (60 C). The temperature of all nine items displayed in the chilled state were in excess of 55 F (13 C).

At Bolling Air Force Base 2 of the 7 (29%) items monitored were not routinely cooked to an internal temperature of 165 F (74 C) or greater. The serving temperature of 11 out of 50 (22%) cooked items were below 140 F (60 C). Three out of 6 chilled salads had display temperatures exceeding 55 F (13 C).

None of the cooks at Ft. Myer and one cook at Bolling Air Force Base employed a thermometer for determining the proper cooking temperature.

Sanitation as Determined by RODAC Plates and the Swab Technique

The sanitary quality as measured by RODAC plates was somewhat superior at Ft. Myer (Tables 7, 8 and 9). Some items at Ft. Myer such as stainless steel tables, interior surface of the Hobart machine, pans, and a steam table on the serving line were unsatisfactory. Of the 14 items evaluated, 3 were unsatisfactory. A higher proportion of surfaces, 9 out of 15 were found to be unsatisfactory at Bolling Air Force Base.

The results of the swab analyses (Table 10) taken at both facilities are not comparable to those obtained with RODAC plates since they were not performed at the same time or on adjacent surface areas. However, note should be taken of the extremely high swab

Table 6

Cooking and Serving Temperatures at Ft. Myer and Bolling Air Force Base

Date	Time	Ft. Myer Item	Temperature[b] Cooking °F	Cooking °C	Serving °F	Serving °C
28 April	1030	Beef (2)[a]	132–156	56–69	118–124	48–51
		Chili-macaroni			168	76
		Swiss steak (1)			130–134	54–57
		Chicken			116–154	47–68
		Beets			130	54
		Cabbage			162	72
		Mixed vegetables			164–166	73–74
		Potato			124–126	51–52
		Cottage cheese			54	12
		Mixed green salad (3) (4)			64	18
	1700	Ham (5)			110–115	43–46
		Corned beef (from lunch) (6)			116–124	47–51
		Swiss steak			132–152	56–67
		Chicken (from lunch) (7)			98–100	37–38
		Spaghetti sauce			138	59
		Mixed vegetables (from lunch)			126	52
		Cauliflower			132–136	56–58
		Potato (mashed)			100–120	37–49
		Green salad (8)			58–64	14–18
		Frankfurter (9)			98	37
	2100	Fried chicken	190–204	88–96	140–160	60–71
		Spaghetti			130–156	54–69
		Green salad (10)			54–58	12–14
29 April	0645	Cream of wheat			158	70
		Fried potato			144–152	62–67
		Sausage			96–116	36–47

Table 6

Cooking and Serving Temperatures at Ft. Myer and Bolling Air Force Base (cont'd)

Date	Time	Ft. Myer Item	Temperature[b] Cooking °F	Cooking °C	Serving °F	Serving °C
29 April	0830–1345	Meat loaf (13) (15)	140–174	60–79	124–144	51–62
		Corned beef (from 28 April)			134–160	57–71
		Hamburger steak (14)			136–142	58–61
		Macaroni and cheese			150–156	66–69
		Stewed tomato			140	60
		Peas			155	68
		Bean soup			162	72
	1345	Roast beef	122–140	50–60		
		Stuffing	130	54		
		Pork chops and stuffing	170–198	77–92		
	1420	Frankfurter (15)			104	40
		Green salad (10 A)			70	21
	1705	Roast beef (17)			120–140	49–60
		Meat loaf (16)			113–124	45–51
		Pork chop & stuffing			113–156	45–69
		Corned beef (20)			–	
		Macaroni and cheese			142	61
		Creamed corn			134	57
		Sandwich meat (ham, salami) (18)			70	21
		Green salad (19)			52–60	11–16

Table 6

Cooking and Serving Temperatures at Ft. Myer and Bolling Air Force Base (cont'd)

Date	Time	Ft. Myer Item	Temperature[b] Cooking °F	Cooking °C	Serving °F	Serving °C
30 April	0810	Fried potato			150	66
		Pork roast (23)	172–186	78–86		
	0900–1000	Fried potato (25)	108–114	42–46	122–124	50–51
		Stuffing			174–186	79–86
		Pork chops (from yesterday)			152–154	67–68
		Fried fish sticks			160–166	71–74
		Roast pork (24)			128–132	53–56
		Mashed potatoes			140–144	60–62
		Carrots (canned)			142–144	61–62
		Broccoli			162	72
		Vegetable noodle soup			170	77
	1200	Roast beef (South Post)			144	62
		Roast pork (South Post)			136	58
	1650	Fried chicken-cream sauce (26)			132–140	56–60
		Steak			130–140	54–60
		Fried potato			124–138	51–59
		Tomato and onion			160	71
		Lima Beans			114	46
		Soup			130–146	54–63
		Green salad			66	19
		Chopped onion (27)			84	29

Table 6

Cooking and Serving Temperatures at Ft. Myer and Bolling Air Force Base (cont'd)

Date	Time	Bolling Air Force Base Item	Temperature[b] Cooking °F	Cooking °C	Serving °F	Serving °C
1 May	1000–1150	Breaded veal chops	180–184	82–84	138–146	59–63
		Meat loaf			146–150	63–66
		Noodles, cheese, meat and sauce (from supper)			162–170	72–77
		Rice			132–148	56–64
		Potato			116	47
		Spinach			168	76
		Beans			148–152	64–67
		Gravy			163	73
		Soup			188	87
		Green salad (32) (33) (31)			50–60	10–16
	1310–1530	Meat loaf (drying out)			140	60
		Rice (drying out)			142	61
		Mashed potato			132–136	56–58
		String beans			126	52
		Spinach			140	60
1 May	1430	Pot roast	150–170	66–77		
	1530–1745	Roast pork (35)			120–130	49–54
		Frankfurter (entree)			130–132	54–56
		Noodles			126–148	52–64
		Mashed potato			132–156	56–69
		Potato salad (34)			52–54	11–12
		Spinach			142	61
		Soup			130–160	54–71
		Green salad (36)			60	16

Table 6

Cooking and Serving Temperatures at Ft. Myer and Bolling Air Force Base (cont'd)

Date	Time	Bolling Air Force Base Item	Temperature[b] Cooking °F	Cooking °C	Serving °F	Serving °C
2 May	1000–1300	Lasagna	174–190	79–88	154–188	68–87
		Spare ribs	162–164	72–73	156–160	69–71
		Sauerkraut			110–182	43–83
		Mashed potato (39)			110–142	43–61
	1130	Gravy			156	69
		Frankfurter (41)			160	71
	1505	Lasagna (warming oven)			138	59
	1530	Chicken (warming oven) (43)			188	87
	1540	Baked chicken			172–182	78–83
		Ham (42)			132–144	56–62
		Pork (from 1 May) (37) (45)			114	46
		Frankfurter			186	86
		Rice			192	89
		Lima beans			190	88
		String beans			192	89
		Green salad (38) (44)			56–60	13–16
3 May	1100–1200	Pork chops			134–158	57–70
		Swiss steak			188	87
		Mashed potato			148	64
		Cabbage			142–166	61–74

Table 6

Cooking and Serving Temperatures at Ft. Myer and Bolling Air Force Base (cont'd)

Date	Time	Bolling Air Force Base Item	Temperature[b] Cooking °F	Cooking °C	Serving °F	Serving °C
2 May	1000–1300	Lasagna	174–190	79–88	154–188	68–87
		Spare ribs	162–164	72–73	156–160	69–71
		Sauerkraut			110–182	43–83
		Mashed potato (39)			110–142	43–61
	1130	Gravy			156	69
		Frankfurter (41)			160	71
	1505	Lasagna (warming oven)			138	59
	1530	Chicken (warming oven) (43)			188	87
	1540	Baked chicken			172–182	78–83
		Ham (42)			132–144	56–62
		Pork (from 1 May) (37) (45)			114	46
		Frankfurter			186	86
		Rice			192	89
		Lima beans			190	88
		String beans			192	89
		Green salad (38) (44)			56–60	13–16
3 May	1100–1200	Pork chops			134–158	57–70
		Swiss steak			188	87
		Mashed potato			148	64
		Cabbage			142–166	61–74

Table 6

Cooking and Serving Temperatures at Ft. Myer and Bolling Air Force Base (cont'd)

Date	Time	Bolling Air Force Base Item	Temperature[b] Cooking °F	Cooking °C	Serving °F	Serving °C
3 May	1100–1200	Mixed vegetables			145–160	63–71
		Beans			140	60
		Vegetable soup			160	71
		Sandwich meat			44–52	7–11
		Green salad (46) (47)			47–62	8–17
	1400–1650	Roast pork	168	76		
		Turkey (48)	160	71	132–138	56–59
		Fried fish cakes			150–164	66–73
		Macaroni and cheese (49)			164–184	73–84
		Baked potato (quarters)	180–200	82–93	146	63
		Asparagus			152	67
		Cabbage (from lunch)			140	60
		Mixed vegetable soup			146	63
		Gravy			152	67
	1645	Macaroni salad (50)			86	30

[a]These samples were also microbiologically analyzed, the number in parenthesis indicating the sample number in Tables 1, 2 or 3.

[b]The range given for the cooking or serving temperature indicates a variation noted among different units being processed when measured at a given time or at different times during the same serving period.

Table 7

Evaluation of the Sanitary State of Surfaces by RODAC Plates

Surface	Ft. Myer	Bolling Air Force Base
Stainless steel table top	U[a](6)[b], S(1)	U(1)
Hobart vegetable cutter (interior)	U(1)	
Hobart – cutting blade	S(1)	
Hobart – mixing pan	S(1)	
Kettle	S(2)	S(1)
Slicing machine	S(1)	U(2)
Sink		U(1)
Large bowl for making salad	S(1)	
Cutting board in kitchen	S(3)	
Pans – large cooking	S(4)	S(2)
Pans – for stacking dishes	U(1)	
Grill		U(1)
Serving line – Steam Table	S(2), U(1)	U(4)
– Shelf		U(1)
Milk dispenser		U(1)
Dining room table		U(2), S(1)
Spatula	S(2)	
Serving spoon	S(5)	
Ladle	S(2)	
Eating utensil – Knife		U(5)
Drink glass		S(10)
Coffee cup		S(5)
Rolling pin		S(1)
Cart for stacking dishes		S(1)
China – dinner plate		S(20)

[a]U –Unsatisfactory, S – Satisfactory

[b]Figures in parenthesis indicate the number of items sampled and not the number of RODAC plates.

Table 8

Distribution of RODAC Plate Counts of Surfaces Examined at Fort Myer

Surface	Total No. RODAC Plates	No. RODAC Plates with CFU/4in^2 (25.8 cm^2) of			Avg. CFU/Plate
		> 50	> 75	> 100	
Stainless steel table top	60	47	43	34	–
Vegetable cutting machine – slicer	5	5	5	5	–
Mixing machine – bowl	8	0	0	0	5
Kettle	10	1	1	0	21
Slicing machine	6	1	1	0	32
Large salad bowl	3	0	0	0	1
Cutting board	8	0	0	0	14
Large cooking pan	20	0	0	0	2
Pan for stacking dishes	10	3	2	2	–
Serving line – steam table	15	3	2	0	–
Serving line – salad, dessert areas	10	9	4	1	–
Spatula	5	0	0	0	5
Serving spoon	5	0	0	0	8
Ladle	5	0	0	0	4

Table 9

Distribution of RODAC Plate Counts of Surfaces Examined at Bolling Air Force Base

Surface	Total No. RODAC Plates	No. RODAC Plates with CFU/4 in^2 (25.8 cm^2) of > 50	> 75	> 100	Avg. CFU/Plate
Stainless steel table top	8	8	8	8	TNTC
Steam kettle	8	0	0	0	2
Slicing machine	3	3	3	3	TNTC
Large cooking pan	10	0	0	0	6
Grill	8	8	6	4	–
Serving line – steam table	11	9	6	3	–
Serving line – shelf	2	2	2	2	–
Serving line – bread dispenser	2	2	2	2	–
Serving line – pies and salad line	2	2	2	2	–
Servine line – railing	2	2	0	0	63
Serving line – other	5	1	0	0	25
Milk dispenser	2	2	2	2	–
Dining table	12	10	10	9	
Table knife	5	3	2	0	54
China Dish	20	0	0	0	0.2
Drinking glass	10	0	0	0	7
Coffee cup	5	1	0	0	25
Rolling pin (wooden)	2	0	0	0	45
Cart (dish; interior)	6	0	0	0	22
Sink	5	5	2	1	–
GSA cleaning rag (unused)	2	0	0	0	32

Table 10

Microbiological Examination of Food Contact Surfaces by the Modified Swab/Millipore Tester Technique

Surface	Fort Myer Counts per 4 in² (25.8 cm²) No. of Swabs[a]	Range of Counts	Avg. Count	Bolling Air Force Base Counts per 4 in² (25.8 cm²) No. of Surfaces Swabbed	Range of Counts	Avg. Count
Hobart vegetable cutter (interior)	1	2250	2250	–	–	–
Can opener	2	162–864	513	2	144–144	144
Kettles	–	–	–	2	0	0
Kettles – nozzle valve	9	0–576	116	1	0	0
Meat slicing machine	1	1116	1116	2	TNTC[b]	–
Cutting board – kitchen	–	–	–	3	36–TNTC[b]	–
Cutting board – sandwich line	1	90	90	–	–	–
Pan – large, cooking	–	–	–	4	0–396	122
Pot – large	2	0–108	54	–	–	–
Milk dispenser, nozzle	–	–	–	5	36–TNTC[b]	–
Serving spoon	1	216	216	1	>1800	>1800
Ladle	3	72–198	120	1	1476	1476
Teaspoon	–	–	–	3	36–234	162
Table knife	–	–	–	3	36–90	66
Fork	–	–	–	2	18–37	27

[a]Each swab represented an individual analysis and indicates the number of surfaces tested.

[b]Too numerous to count (TNTC).

counts obtained for the vegetable cutter, can opener, nozzle valves of steam kettles, food contact surfaces of the meat slicing machine, cutting board, nozzles of milk dispensers, the serving spoon and the ladles.

Temperature of the Washing Machines

The warewasher and the pot and pan washer at the Ft. Myer facility consistantly delivered water that was hotter than that produced at Bolling Air Force Base (Table 11).

When initially tested the final rinse of the warewashing operation at Ft. Myer was adjusted to heat china to slightly below 160 F (71 C) as determined by the thermolabel papers. After readjustment, temperatures in excess of 160 F (71 C) were routinely attained. For this reason no RODAC sampling of china or glassware at Ft. Myer was conducted.

The warewashing operation at Bolling Air Force Base was never properly operative and china plates seldom attained a final temperature of 150 F (66 C). On the third day of the study the warewashing operation was discontinued due to a breakdown in the steam line and paper plates, containers and plastic eating utensils were used. Evaluation of china and glassware by RODAC plates indicated that they were in a satisfactory sanitary condition whereas some eating utensils, such as knives (Tables 7, 8 and 9) were found to be unsatisfactory.

Visual Evaluation

Visual evaluation involved observing the sanitary state of the equipment and facilities processing conditions, personnel, appearance and habits, etc. Infractions noted of either specific regulations or accepted practices for both bases are listed in the appendix. A large number of infractions and poor manufacturing practices were found in both facilities. The main problems at Ft. Myer concerned the use of left-overs, personnel not changing to work clothes, lack of proper certification of food handlers, defrosting practices and the improper dating of dairy products. The criticisms of practices at Bolling Air Force Base included many of those noted at Ft. Myer in addition to an inadequate amount of hot water for warewashing, poor sanitation and the presence of roaches.

Relationship Between Visual Evaluation and RODAC Analysis of Sanitation

A limited study was made to determine the relationship between visual evaluation and RODAC plate analyses of surfaces, Table 12. Of the 20 visual evaluations, 5 were not verified by RODAC analyses. Two surfaces considered to be visually acceptable were unacceptable by RODAC (the grill and serving counter surfaces). The converse was true for the other three disparities. Of the remaining 15 visual observations the RODAC

Table 11

Temperature Achieved in the Warewasher and Pot/Pan Washer as Measured by Thermolabel Papers

Date	Location	Time	Equipment	Highest Temperature °F	°C
28 April	Ft. Myer	1000	Pot/Pan	180	82
		1140	Warewasher [a]	150	66
		1800	Warewasher [a]	150	66
29 April	Ft. Myer	0800	Warewasher	150	66
		0845	Pot/Pan	180	82
		1140	Warewasher [a]	150	66
		1705	Warewasher	160	71
30 April	Ft. Myer	0810	Warewasher	160	71
		1700	Warewasher	160	71
1 May	Bolling AFB	0910	Warewasher	140	60
		1145	Warewasher	140	60
		—	Pot/Pan	140	60
		1630	Pot/Pan	160	71
			Warewasher [b]	140	60
2 May	Bolling AFB	0930	Warewasher [b]	140	60
		1120	Pot/Pan	180	82
		1300	Warewasher [b]	150	66
3 May			Washers not operative		

[a] The 160 F (71 C) thermolabel tape was slightly negative.

[b] The 150 F (66 C) thermolabel tape was ±.

Table 12

A Comparison Between Visual and RODAC Plate Evaluation[a] of Surfaces

	Visual	RODAC
Stainless steel table	U	U
	U	S
	U	U
	U	U
Meat cutter	U	U
Steam kettle	S	S
Grill	S	U
Serving counter	S	U
	S	S
Pan	U	S
	S	S
Dinner plate	S	S
	S	S
Coffee cup	S	S
Glass	S	S
Knive	U	U
Rolling pin	S	S
Dining table	U	U
	U	S
	U	U

[a] U – Unsatisfactory
S – Satisfactory

technique verified 7 unsatisfactory surfaces and 8 satisfactory surfaces. Considerably more of this type of data is necessary before statistically valid conclusions may be drawn.

DISCUSSION

In examining the menu items prepared at both facilities it is apparent that the present day cook was devoting considerably less time to formulations and preparation, and was now less concerned with the problems of left-overs, trimmings, and shrinkage. Entree items were obtained from commercial sources already trimmed and/or preportioned. Seasonings were stabilized and sauces, gravies, etc., were often purchased completely formulated. Potatoes and vegetables were received trimmed, cut, blanched and either dehydrated, frozen or canned. While most foods have the potential to cause food poisoning or infection there are only a minimal number of items which initially present a microbiological problem in a feeding system where the food is served directly from an adjacent or integral kitchen facility. In order for food items to present a health hazard, a combination of abuses would have to occur. For this reason the main emphasis was placed on analyzing entree items and items to which specific temperature abuses occurred in order to evaluate the extent and consequences of possible post-processing contamination. No attempt was made to monitor time in relation to temperature. Future studies should include this variable.

In comparing the two facilities visually from the viewpoint of microbiological safety one would be tempted to conclude that Ft. Myer had a much lower risk hazard than Bolling Air Force Base. The Ft. Myer facility gives one the impression of a well organized, modern, sanitary, and efficient operation, whereas Bolling Air Force Base suffered by comparison. To a large extent the analyses of the sanitary condition of the facilities verified these impressions, but it might be incorrect to assign a higher hazard factor to the Bolling facility based on sanitation alone. Except for the sample of a cream pie, all of the other samples of cooked food from both bases were within the suggested microbiological constraints. The cooking and serving temperatures at Bolling were, generally, much higher than those of Ft. Myer. The use of such high temperatures may have adversely affected quality and this aspect should be studied by others. Nevertheless, the inferior sanitary quality at Bolling was, in part, a reflection of a poor physical plant. The warewasher did not operate correctly; the supply of hot water was inadequate; the kitchen facilities were not properly designed; there were no stoves; the oven was not functioning properly; the number of sinks were inadequate, and the warming ovens and refrigerated holding units were not functioning properly. The serving counter was electrically heated, and temperature control was difficult. Other problems are listed below. These mechanical problems tend to decrease managerial efficiency and overcooking and quality deterioration may result.

Particular attention was devoted to the salad operation. At Ft. Myer raw salad ingredients were purchased twice weekly from local commercial sources and all salads were

prepared by one person. The outer leaves were washed and separated to be used specifically for sandwiches and the remaining leaves were soaked in a commercial antioxidant solution (Potato Whitener, Monarch Consolidated Foods Corp). However, the responsible employee used considerably less than the recommended concentration of one tablespoon per gallon. Salads were made twice daily and were attractively displayed over ice.

The salad operation at Bolling was not as well regulated. The vegetables were government issued, and appeared to be of a poorer quality. No antioxidant was employed, and on a number of days different employees made the salads. However, there was little, if any difference in the microbiological quality of the raw salads between the two bases. At both bases the temperature of display was usually around 60 F (16 C). This data and data from other NLABS' studies indicate that coliform organisms appear to be natural contaminants of lettuce purchased from commercial sources. The incidence of natural fecal coliform contamination in salads awaits further study.

It is extremely difficult at this time to propose microbial criteria for salads. Of the 15 samples analyzed in this study 7 (47%) exceeded 10^6 CFU/g. Considering salads made on different days, each day being considered as a production unit, of the 6 units analyzed, 4 had microbial populations in excess of 10^6 CFU/g. A great deal of additional data, obtained under carefully controlled conditions, will be required to decide whether microbial criteria are necessary and if so, what are meaningful criteria.

RECOMMENDATIONS

1. That a publication on sanitary food service, supplemented with a specific training course, be made available to supervisory personnel.

2. That microbiological and sanitary constraints be made clear and concise to supervisory personnel and that a monitoring system be redirected toward effectively correcting abuses rather than toward being limited to reporting abuses.

3. That the mechanical equipment for any given installation be monitored on a routine basis, undergo preventive maintenance and maintained operational.

4. That a certain amount of self-monitoring be conducted at each installation, with some of the monitoring being more quantitative (time-temperature profiles, microbial counts) rather than only subjective (visual inspection).

5. That a task force be established for the purpose of promulgating uniform standards for certifying facilities.

SUMMARY

Two feeding facilities were evaluated at (1) Ft. Myer, Arlington, Va. and at (2) Bolling Air Force Base, Washington, D.C. for their ability to conform to recommended microbiological and sanitary constraints. In addition, visual evaluation was conducted on specific processing operations and on the effectiveness of sanitizing procedures.

At Ft. Myer all cooked menu items were within the microbiological constraints even though many were not cooked to an internal temperature of 160 F (71 C) or were served below 140 F (60 C). One sample of cream pie at Bolling Air Force Base was the only sample of processed food found in this study to contain an excessive number of microorganisms although the product was acceptable as regards to coliform, fecal coliform, and *Staphylococcus aureus*. In this study there did not appear to be any direct relationship between low cooking or serving temperatures and the resultant total microbial population.

The temperature of raw salads during their display was usually higher than the recommended temperatures of 45 F (7 C) or 55 F (13 C). The APC varied from 10^5 to 10^7 CFU/g, coliforms and/or fecal coliforms were present in a large percentage of the samples obtained in various stages of preparation.

Sanitation and housekeeping were better at Ft. Myer than at the Bolling Air Force Base, where much of the difficulty appeared to be due to a lack of personnel training and to inadequate equipment.

Two new innovations in monitoring were examined. Thermolabel papers were used to evaluate the highest temperature attained by china in the warewashing machines and a modified swab technique was examined as a means of evaluating sanitation. Both techniques proved to be capable of being extremely useful for this type of field work. The temperature of the warewasher at Ft. Myer produced china having temperatures in excess of 160 F (71 C) while the china at the Bolling Air Force Base was consistently rinsed to a temperature below 150 F (66 C).

Certain surfaces considered to be acceptably cleaned by visual evaluation were found to be unacceptable by the RODAC plate technique. Also, there were surfaces (stainless steel table, pan, and a dining table) that were microbiologically clean, as determined by RODAC plates, but were visually dirty (dried food, detergent).

A variety of practices were observed which violated recommended procedures either in food material handling or in sanitation and these implications are discussed.

APPENDIX

Visual Evaluation

The following infractions were noted when the two bases were evaluated visually.

Ft. Myer

A. Personnel Hygiene

1. Hats, caps or hair restraints were not worn by all personnel.

2. Health examinations were annual instead of semi-annual as called for in the contract.

3. Some employees were without health certificates.

4. Uniforms were worn by female but not by male employees.

B. Food Handling Practices

1. Gloves were not used consistently for handling foods and food contact surfaces.

2. Only designated employees were authorized to discard left-overs and left-overs were generally placed on trays, covered and refrigerated for further use. In a number of cases food was removed directly from the steam table, covered and refrigerated. The rate of cooling was very slow.

3. Frozen hamburger at the South Post Annex was defrosted at room temperature.

4. The initial defrosting of frozen raw hamburger, roast beef, and turkey rolls was done at room temperature. The final stages were done in a refrigerator. One container of turkey roll dripped blood onto the kitchen floor.

C. Food Preparation Areas

1. Tables in the kitchen and baking areas were frequently not cleaned between use for different menu items.

2. Transporters were used interchangeably for the storage of either salads, cakes, etc., without sanitizing between use.

3. Most of the surfaces were washed and wiped with disposable towels but a few sponges were in evidence. The cleaning of surfaces and equipment was done with a minimum amount of detergent solutions and depended mainly on wiping with disposable towels. It was noted that personnel used the same towel to clean equipment and to dry their hands.

4. It was not unusual to slice sausage meat and ham or raw vegetables on the slicing machine and then, without sanitizing, to use the machine to slice roasts.

5. Sandwiches were made on cutting boards used for other food preparations. The cutting boards were often not sanitized between use.

6. Vegetable sink containing lettuce was also used for washing parts of the Hobart slicer.

7. Bakery equipment and utensils not in use were often left dirty for long periods of time.

8. While salads were generally made daily, a large portion was stored for week-end use.

D. Serving Line

1. Food was not protected by sneeze guards.

2. Overhead lights (4) not protected by explosion proof globes.

3. No thermometer in refrigerated holding cabinet and its door was in need of repair.

E. Dining Area

1. Spills not cleaned up rapidly.

2. Dining tables were streaked and spotted.

3. Crumbs were noted on chairs.

4. Soap for washing surfaces was not used until suggested by NLABS personnel.

F. Refrigerated Storage

1. No date on some milk and egg mix cartons, and some containers were found to be leaking. The expiration date for ice cream and chocolate mixes was past. These outdated items were eventually used.

2. Cooked items being stored (leftovers, items for the annex) uncovered and outdated.

3. Sleeves on shirts and jackets were dirty.

4. The outside of the ice machine was dirty, and the scoop for ice cubes was stored on the uncleaned top surface of the machine.

G. Other

1. Shelves in dry storage area were not positioned away from the wall and were dirty.

2. Dishes from the warewasher were handled with cloths used for other cleaning purposes.

3. Window screens and panes needed replacement.

4. Containers were not stacked in the freezers to allow for adequate air circulation.

Bolling Air Force Base

A. Personnel

1. Hair restraints or caps were not worn by all personnel.

2. Health certificates were not issued for all employees.

B. Food Handling Practices

1. Receiving area was dirty.

2. Cartons of frozen meat were stacked on the rear platform, the bottom carton being placed directly on a pool of water.

3. Left-overs maintained in warming oven until next meal or refrigerated overnight for use next day, often with poor temperature control. Salisbury steaks from lunch being held for supper in warming ovens at 132 F (56 C). The serving line often ran out of entree items during serving, and it was not unusual for 2 or more left-overs to be rapidly rewarmed and then sequentially served.

4. Large amounts of cooked macaroni and cheese were stored in the refrigerator, most likely for the week-end.

C. Food Preparation Areas

1. The tables and equipment were not always cleaned after use.

2. Hot water was often in vicinity of 135 F (57 C). Pots and pans washed in inadequately heated water were not chemically sanitized.

3. The labor force was inadequate for consistently maintaining proper sanitation.

4. GSA rags were used in place of disposable towels. The rags were stored improperly, and their sanitary condition and the duration of their use were not controlled.

5. No handwashing facility was available.

6. The sinks used for food preparation were also used for handwashing and the dumping of mop water.

7. Roaches were observed in the kitchen.

8. The general impression of the kitchen, bakery, salad, warewashing and serving areas was that of neglect.

9. The air curtain over the rear door blew insects into the kitchen.

10. Some portions of lettuce used for salad making were not washed.

11. Pastry transporters were not cleaned before loading.

D. Serving Line

1. Serving line surfaces were not cleaned well.

2. The milk dispensers' spout and the area surrounding the spouts and the dispenser itself were often not sanitary. The temperature indicators were often in the danger zone for extended periods of time.

3. The silverware was washed incorrectly. It was sent through the washer, flat, in a basket, and then stacked vertically by hand in a dispenser without gloves. It was not rewashed.

4. Dish dispensers did not work well; excessive amounts of handling was required to remove dishes.

5. Area behind serving counter had a constant litter of food particles--even after cleaning.

6. Some warming ovens used to store cooked food and left-overs had their thermometers broken, and others could not be adjusted. One oven was at 190 F (88 C).

7. Coffee urn was dusty.

8. Filters in the steam exhaust hood were not properly installed.

9. Soft drink dispensing machines were not clean.

E. Dining Area

1. Tables and chairs were not clean.

2. Condiment containers were coated with caked material.

3. Dinner plates were spotted, soiled and chipped.

4. Silverware spotted and soiled: spoons (30%), knives (100%), and forks (30%).

F. Refrigerator Storage

1. Refrigerators #1 and #3 were dirty, disorderly, wet and rusted.

2. Food was not spaced to provide adequate air circulation.

3. Scoop was stored on uncleaned top surface of the ice machine.

G. Freezer Storage

1. Coils needed defrosting because of faulty (leaking) compressor.

2. Food was not stored to provide adequate air circulation.

H. Dry Storage

1. Food was routinely stored on floor. The floor was dirty.

2. Shelves were not positioned away from wall to provide adequate ventilation and discourage the nesting of insects and rodents.

I. Storage Rooms for Supplies and Equipment

1. This area was unsatisfactory in that it was not kept clean; empty cartons were in evidence; supplies were not stored in an orderly manner.

J. Restrooms and Locker Rooms

1. These rooms were not maintained in a satisfactory manner. Neither soap nor towels were supplied; waste containers were emptied infrequently; soiled clothing was heaped on the floor, and food and drink littered the area.

2. Workers handled both dirty and clean dishware.

3. Some workers touched the center of washed plates when handling.

4. Ten percent (5 out of 50) of plates were found to be spotted with egg after being washed and stored.

5. Ten percent (6 out of 58) glasses were spotted and streaked.

L. Garbage and Trash Areas

1. Area was dirty and disorderly.

2. Platform and ground surface were dirty.

3. Spilled food and debris were in front of dumpster.

4. Garbage containers were not closed with tightfitting lids.

5. Trash was not confined to proper receptacles.

6. Puddles containing food particles were observed.

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