

Business Case Analysis for Self-Service Serving Lines

**Prepared for:
The Under Secretary of the Navy**



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1. Executive Summary

1.1 Description: The use of self-service feeding style afloat will reduce Food Service Attendant workload in support of serving lines by 25 percent during meal times.¹ The amount of time a customer waits in the serving line decreases by approximately 75 percent.² These savings are realized only during meal times. Self-service feeding style is defined as allowing Sailors to serve themselves from the serving line vice a Food Service Attendant performing that function. Additional hot and cold food serving stations, located on the messdecks, provide other serving stations and reduce congestion at the main serving line. Although Sailors serve themselves from the main serving line and the hot/cold serving stations, Food Service Attendants restock these serving stations and ensure proper sanitation is maintained. Additional Food Service Attendant workload is generated by stocking and maintaining these additional serving stations; however, savings cited in this study are net of this increased workload.

This style of feeding is most efficient when additional hot and cold food serving stations are installed on the messdecks. Since small ships have limited space for additional serving stations, this style of feeding is primarily recommended for Aircraft Carriers and Amphibious Warfare ships. Although Sailors enjoy the self-service concept with attendant, faster lines and increased variety, the self-service feeding style is a significant departure from the standard feeding paradigm currently in place. The potential exists to exceed the daily food allowance and/or degrade sanitation on the serving line when using this feeding style; however, proper education of the crew concerning food waste and sanitation, coupled with attentive management, has been shown to mitigate these risks. The return on investment for this proposal is provided in the table below.

1.2 Summary Table 5-Year ROI (Cost/Savings/ROI Per Annum):³

	FY 00 ⁴	FY 01 ⁵	FY 02 ⁶	FY 03	FY 04	Total (\$M)
Total Annual Cost	0.0	1.30	1.32	0.63	0.0	3.26
Total Annual Workload Savings	0.0	1.26	2.55	3.20	3.27	10.29
Return on Investment	0.0	-.044	1.23	2.57	3.27	7.03

Return on Investment in manpower savings should be realized only after this initiative is proven on deployment and the corresponding workload reduction is validated by NAVMAC and tied to specific billets.

1.3 Benefits: Studies have demonstrated the advantages of self-service feeding style include improved customer satisfaction, labor savings and a consistently faster throughput of patrons. The amount of time Sailors spend waiting in a traditional serving line onboard an Aircraft Carrier is 15-25 minutes. Use of self-service serving lines reduces waiting time by 10-20 minutes.⁷ Challenges associated with this proposal include: 1) required serving line design modifications, 2) possible increase in food waste and 3) potentially degraded sanitation. Afloat units are currently manned at 88 percent of allowance for General Detail (GENDET) sailors, E1-E3.⁸ Junior Sailors are often performing multiple

Food Service Attendant functions of greater than 90 days per tour. Reduced workload through the use of self-service lines will make more time available for Food Service Attendants to perform other work and pursue professional/personal growth that is not being accomplished due to manning shortages. Based on findings demonstrated to date, it is recommended that Aircraft Carriers and Amphibious Warfare ships aggressively utilize a self-service feeding style system. Smaller decks should utilize this feeding strategy when possible.

2. Background

2.1 Objectives/Scope – Detailed Description: Manning shortfalls in Food Service Attendants and Mess Management Specialists have forced ships to attempt non-traditional methods of food service that have proven successful in the commercial sector. As a result, multiple prototypes on Aircraft Carriers have been conducted to identify the advantages, disadvantages and feasibility of utilizing the self-service feeding style afloat, similar to what is utilized at buffet type restaurants. Sailors serve themselves on the main serving line and determine which items to choose and the quantity. On some platforms, high cost entrées are still served by the Food Service Attendant in an effort to control food costs. Additionally, strategic placement of vegetables and healthy items at the beginning of the main serving line encourages healthier eating. Installation of additional hot/cold serving stations on the messdecks provides alternatives to the main line. Potato, Chili and Pasta serving stations, combined with a salad/fruit serving station, allow Sailors to bypass the main serving line, thereby reducing waiting times in the main serving line. Most ships require serving line design changes to facilitate the self-service feeding style. Others require additional hot/cold serving stations on the messdecks.

Underway, a typical Aircraft Carrier stations four Food Service Attendants behind each of two serving lines in the forward galley and each of two serving lines in the aft galley. A total of 16 Food Service Attendants support the serving lines for approximately three hours each meal. Approximately 1008 hours per week are expended to support traditional serving lines for three meals per day.⁹ The self-service feeding style reduces the Food Service Attendant requirement for the forward galley from four to three personnel. The aft galley is reduced from four Food Service Attendants to two personnel. The manpower requirement decreases to approximately 630 hours per week to support the self-service feeding style. Savings of 378 hours result; however, approximately 126 man-hours are required for additional restocking and cleaning to support the self-service feeding style. Net man-hour savings per week is approximately 252 hours.¹⁰

Currently, four Aircraft Carriers are employing the self-service feeding style. Based on the initial success demonstrated on USS HARRY S. TRUMAN (CVN-75), an operational guide for conducting self-service feeding was developed and deployed to Type Commanders.

- The initial test of the self-service feeding style was conducted onboard USS HARRY S. TRUMAN (CVN-75). Underway, labor savings of 378 man-hours/week were generated by reducing manning behind the main serving line; however, 126 hours of labor/week was required to restock hot/cold

serving stations and maintain sanitation. Net labor savings was 252 hours/week while underway.¹¹ Ships reduce the number of serving lines open while inport and workload savings decreases commensurately. Initially, food cost increased, but was eventually reduced after intensive training of the crew and food service staff concerning portion control and waste management. USS HARRY S. TRUMAN (CVN-75) incorporated a chili/potato serving station in the aft crew galley in order to increase menu variety. Time spent waiting in the main serving line decreased 75 percent (10-20 minutes less).¹² The crew views this feeding style as having a positive impact on afloat Quality of Life.

- A study onboard USS JOHN C. STENNIS (CVN-74) resulted in a workload reduction of 126 Food Service Attendant man-hours per week even though some additional Food Service Attendant labor was required to restock and maintain acceptable sanitation levels.¹³ USS JOHN C. STENNIS (CVN-74) was inport for the duration of the test. Food waste was initially high, however, waste reduced over time as the crew became comfortable with the feeding style. Sanitation degraded at the start of the test but also improved over time. Food cost was high and exceeded the daily food allowance. This is due to the fact the ship was in an availability and had no underway time. The cost of a ship's menu is based on inport and underway time. Underway periods allow ships to claim 100 percent ration count to offset any cost overruns experienced inport. Since this test was conducted only while the ship was inport, there was no opportunity for the ship to offset any cost overruns associated with the prototype. If the ship had experienced some underway time cost overruns could have been offset. Time spent waiting in the main serving line decreased 75 percent (10-20 minutes less).¹⁴ The self-service feeding style positively impacted crew morale.

2.2 Implementation Components: Many ships can support the self-service feeding style after minor design changes such as relocation of the sneeze shield located on the serving line. In order to support self-service feeding on Aircraft Carriers, design modifications are required that raise the countertops on the main serving line and relocate the sneeze shields. This modification costs \$10K per serving line.¹⁵ There are four serving lines per Aircraft Carrier, two serving lines per Amphibious Warfare ship. Plastic dome covers are required for serving pans in order to maintain sanitation standards. Dome cover cost per serving line is approximately \$500. The cost to permanently install hot/cold serving stations in the crew mess areas is approximately \$35K for procurement and installation.¹⁶ The cost to accomplish design changes on an Aircraft Carrier is approximately \$77K.¹⁷ The cost for an Amphibious Warfare ship is approximately \$56K.¹⁸

3. Benefits

3.1 Summary List: Potential benefits will include:

- Improved Quality of Life
- Reduced workload for Food Service Attendants
- Reduction in customer queuing time
- Reduction in food waste
- Increased variety of food items

3.2 Individual Benefit Description

3.2.1 Improved Quality of Life: The self-service feeding style provides Sailors an increase in selection and quantity. Sailors control the items selected and the quantity desired. Installation of additional hot and cold serving stations provides an opportunity to completely bypass the main serving line. Onboard USS HARRY S. TRUMAN (CVN-75), self-service feeding was combined with 24-hour service. One galley was open at all times. This allowed Sailors to dine when desired. On all four Aircraft Carriers where self-service serving lines have been implemented, the impact on Quality of Life has been positive.

3.2.2 Reduced Workload for Food Service Attendants: The self-service feeding style reduces the number of Food Service Attendants required behind the main serving line. It reduces workload in the galley during meal times by approximately 252 hours per week on an underway Aircraft Carrier. Although additional serving stations increases the area of the messdeck to be serviced, the overall workload reduction in the main galley outweighs any additional labor. This feeding style will be tested onboard USS TARAWA (LHA-1) as part of the food service Single Ship Prototype. It is anticipated approximately 168 man-hours per week would be saved on an Amphibious Warfare ship. Food Service Attendants can dedicate more time to accomplishing other functions or personal/professional growth.

3.2.3 Reduction in Customer Queuing Time: Implementation of the self-service feeding style, combined with additional serving stations on the messdecks, expands the overall number of serving stations available and relieves queuing pressure on the main serving line. On average, Sailors wait in the main serving line 15 to 25 minutes onboard an Aircraft Carrier. Employment of the self-service feeding style reduces queuing times by 10 to 20 minutes (75 percent decrease).

3.2.4 Reduction in Food Waste: Studies onboard USS JOHN C. STENNIS (CVN-74) and USS HARRY S. TRUMAN (CVN-75) demonstrated a slight decrease in food waste when utilizing the self-service feeding style. Sailors select type and quantity of foods to consume. At the start of these studies onboard USS JOHN C. STENNIS (CVN-74) and USS HARRY S. TRUMAN (CVN-75), Sailors took more than they would consume and food waste increased; however, as the test progressed and Sailors became accustomed to the feeding style, they monitored their own consumption and food waste decreased. Feedback from both Aircraft Carriers indicates Sailors will police themselves as to food consumption and waste. Additionally, management oversight plays a major role in controlling food waste. A proactive food service staff will monitor food waste and educate Sailors on how to reduce waste.

3.2.5 Increased Variety of Food Items: Installation of additional hot and cold serving stations on the messdecks provides an opportunity to increase the variety of food items offered. Potato serving stations, Chili serving stations and Pasta serving stations can be added to menu. Hot serving stations can also be used to offer an increased variety of hot vegetables. Cold serving stations can be dedicated to potato, macaroni, tuna and other pre-made salads. Overall, more serving stations allows

the food service operation to offer an increased variety of food items. The positive impact on morale is significant.

4. Associated Cost Savings

The savings associated with use of the self-service feeding style consists of tangible and intangible savings. Tangible savings can be quantified accurately. Intangible savings are considered as those either impossible to quantify or beyond the scope of this analysis.

4.1 Tangible Savings

4.1.1 Workload Reduction (\$3.3M annual savings): Savings are estimated for Aircraft Carriers/Amphibious Warfare ships only. Workload reductions are two-tiered. Food service operations underway employ all serving lines. Inport, usually only 50 percent of the serving lines are utilized. For purposes of this study it was assumed ships would be underway 50 percent of the time. Underway labor savings is 252 man-hours per week. Inport labor savings is 126 man-hours per week. Food Service Attendant personnel impacted were assumed to be at the E-2 paygrade with an FY 00 composite standard pay rate of \$26,250, annually.¹⁹ Total estimated workload reduction savings equates to approximately 116 man-years when all Aircraft Carriers and Amphibious Warfare ships have adopted this feeding style.²⁰ This workload reduction applies only when serving meals and does not provide an opportunity to reduce manning afloat.

4.2 Intangible Savings

4.2.1 Queuing Time Savings: Employment of the self-service feeding style reduces time spent in the serving line by approximately 10-20 minutes per Sailor. Although beyond the scope of this analysis, this time savings is a significant improvement in the Quality of Life for Sailors. The frustration of long serving lines is reduced and time not spent in serving lines can be dedicated to other activities.

4.2.2 Quality of Life Impact: Reduced Food Service Attendant workload will improve the overall Quality of Life for these Junior Sailors. Additionally, employment of the self-service feeding style is positively endorsed by Sailors as a Quality of Life enhancer. Increased variety, self-service and reduced queuing times all serve to improve the overall afloat experience.

5. Cost to Implement

5.1 Proof of Concept Costs: There are no proof of concept costs. Prototypes have already been conducted and funded for Aircraft Carriers. Additionally, proof of concept for Amphibious Warfare ships is funded and underway on USS TARAWA (LHA-1).

5.2 Deployed Systems Costs: The estimated cost for deployment of the self-service feeding style is based on actual design changes observed onboard USS HARRY S. TRUMAN (CVN-75) and configuration changes developed by Commander Naval Air Forces Pacific. Costs for deployment are as follows:

FY 01:	\$ 1.30M	(5 CVNs/16 “L” decks)
FY 02:	\$ 1.32M	(5 CVNs/16 “L” decks)
FY 03 and beyond:	\$.63M	(2 CVNs/ 8 “L” decks)

Estimates are based upon modifying 40 percent of Aircraft Carrier and Amphibious Warfare ship serving lines to accommodate self-service feeding style in FY 01, 40 percent in FY 02 and 20 percent in FY 03.²¹

6. Conclusions

6.1 Short Summary of Benefits: Based on the methodology applied in this analysis, the Navy will obtain a significant amount of savings through increased use of the self-service feeding style. Improved Quality of Life and reduced workload will constitute the primary benefits.

6.2 Assumed Cumulative Implementation Plan:

FY 2001:	40%
FY 2002:	80%
FY 2003:	100%

6.3 Total Cost Savings over 5-Year Period: Using the estimated implementation cost and potential savings, estimated total savings of \$7.03M is forecast for a five-year period. In addition to these savings, Quality of Life and morale will also be positively impacted.

An estimated total savings of \$7.03M is forecast for a five-year period.

Attachment 1: USS STENNIS (CVN-74) Summary Report

Attachment 2: USS TRUMAN E-Mail (CWO4 Leon Cole)

Attachment 3: Self Serve Metrics

Attachment 4: PERS-221A EMC Statistical Summary Sheet (dated 10/12/99)

Attachment 5: Military Composite Standard Pay and Reimbursement Rates

¹ Per Attachment 1 and Attachment 2.

² Per Attachment 2.

³ See Attachment 3, Sheet 2 (Costs), ROI Computation, Cells A16 – H19.

⁴ Based on 40 percent implementation on Carriers and L Decks in FY 00.

⁵ Based on 40 percent implementation on Carriers and L Decks in FY 01.

⁶ Based on 20 percent implementation on Carriers and L Decks in FY 02.

⁷ Per Attachment 2.

⁸ Based on PERS-221A EMC Statistical Summary Sheet (dated 10/12/99). Provided as Attachment 4.

⁹ See Attachment 3, Sheet 1 (Savings) Cell H3 (Total FSA Manhrs/Wk/Ship).

¹⁰ See Attachment 3, Sheet 1 (Savings) Cell F3 (Total FSA Hrs/Wk Saved/Ship).

¹¹ Ibid.

¹² Per Attachment 2.

¹³ Per Attachment 1.

¹⁴ Ibid.

¹⁵ See Attachment 3, Sheet 3 (Phonecons), w/PERA-CV 12/22/99.

¹⁶ Per Attachment 2.

¹⁷ See Attachment 3, Sheet 2 (Costs) Cell I4 (Total Costs/Ship).

¹⁸ See Attachment 3, Sheet 2 (Costs) Cell I5 (Total Costs/Ship).

¹⁹ Military Composite Standard Pay and Reimbursement Rates, Department of the Navy, for Fiscal Year 2000. Provided as Attachment 5.

²⁰ See Attachment 3, Sheet 1 (Savings) Cell P6 (Total Man-yrs Saved).

²¹ See Attachment 3, Sheet 2 (Costs) Cells D12–G12 (Total Costs FY 00-03).