Implementation Assessment
for
Maintenance Free Decking

Prepared for:
The Under Secretary of the Navy

Prepared by:
Commander, Naval Supply Systems Command
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1. Executive Summary

1.1 Description: This Implementation Assessment provides a review of potential savings available through aggressive installation of low maintenance decking afloat. This assessment compiles data from various sources to demonstrate the savings associated with low maintenance decking recently installed on Navy ships. NAVSEA is the Program Manager for decking. Type Commanders prioritize decking installation based upon the ship's availability schedule and available funds. This study reinforces what was already surmised, installation of low maintenance decking is a smart business decision. Aggressive installation of this decking material by NAVSEA and Type Commanders should be encouraged in order to maximize workload savings and Quality of Life.

Installation of low maintenance decking in dry spaces will enhance Quality of Life and reduce workload afloat by up to 78 percent (per NAVSEA projections).[1] The use of low maintenance decking supports Chief of Naval Operations' efforts to reduce workload afloat, especially during the Inter-Deployment Training Cycle. Low maintenance decking is defined as any non-waxing/non-buffing decking material that is NAVSEA approved for shipboard use. For purposes of this review a comparison of traditional vinyl tile and cosmetic polymeric (commonly referred to as PRC) was made to recently installed Stratica Decking. Stratica tile has proven successful in NAVSEA controlled shipboard testing and reduces workload approximately 66 percent.[2] A total of 37,800 square feet of Stratica decking is currently installed on 10 Navy ships.[3] For purposes of demonstration, the table below compares costs/savings of Stratica to vinyl tile and Stratica to PRC for the 37,800 square feet of Stratica already installed on Navy ships. This is not a projection of planned installations. Rather, these tables represent anticipated return on investment based on installations already accomplished.

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

Stratica vs. Vinyl Tile[4]

	FY 00	FY 01	FY 02	FY 03	FY 04	Total ($M)
Install/Repair Cost *	.416	.154	.156	.159	.162	1.047
Install/Repair Savings **	.066	.096	.098	.099	.101	.460
Labor Savings ***	1.399	1.421	1.444	1.467	1.498	7.229
Return on Investment	**1.049**	**1.363**	**1.386**	**1.407**	**1.437**	**6.642**

***** Installation and repair cost represents the cost of installing Stratica
** Represents savings by installing/maintaining Stratica vice vinyl tile
*** Represents the labor savings generated by Stratica (vinyl tile labor less Stratica labor)

Stratica vs. Cosmetic Polymeric (PRC) Decking[5]

	FY 00	FY 01	FY 02	FY 03	FY 04	Total ($M)
Install/Repair Cost *	.416	.154	.156	.159	.162	1.047
Install/Repair Savings **	.529	.557	.566	.576	.588	2.816
Labor Savings ***	.163	.165	.168	.170	.173	.839
Return on Investment	**.276**	**.568**	**.578**	**.587**	**.599**	**2.608**

***** Installation and repair cost represents the cost of installing Stratica
** Represents savings by installing/maintaining Stratica vice PRC
*** Represents the labor savings generated by Stratica (PRC decking labor less Stratica labor)

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 installing low maintenance decking such as Stratica to include significant labor savings, increased life expectancy of decking material and reduced Total Ownership Costs. Labor savings are reduced approximately 78 percent (per NAVSEA projections) by elimination of stripping/waxing/buffing required for vinyl decking.[6] Periodic resealing, required for PRC decking, is also eliminated. Life expectancy for Stratica is ten years.[7] Life expectancy for vinyl tile is five years and ten years for PRC (with resealing every six months).[8] Total Ownership Cost of Stratica decking is 66 percent less than vinyl decking and 8 percent less than PRC, over its ten-year life span.[9] Total Ownership Costs for all three decking materials are provided in the table below.

Total Ownership Cost[10]
($ per square foot over 10 year life span)

	Stratica	Vinyl Tile	PRC
Installation *	7.00	6.25	6.50
Repair **	4.00	6.50	18.50
Labor ***	192.24	587.78	195.93
Total	**203.24**	**600.53**	**220.93**

* Initial installation cost: Surface preparation, underlayment, material and installation labor
** Repair cost: Normal repairs and periodic replacement of tile/PRC decking
*** Labor cost: Based on FY 00 E-3 pay rate of $29,025 annually, 325 workdays per year and NAVSEA workload factor per decking material (Stratica: .0033 man-hours/sqft/day, Vinyl Tile: .0102 man-hours/sqft/day, PRC: .0034 man-hours/sqft/day)

2. Background

2.1 Objectives/Scope – Detailed Description: Deck maintenance is one of the most significant workload drivers afloat. Maintenance is defined as sweeping, swabbing, stripping

and waxing. Typically, the food service operation is responsible for the largest square footage of decking on a ship. Afloat units are currently manned at 88 percent of allowance for General Detail (GENDET) Sailors, E1-E3.[11] Junior Sailors are often serving as Food Service Attendants more than 90 days per tour. Reduced workload through reduction of deck maintenance will decrease "drudge" work and make more time available for Food Service Attendants to accomplish other work and pursue professional/personal growth that is not being accomplished due to current manning shortages.

- USS WEST VIRGINIA (SSBN-736) was the initial test platform for Stratica decking. 800 square feet of Stratica decking was installed.[12] The table below is based on test results and provides USS WEST VIRGINIA's (SSBN-736) estimated annual savings when comparing vinyl tile to Stratica decking.

Cost of Cleaning Decks[13]

	Vinyl Tile	**Stratica tile**	**Savings**
Man-hours/day	8 hrs	2.6 hrs	5.4 hrs
E-3 pay rate	$29,025	$29,025	N/A
Cost per day	$131.93	$43.54	$88.39
Hours per year	2600	858	1742
Cost per year	**$42,878**	**$14,150**	**$28,728**

2.2 Implementation Components: Availability funds are transferred from CNO N4 through the chain of command to Type Commanders who liaison with individual ships for requirements. Commanding Officers decide the amount of decking to be replaced and the type of decking to be utilized. Vinyl tile installation cost is $6.25 per square foot.[14] Stratica installation cost is $7.00 per square foot.[15] Although Stratica decking provides the lowest Total Ownership Cost (66 percent less than vinyl tile over ten years), many commands elect to install vinyl tile because the initial installation cost of vinyl tile is less than Stratica. Stratica's overall savings result from reduced workload... no stripping/waxing, however, some commands still view Sailor-labor as free and elect the vinyl tile in an effort to stretch available funds. Rapid deployment of low maintenance decking requires top/down direction to discontinue use of vinyl tile.

3. Benefits

3.1 Summary List: Potential benefits will include:

- Reduced workload for deck maintenance
- Reduced repair/resurfacing costs
- Reduced need for scrubbers/buffers
- Reduced need for chemical strippers and wax

3.2 Individual Benefit Description

3.2.1 Reduced Workload for Deck Maintenance: Low maintenance decking provides an opportunity to reduce the amount of labor required to maintain decking. It provides labor savings of approximately 66 percent over standard vinyl tile decking.[16] Standard vinyl tile and PRC require routine scrubbing, wax stripping, wax applying and buffing to maintain a high gloss appearance. Stratica has a resilient wear layer equivalent to 25mm of marble that has a clear matte appearance.[17] Maintenance includes sweeping to remove dirt, swabbing with a mild detergent and air-drying.

3.2.2 Reduced Repair/Resurfacing Costs: PRC decking requires resurfacing approximately every six months with a clear polyvinyl coating. PRC has a relatively low surface resilience. And as a result, the periodicity of resurfacing increases if the deck is subject to high traffic or rigorous scrubbing. On the other hand, Stratica decking exceeds all international industry standard tests for resilient flooring and is guaranteed to last for 10 years. Stratica's Surlyn coating is 10 times tougher than linoleum, 30 times tougher than terrazzo and 40 times tougher than marble.[18]

3.2.3 Reduced Requirement for Scrubbers/Buffers: Stratica decking does not require anything more than sweeping and swabbing. There is no need for mechanical scrubbers or buffers and the associated scrubbing/stripping/waxing pads.

3.2.4 Reduced Requirement for Chemical Strippers and Wax: Stratica decking does not require stripping or waxing. There is no need for chemical stripper solution or liquid wax. There is also no requirement for special detergents or soap for swabbing. Since these items will not be carried, storage space will increase. The environmental and hazardous material issues associated with chemical strippers and waxes will also be eliminated.

4. Associated Cost Savings

The savings associated with increased use of Stratica decking consist 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 ($1.4M annual savings compared to vinyl tile):[19] A total of 37,800 square feet of Stratica decking is currently installed on ten ships. Annually, approximately 84,000 hours per year are saved through reduced deck maintenance for 37,800 square feet of Stratica decking.[20] For purposes of this proposal, personnel impacted were assumed to be at the E-3 paygrade with an FY 00 composite standard pay rate of $29,025 annually.[21] Based on Stratica decking installed to date, annual labor savings will be approximately $1.4M for 37,800 square feet of decking. The workload reduction provides an opportunity to reduce Food Service Attendant "drudge" work.

4.1.2 Install/Repair Savings ($96K annual savings compared to vinyl tile):[22] Based on maintenance/repair cost estimates, approximately $96K (per 37,800 square feet) will be saved annually by reducing the requirement for normal repairs and periodic replacement of vinyl tile. For purposes of this proposal, cost savings were calculated by subtracting Stratica maintenance/repair costs from vinyl tile maintenance/repair costs for 37,800 square feet of decking.

4.2 Intangible Savings

4.2.1 Quality of Life Impact: Significant reductions in "drudge" work such as deck maintenance will improve Quality of Life for our Sailors and make more time available for other work and personal/professional growth.

4.2.2 Reduced Equipment and Cleaning Chemicals: Though beyond the scope of this review, the requirement for floor buffers, scrubbing/buffing pads, stripper chemicals and wax will be reduced. Further analysis is required to quantify this savings.

5. Cost to Implement

5.1 Proof of Concept Costs (Prototypes): There are no proof of concept costs. Prototypes have already been funded and conducted.

5.2 Deployed Systems Costs (Fleet-Wide Implementation): The estimated cost for deployment of low maintenance decking is as follows:

FY 00 and beyond: As determined by NAVSEA/Type Commanders *

* ROI table in Section 1.2 depicts savings associated with low maintenance decking already installed. The table does not project savings based upon future installations. The table demonstrates significant labor savings and supports the assertion that aggressive installation by NAVSEA and Type Commanders would maximize labor savings.

6. Conclusions

6.1 Short Summary of Benefits: Based on the methodology applied in this review, the Navy will obtain a significant savings afloat through use of low maintenance decking similar to Stratica. The Total Ownership Cost reduction through use of Stratica vice vinyl tile is 66 percent. The Total Ownership Cost reduction through use of Stratica vice PRC is 8 percent. Improved Quality of Life and reduced workload will constitute the primary benefits.

6.2 Assumed Cumulative Implementation Plan: Installation of low maintenance decking will proceed based on ship availability and funding resources. NAVSEA and Type Commanders will direct installation and the type of material to be installed.

6.3 Total Costs Savings over 5-Year Period: Total cost savings will be based upon the amount of low maintenance decking installed each year by NAVSEA and Type Commanders; however, based upon 37,800 square feet of Stratica decking installed to date, an estimated total savings of $6.6M is forecast for a five-year period when compared to vinyl tile.[23]

An estimated total savings of $6.6M is forecast for a five-year period based on decking installed to date.

Attachment 1: Decking Summary Statistics

Attachment 2: NAVSEA 05M Support Data

Attachment 3: PERS-221A EMC Statistical Summary Sheet (dated 10/12/99)

Attachment 4: Military Composite Standard Pay and Reimbursement Rates, Department of the Navy, for Fiscal Year 2000

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[1] See Attachment 1, Sheet 1 (Workload Savings), NAVSEA 05M Estimate, Vinyl MNHR Savings vs. Stratica, Cell J13.
[2] See Attachment 1, Sheet 1 (Workload Savings), USS WEST VIRGINIA data, % MNHR Savings, Cell J5.
[3] See Attachment 2, NAVSEA 05M Support Data.
[4] See Attachment 1, Sheet 2 (Stratica vs. Vinyl), Cells B3-G6.
[5] See Attachment 1, Sheet 3 (Stratica vs. PRC), Cells B3-G6.
[6] See Attachment 1, Sheet 1 (Workload Savings), NAVSEA 05M Estimate, Vinyl MNHR Savings vs. Stratica, Cell J13.
[7] Per Stratica Industry Website (www.stratica.com).
[8] Per NAVSEA 05M Historical data.
[9] See Attachment 1, Sheet 4 (Total Ownership Costs), Cells C8, D8.
[10] See Attachment 1, Sheet 4 (Total Ownership Costs), Cells B4-D7.
[11] Based on PERS-221A EMC Statistical Summary Sheet (dated 10/12/99). Provided as Attachment 3.
[12] See Attachment 2, NAVSEA 05M Support Data.
[13] See Attachment 1, Sheet 1 (Workload Savings), Cells I3-5.
[14] See Attachment 1, Sheet 4 (Total Ownership Costs), Vinyl Tile Installation Cost, Cell C4.
[15] See Attachment 1, Sheet 4 (Total Ownership Costs), Stratica Tile Installation Cost, Cell B4.
[16] See Attachment 1, Sheet 1 (Workload Savings), % MNHR Savings, Cell J5.
[17] Per Stratica Industry Website (www.stratica.com).
[18] Ibid.
[19] See Attachment 1, Sheet 1 (Workload Savings), FY 00 Cost Savings/10 Ships Installed, Cell C26.
[20] See Attachment 1, Sheet 2 (Stratica vs. Vinyl), MNHRS Saved, Cell C17.
[21] Military Composite Standard Pay and Reimbursement Rates, Department of the Navy, for Fiscal Year 2000. Provided as Attachment 4.
[22] See Attachment 1, Sheet 2 (Stratica vs. Vinyl), Install/Maint Cost Savings, Cell C4.
[23] See Attachment 1, Sheet 2 (Stratica vs. Vinyl), Total ROI, Cell G6.