

19 July 2002

From: Ships Store Program, NEXCOM

Subj: Design Considerations

A. Steam vs. Electric Laundry Comparison

Steam laundries are by design more efficient at heating water and drying clothing than the electric. The steam equipment is less expensive than electric and steam has a faster recovery time than electric. Electric equipment requires less maintenance than steam. Various ships classes have been converted to electric laundries and have been very successful and these have been small laundries. The following classes of ships have electric laundries installed.

- FFG (complete class converted from steam to electric)
- DDG (complete class built as electric)
- LSD-41 / 50 (Complete class converted from steam to electric)
- CG-47 (East coast CG's converted from steam to electric)
- LPD-17 new construction (complete class built as electric)

<u>Steam</u>		<u>Electric</u>	
Washer Extractor 200 #	43K	Washer Extractor 200#	46K
Washer Extractor 100#	38K	Washer Extractor 100 #	41K
Washer Extractor 60 #	34K	Washer Extractor 60 #	37K
Tumbler Dryer 100 #	13K	Tumbler Dryer 100#	20K
Tumbler Dryer 50 #	10K	Tumbler Dryer 50 #	13K
Press, Topper 36"	6.8K	Press Topper 36"	9K
Press, utility 54"	7.5K	Press, utility 54"	10.5K
Flat work Ironer	35K (est)	Flat work Ironer	40K (est)

2. New laundry Equipment review.

A. The Laundry and Dry Cleaning Equipment Shows provide laundry owners the latest equipment and initiatives available to the industry. Laundry and Dry cleaning equipment life cycle manager Mr. Joe Bowen from Naval Surface Warfare Center Carderock Division- Surface Ships Engineering Service (NSWCCD-SSES) Code 9790 and Dave Powell (Fleet Assistance Team Norfolk Habitability team) evaluate equipment and products at these shows. It is their opinion that there is no significant new technology in the laundry area; instead the industry focus is obtain better laundry through automation and chemistry. The Navy Ships Store Program follows this philosophy. Through the installation of Programmable Logic Computers to control the washer process cycles and the use of solid cake chemical systems to provide the best wash quality, Naval ships are comparable with leading civilian concerns in these areas. The team also looked to determine if there were any innovations in design that could be applied to the shipboard environment, however there were none that appeared satisfactory

3. Proposed Design for Self Service Laundry

A. Self Service laundries have been designed and "back-fit" installed on the majority of the CVN-68 Class air craft carriers. All of these self-service laundries are of the same design and consist of 14 washer extractors and 21 tumbler dryers. At the time of installation it was not known if the amount of equipment would support the crew. (The ECP CVN77CD-3064 addresses the self-service laundry with 14 washer extractors and 21 tumbler dryers). COMNAVAIRLANT and COMNAVAIRPAC elected to allow the fleet to address the needs of more equipment. Both

Fleets have indicated that additional equipment would provide a benefit to the crew. The latest move in this area is COMNAVAIRLANT who plans to install self-service laundries in two locations with 40 washers and dryers in each location. For all new ship designs self-service laundries should be a part of the design.

4. Dry Cleaning.

A. Dry cleaning equipment currently is on aircraft carriers and flag ships. Carrier Type Commanders are reviewing the decision to remove dry cleaning equipment from their ships. For new construction large deck ships, the only dry cleaning piece of equipment that should be onboard is a dry cleaning press.

5. Barber shop requirements

A. The requirement of 1 barber chair per 300 personnel or a portion thereof is an accurate requirement on all classes of ships with the exception of aircraft carriers. NAVSEA has designed barber shops with a total of 21+ barber chairs on board all CVN-68 class aircraft carriers as they were built. It has not been unusual that after commissioning the ship has removed chairs due to the lack of barbers. It is our opinion that there will not be sufficient manning in the future to support the 21+-barber concept on a carrier. CVN77CD-3078 addresses this issue and is our understanding that this proposal has been concurred with by both air type commanders. The requirement will consolidate all barber chairs into one barbershop servicing the entire crew including OFF/CPO.

6. Requirement for Ships Store outlets

A. It has been determined the CVN-68 class aircraft carrier total square footage allotted to ships stores is adequate. What is inadequate is the design and layout of the spaces, particularly the storeroom allocation and supporting equipment for movement of stores to those storerooms. To proceed to CVN-77 and CVX and provide the desired manpower reduction, radical changes are required. We have recommended:

1. Relocation of Ships stores or storerooms to provide the ships store and storerooms adjacent to one another.
2. Pallet type elevators to support those storerooms.
3. Unimpeded access between storeroom and selling location to permit use of handcarts etc.
4. Large vending areas and adjacent storerooms with supporting pallet elevators to supply the storerooms that will take the place of secondary stores.
5. Merchandise pathways that do not go through airlocks
6. Air Conditioned spaces for food products

There have been a number of different proposals over the years made by the type commander to PMS312 carrier site for evaluation. Among those proposals there were some very well thought out solutions to the CVN-68 class carriers ships store layout. None to date have received funding for design installation.

Drink Vending Operations

Best commercial practice to date is to provide the product in a can or plastic bottle to meet consumer needs and desires. The shipboard customer reflects this American theme. For workload reduction, it is imperative to have the storerooms collocated next to the vending areas as well as plan the movement

pathway to enlist movement aids to move the cans from storeroom to dispensing area. As an alternative, there may be options to create giant vending machines in a box via a 7-11 store model in which the drink is vended from the front but stored and loaded from the back. The advantage for this model is that soda is moved only once in the process to reduce workload of many folks moving a lot of soda cans from one place to the other as well as offer extended sustainability.

Design Considerations (other)

Hatches. Normal hatch width is 26 inches, which has not changed over the years. The size restricts the movement of large items into and out of the ship. Expanding the hatch size to 30+ inches would facilitate movement of items.

Services Mall. Rather than spreading QoL services throughout the ship, collocate them next to each other.

Horizontal movement of stuff. Ships may have vertical movement equipment, but no horizontal movement. When transporting anything from copying paper to laundry bags from one end of the ship to the other, there is a loss of manpower, time and efficiency of operation as the item is carried one item at a time through hatches, down ladders, cross decks etc to reach its destination. Identifying the heavy load movement of items on a ship, such as laundry bags, food etc and providing horizontal aids would assist in the rapid movement of the items.

Vertical movement of stuff. If the origin and destination are not in a vertical or horizontal plan, there will be inefficiencies in the movement up or down ladders, cross P-ways, through air locks, etc. It is also noted that in current designs, the downward movement using gravity is used to move items down and into the ship, but there are few if any means to move items up the ship except by carrying the item one at a time up a ladder etc.

Wireless connectivity to transmission nodes in the ship to permit the wireless transmission of data to shipboard LAN