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A NEW COAST GUARD WORK UNIFORM  
A DESIGN AND FIELD EVALUATION STUDY

NAVY CLOTHING AND TEXTILE RESEARCH FACILITY  
NATICK, MASSACHUSETTS

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as Charleston, in both summer and winter, and in Hull during the summer. (U)

TABLE OF CONTENTS

	<u>Page</u>
Introduction .....	1
Design and Materials .....	1
Test Sites .....	2
Test Data .....	2
Conclusions .....	4
Recommendations .....	4
Appendix A. Test Data from Questionnaires .....	A-1
Appendix B. References .....	B-1

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## A NEW COAST GUARD WORK UNIFORM: A DESIGN AND FIELD EVALUATION STUDY

### INTRODUCTION

The Navy Clothing and Textile Research Facility (NCTRF) conducted a wear test program on prototype shirts, made of polyester-cotton blend fabrics of two different weights, which were found more acceptable to the Coast Guard than the standard nylon cotton utility jumper. The Commandant of the U.S. Coast Guard requested this program to determine the feasibility of adopting a new work uniform consisting of a new short sleeve work shirt and the undress Coast Guard blue trousers to replace the enlisted work and undress uniforms (1). A 90-day evaluation was conducted at the Coast Guard Base, Pt. Allerton, Hull, Massachusetts, and aboard the Coast Guard Cutter (USCGC) PAPAW (WLB-328), based at Charleston, South Carolina. The 83 test subjects were furnished three pair of Coast Guard undress-blue, 7-ounce twill, 65/35 polyester-cotton blend trousers. They also received four short-sleeve shirts made of this 65/35 polyester-cotton blend. There were two shirt fabric weights, a 4.8-ounce modified-basket-weave type and a 7-ounce twill identical to the trouser fabric.

Test subjects completed the questionnaires after 90 days of wearing the outfits. Sixty-three test subjects responded with completed questionnaires (76%), and each test site submitted a letter report at the completion of the wear test. Analysis of the test results revealed that the new outfits were more acceptable than the standard ones. Moreover, both shirts were more comfortable, had a better appearance and after repeated washings and extended wear were still in very good condition.

The crew and officers aboard the USCGC PAPAW, stationed in the warm southern climate, preferred the lighter shirt with the undress blue trousers for wear in both summer and winter.

The station personnel at Point Allerton Coast Guard Station in New England preferred the lighter shirt in the summer and the heavier shirt in the winter. Both shirts were worn with the undress blue trousers.

This report will cover the design of the garments and fabrics used as well as conclusions, recommendations and an analysis of the evaluation data.

### DESIGN AND MATERIALS

The shirts were made from two polyester-cotton blend fabrics. The lighter weight material, designed as Fabric A, was 65/35% blend of polyester and cotton fibers spun into a singles yarn for both the warp and filling. The fabric had a modified basket weave and the minimum weight of the finished cloth was 4.8 ounces per square yard. The heavier fabric (Fabric B) was a 50% polyester-50% cotton blend spun into a two-ply yarn for the warp and a singles yarn for the filling. The weave was 2 up, 1 down right-hand twill. The minimum weight of the finished cloth was 6.8 ounces per square yard. The color of both fabrics was Coast Guard Blue 3362.

The shirts were designed with a convertible collar, a six-button front, and a squared-off bottom. There were two outside breast pockets with button-down flaps. The left flap had a stitched-down pencil opening. A fusible interlining was bonded to each top collar and to the top ply of each pocket flap. A polyethylene-plastic collar stay was stitched into each collar point.

The trousers were of a single needle construction with a separate interlined waistband. The back had uncut darts, and the bottoms were plain finished. The seat was made with a seam outlet, the front with a slide-fastener fly closure. The heavier Fabric B shirt material dyed a Coast Guard Blue 3362 was used in the construction of the trousers.

#### TEST SITES

##### Pt. Allerton Coast Guard Base

At the Pt. Allerton Coast Guard Base, the test subjects were involved in small craft rescue duties in the Boston area. Since the evaluation was conducted during the winter months, the test subjects operated under cold, stormy conditions with high waves and sleet. The average temperature was around 34°F.

##### USCGC PAPA

The other test site was aboard the USCGC PAPA whose home port was Charleston, SC. The test subjects performed routine duties at sea and in port, stood deck and completed engine room duties. The evaluation was conducted in 65°F temperatures. The environment was reported as warm with some rainy weather.

#### TEST DATA (SEE APPENDIX A)

##### Style

The experimental shirts made with fabrics A and B ("A" and "B" shirts) were well liked whereas the standard nylon-cotton jumper was not. The Pt. Allerton personnel indicated a greater preference for the heavier "A" shirt, which offers more protection in the winter than the lighter "B" shirt. Nevertheless, many test subjects commented that they would prefer the lighter shirt in the summer. The combination of the undress blue trousers worn with either experimental shirt was described by test subjects as a very smart outfit.

The PAPA personnel indicated a preference for the lighter "B" shirt in summer or winter. This is understandable in view of the relatively warm temperatures in which they worked. Again, the experimental shirt and undress blue trouser combination was praised as a highly presentable uniform.

Many complaints were received regarding the insignia pins striking the collar stays when the insignia devices were attached to the collar. This problem is being investigated by NCTRF with the possibility that the current method of the insignia device attachment will be modified.

### Comfort

The Pt. Allerton personnel found the "A" shirt slightly warmer than the jumper. The "B" shirt was reported as being much cooler than the jumper. Not one test subject reported the "B" shirt as being hot and uncomfortable. Many PAPA W test subjects reported the "B" shirt as being cooler than the jumper. In the South Carolina climate, a lightweight shirt was a great advantage.

All of the test subjects reported that the "A" shirt was much warmer than the "B" shirt. This is advantageous only during the winter season at Pt. Allerton but not during the summer. Many test subjects aboard the PAPA W reported that the "A" shirt would be much too warm and heavy to wear during the summer when the climate is both warm and humid.

### Appearance

At both test sites, the "A" and "B" shirts were found to have a very good to excellent appearance after 15 washings (minimum). Also, almost half of the jumpers were reported as having fair to poor appearance after 15 washings (minimum).

### Durability (Condition)

At both sites, the condition of the "A" and "B" shirts after a minimum of 15 washings and 20 wearings were reported as being very good to excellent. Pt. Allerton had no test shirts in the fair to poor category and only 1/3 of the PAPA W test shirts were in fair to poor condition. (Duty aboard the PAPA W causes more wear and tear.) Also the ship's laundry method aboard the PAPA W is more harsh than the home-type washes at Pt. Allerton. The jumpers were reported as being in much worse condition than the "A" and "B" shirts at both Pt. Allerton and aboard the PAPA W.

### Letter Reports

A letter report commenting on the evaluation was received from the Commanding Officer of each test site.

The Commanding Officer at Pt. Allerton reported that the new shirts, worn in combination with the undress-blue Coast Guard trousers, were more presentable than the jumper-dungaree or jumper-undress-blue-trouser uniform (2). Wash and wear fabrics warm enough for winter wear and cool enough for summer, were desirable. The problem of insignia device pins bending against the collar strap should be resolved. He recommended that the experimental uniform be adopted to be worn with the garrison cap or blue baseball cap.

The Commanding Officer, USCGC PAPA, reported the overall conclusion that the dark-blue work shirt and wash/wear undress blue trousers were the most acceptable work and undress uniform (3). The dark-blue lighter weight "A" shirt was much more comfortable than the heavier "B" shirt and was excellent for all seasons. The primary advantage was that the new work and undress uniform will replace a conglomeration of chambray shirts, dungarees, jumpers, work trousers, etc. He recommended that this new work uniform be adopted as the Coast Guard's work and undress uniform.

#### CONCLUSIONS

The new dark-blue shirts and dark-blue undress trousers were more acceptable than the conglomeration of currently worn work clothing. The new shirts were more durable and stain resistant, particularly aboard ship. The lighter weight "B" shirt was more comfortable than the heavier weight "A" shirt in warmer climates. This would be especially true for Coast Guard men stationed in Charleston during both summer and winter, and for Coast Guard men stationed in Boston during the summer. The design of the collar stays resulted in bending the pins of the collar devices when attached to the collar.

#### RECOMMENDATIONS

It is recommended that:

1. The new work shirts and dark-blue undress Coast Guard trouser be adopted by the U.S. Coast Guard as a work and undress outfit.
2. A new method of attaching collar devices be developed which is compatible with the collar stays of the new experimental work shirts.

APPENDIX A. TEST DATA FROM QUESTIONNAIRES\*

Style

Compare A with Standard Jumper - A is:

	<u>Excellent - Very Good</u>	<u>Average</u>	<u>Fair-Poor</u>
Pt. Allerton	73%	13%	10%
PAPAW	40%	20%	35%

Compare B with Standard Jumper, B is:

	<u>Excellent - Very Good</u>	<u>Average</u>	<u>Fair-Poor</u>
Pt. Allerton	80%	3%	14%
PAPAW	45%	20%	26%

Compare A with B, A is:

	<u>Superior</u>	<u>Same</u>	<u>Not as Good - Poor</u>
Pt. Allerton	43%	30%	20%
PAPAW	40%	17%	43%

Comfort

Compare A with Standard Jumper, A is:

	<u>Hot-Warm</u>	<u>Same</u>	<u>Cool</u>
Pt. Allerton	44%	40%	13%
PAPAW	63%	17%	11%

Compare B with Standard Jumper, B is:

	<u>Hot-Warm</u>	<u>Same</u>	<u>Cool</u>
Pt. Allerton	0%	53%	44%
PAPAW	29%	29%	34%

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\*Pt. Allerton response based on 30 questionnaires.  
USCGC PAPAW response based on 33 questionnaires.

Compare A with B - A is:

	<u>Hotter-Warmer</u>	<u>Same</u>	<u>Cool</u>
Pt. Allerton	70%	20%	3%
PAPAW	72%	14%	14%

Appearance (After a minimum of 15 washings )

	<u>Excellent - Very Good</u>			<u>Good</u>			<u>Fair-Poor</u>		
	<u>A</u>	<u>B</u>	<u>Standard</u>	<u>A</u>	<u>B</u>	<u>Standard</u>	<u>A</u>	<u>B</u>	<u>Standard</u>
Pt. Allerton	66%	73%	20%	27%	23%	37%	3%	0%	40%
PAPAW	57%	54%	22%	17%	23%	29%	26%	23%	32%

Durability (Condition of garments after a minimum of 15 washings and a minimum of 20 wearings.)

	<u>Excellent - Very Good</u>			<u>Good</u>			<u>Fair-Poor</u>		
	<u>A</u>	<u>B</u>	<u>Standard</u>	<u>A</u>	<u>B</u>	<u>Standard</u>	<u>A</u>	<u>B</u>	<u>Standard</u>
Pt. Allerton	66%	73%	23%	30%	23%	30%	0%	0%	43%
PAPAW	55%	54%	28%	37%	34%	29%	17%	12%	26%

APPENDIX B. REFERENCES

1. Commandant ltr GP-1/62 of 10 Jul 1975 to Commandant, First Coast Guard District (P) and Commandant, Seventh Coast Guard District (P).
2. Commanding Officer, Pt. Allerton Station, Hull, MA ltr 1020 of 4 May 1976 to OIC, NCTRF.
3. Commanding Officer, USCGC PAPA (WLB308) ltr 1020 of 3 May 1976 to OIC, NCTRF.