

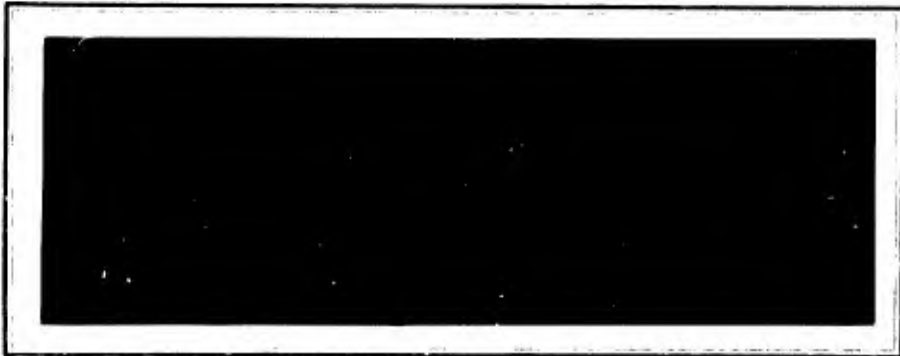
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**A LIMITED OPERATIONAL EVALUATION OF
DEHYDROFROZEN PEAS AND CARROTS**

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A LIMITED OPERATIONAL EVALUATION OF DEHYDROFROZEN PEAS AND DEHYDROFROZEN DICED CARROTS

INTRODUCTION

Dehydrated foods and frozen foods have been used extensively during the past 15 years by the Armed Forces. Unfortunately, neither type of food is completely satisfactory for submarine use. The dehydrated foods while having advantages of long storage life, less weight, and volume, and requiring no refrigeration, are often so altered during the preservation process that their consumer acceptability is affected adversely. Frozen foods on the other hand, retain their original characteristics but require considerable freezer storage space. This space factor determines the types and amounts of foods that can be carried aboard submarines.

The Western Utilization Laboratory, U. S. Department of Agriculture, Albany, California has obtained a public-service patent on a process called "dehydro-freezing". This process consists of removing approximately 50 per cent of the moisture from the products then freezing them. When preparing the product for use, it can be thawed and rehydrated simultaneously. The Department of Agriculture reports that dehydrofrozen products require 50 per cent less storage space than conventionally frozen foods and that unlike completely dehydrated foods, dehydrofrozen foods retain their original quality.

It was considered advisable to investigate the suitability of this type of food for use aboard submarines.

METHOD

A 50 pound case each of dehydrofrozen peas and dehydrofrozen carrots were provided by Lamb-Weston, Inc., Freezers and Canners, Weston, Oregon. The peas had been dehydrated to 48 per cent and the diced carrots to 51 per cent of their original volumes and weights prior to freezing. Both products were packed in 50 pound packages.

The vegetables were placed aboard the U.S.S. SARDA (SS 488) for trial use. The supply officer was asked to complete a questionnaire regarding the reactions of the crew to the product. The crew was not forewarned of the trial so that prejudices could be avoided as much as possible. The officers and enlisted men were polled separately because of differences in eating habits between the two groups. Instructions for rehydrating and thawing the vegetables were provided by the company. They consisted merely of adding cold water equal to one and one-half times the weight of the dehydrofrozen product used and then cooking until done. Standard Navy recipes for dressing the vegetables were used.

FINDINGS

A tabulation of the data taken from the questionnaire is contained in Table I. From these data it will be noted that the crew's reaction to the dehydrofrozen peas was very favorable with the majority (76.3%) "particularly liking them" whereas with the dehydrofrozen diced carrots most of the crew (57.2%) made no comment. No crew member signified a dislike for either of the products. It is also interesting to note that while the crew particularly liked the peas, they did not distinguish them from conventionally frozen peas. They were, however, able to recognize that they were not canned peas.

The shape and color of the dehydrofrozen peas as reported by the U.S.S. SARDA were exactly the same as conventionally frozen peas but their consistency was slightly inferior. The dehydrofrozen diced carrots retained the same color and consistency as the conventionally frozen product but had a slightly inferior shape. Both the peas and carrots were considered slightly inferior in shape to their canned counterparts.

The cooks reported that no more effort was required to prepare the dehydrofrozen vegetables than conventionally frozen ones. They considered the 50 pound package very unsatisfactory and felt that a 2-1/2 pound package would have been better.

Considerable space was saved by using the dehydrofrozen vegetables. According to the supply officer, almost twice as many rations of dehydrofrozen vegetables were served from the amount of freezer space normally allotted to these vegetables.

CONCLUSIONS

Dehydrated frozen peas and dehydrofrozen diced carrots, from the quality standpoint, are at least as acceptable as conventionally frozen diced carrots.

These vegetables required approximately 50 per cent less storage space than their conventionally frozen counterparts.

These vegetables required no more effort to prepare (including thawing and rehydration) than conventionally frozen peas and conventionally frozen diced carrots.

The dehydrofrozen peas had a consistency slightly inferior to conventionally frozen peas but superior to canned peas.

The dehydrofrozen diced carrots were slightly inferior in shape to conventionally frozen and canned diced carrots.

A more convenient size package should be provided preferably a 1-1/2 pound size.

TABLE I
REACTION OF CREW OF USS SARDA TO DEHYDROFROZEN PEAS AND DEHYDROFROZEN DICED CARROTS

GENERAL REACTION:	OFFICERS		MEN		TOTAL CREW	
	PEAS	CARROTS	PEAS	CARROTS	PEAS	CARROTS
Particularly liked them	71.4%	42.8%	77.3%	24.3%	76.3%	26.0%
Made no comment	28.6	57.2	22.7	75.7	23.3	74.0
Did not like them	0.0	0.0	0.0	0.0	0.0	0.0
ABILITY TO DIFFERENTIATE BETWEEN DEHYDROFROZEN AND CONVENTIONALLY FROZEN PRODUCTS:						
Immediately detected difference	42.8%	28.6%	16.7%	13.6%	19.2%	15.1%
Did not notice difference	57.2	71.4	83.3	86.4	80.8	84.9
No comment	0.0	0.0	0.0	0.0	0.0	0.0
ABILITY TO DIFFERENTIATE BETWEEN DEHYDROFROZEN AND CONVENTIONALLY CANNED PRODUCTS:						
Immediately detected difference	85.7%	57.2%	72.7%	70.0%	74.0%	68.5%
Did not notice difference	14.3	42.8	27.3	30.0	26.0	31.5
No comment	0.0	0.0	0.0	0.0	0.0	0.0