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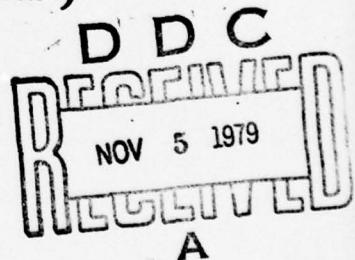
Department of Defence
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Armed Forces Food Science Establishment
Scottsdale, Tasmania

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Field Evaluation of
Australian Ration Packs
Combat Ration (One Man)

1976/77 (u)



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FIELD EVALUATION OF AUSTRALIAN RATION PACKS
COMBAT RATION (ONE MAN) 1976/77 RATION PACKING PROGRAMME
TRIALLED AT EXERCISE BRAHMAN DRIVE

D. J. LICHTENSTEIN

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SUMMARY

The five new varieties of the Combat Ration (One Man) 1976/77 Ration Packing Programme were trialled and compared with the 1975/76 Combat Ration (One Man) pack.

The results obtained indicated that the 1976/77 pack, as a whole, was an improvement over the previous pack in terms of consumer acceptability and Service suitability.

These results need to be confirmed at a further field trial. (U)

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FIELD EVALUATION OF AUSTRALIAN RATION PACKS
COMBAT RATION (ONE MAN) 1976/77 RATION PACKING PROGRAMME
TRIALLED AT EXERCISE BRAHMAN DRIVE

by

D. J. Lichtenstein

INTRODUCTION

A previous report detailed the results of an extensive field survey undertaken to determine the consumer acceptability and service suitability of the Combat Ration (One Man) 1975/76 Ration Packing Programme (Badcock and Lichtenstein, 1978).

Generally it was found that this ration is satisfactory for the task for which it was designed. However, there were a number of components which did not meet a satisfactory standard. Accordingly, a number of recommendations were made in an attempt to rectify these deficiencies, some of which were incorporated during the 1976/77 Ration Packing Programme.

The changes included the deletion of Candy Creamy Fudge in favour of Butterscotch. (This was an interim measure subject to satisfactory field acceptability trials). Varieties of Canned Fruit were reintroduced. One packet of Survival Biscuits was deleted from each ration pack and a tube of Butter Concentrate was a new addition. Potato with Onion Powder was a new addition to menus D and E.

TRIAL AND EVALUATION

The acceptability and Service suitability of individual components was determined as described previously (Badcock and Lichtenstein, 1978). A sample questionnaire is shown at Annex A.

The trial was conducted during the major HQ 1 Div field exercise Brahman Drive. Two evenly matched (understrength) platoons were selected as trial subjects. These were 5 PI, B Coy 6 RAR and 8 PI, C Coy 8/9 RAR respectively which operated separately from each other during the trial period.

The trial was divided into two phases lasting 5 days each during which time the subjects had an opportunity to consume each of the 5 varieties of the 2 different types of ration on trial. During phase 1 5 PI consumed the 75/76 Ration type whereas 8 PI consumed the 76/77 Ration type. During phase 2 the consumption patterns of both platoons were reversed.

Prior to the commencement of phase 1 the subjects were briefed, issued with questionnaires (to be completed following the consumption of the particular item in question), all outside sources of food were removed and an initial ration issue was made. However, the members of each platoon were allowed to interchange the ration pack components if they so desired. During the course of the trial, all unconsumed (unopened) ration pack components were returned, with a final return being made at the end of phase 1 when the subjects were also debriefed, completed questionnaires returned and new questionnaires issued. This procedure was repeated for phase 2.

RESULTS AND DISCUSSION

Analysis of Data

Answers to questions relating to the acceptability, quantity provided and nature of the packaging of each ration component are detailed in Tables 1-4. The results are shown for each of the 2 sets of conditions under investigation: each ration packing phase and each platoon. The popularity ratings of each component, are depicted in descending order of decreasing popularity in Tables 5-8. These Tables also compare the actual discard figures with stated discards determined from answers to questionnaires. Finally, the summary of acceptability, percent dislike, and percent discard data of individual ration components for each of the conditions under investigation, are compared with summary results from previous surveys in Tables 9-11 respectively.

In general the results for the 75/76 ration packing phase confirm the ratings accorded previously (Badcock and Lichtenstein, 1978), suggesting that the sample of soldiers surveyed was typical of those surveyed previously. In addition, it would seem that the changes made in the 76/77 ration packing phase, in response to the previous surveys, have resulted in an increased acceptance of the Combat Ration (One Man). These results are discussed below in greater detail.

Whereas both platoons rated the 76/77 pack at an overall average acceptability factor of 0.9, 5 PI was more critical of the earlier pack compared with 8 PI (0.5 and 0.8 respectively). This may have been an over reaction on the part of 5 PI to consuming the 75/76 pack during phase 2 of the trial following the initial exposure to the more acceptable 76/77 pack. This figure may be compared with the previously determined overall battalion average acceptability factor of 0.7 (range 0.6-0.9) for the 75/76 ration pack (Badcock and Lichtenstein, 1978).

Cereal Block, Survival Biscuits, Candy Creamy Fudge, Orange Beverage Powder, Lemon Beverage Powder, Lime Beverage Powder, Camp Pie, Luncheon Meat and Corned Beef were considered unacceptable (Tables 1-4). Each of these listed items have previously been shown to be unacceptable on a number of occasions. On the other hand none of the new items on trial were deemed to be unacceptable.

The discard figures for each component (Tables 5-8) show a somewhat tenuous inverse relationship between acceptability and the discard rate. However, as shown previously (Badcock and Lichtenstein, 1978) certain items, such as canned meats products, which although are either unacceptable or barely acceptable, are not as readily discarded as more acceptable items. Generally, the actual discard rates for components were higher than what the user believed they were.

Perhaps the surprise was the amount of rice actually discarded by 5 PI (81% in the case of the 75/76 pack and 57% for 76/77 pack). This can be compared with the average discard rate of 5% for Potato with Onion Powder (for both platoons). It must be noted however that rice in the Combat Ration (One Man) is a precooked hot air dried product, requiring at least 10 minutes preparation time.

Despite the user plea for the addition of more adjuncts, the discard figures for the current adjuncts, Salt, Curry Powder, Beef and Chicken Soup Powders are rather high. Also, contrary to popular opinion, the actual discard figures suggest that there is sufficient Tea, Coffee, Sugar and Condensed Milk in the ration pack for soldiers engaged in infantry-like activities.

Of the new items, only Butter Concentrate was discarded in significant quantities (35% and 16% respectively for 5 and 8 PIs). The deletion of one packet of Survival Biscuits resulted only in a marginal reduction in the discard rate, which is still significant.

User Comments

Generally, it was felt that the inclusion of Canned Fruit and Potato with Onion Powder was a step in the right direction in improving pack and that Butterscotch was an improvement over Candy Creamy Fudge. However, the major criticisms expressed previously (Badcock and Lichtenstein, 1978) still remain such as the lack of variety in the menus. Only those comments which have not been reported previously are included in this report.

7% of the users stated that the Canned Fruit containers were too fragile being broken easily under field conditions. 5% stated that the Chocolate Block left a dry taste in the mouth making one feel sick. 2% stated that Butterscotch was far too soft and tasteless. 2% stated that there was too much butter in the packs.

Suggested improvements were along the same lines as those reported previously (Badcock and Lichtenstein, 1978) with the following additional suggestions: include a small refresher towel in each pack (7%); a larger quantity of Potato with Onion Powder should be included (7%), the majority of the packs should have Potato with Onion Powder (5%); the sweets should be replaced by mixed dried fruits (5%); there should be a different variety of sweets in each ration pack (5%); all cans should have flat surfaces (5%); the cans should be constructed out of a lighter material such as aluminium (2%); there should be a different variety of Chewing Gum in each pack (2%); the Survival Biscuits should be replaced by Canned Bread (2%); the Granulated Sugar should be replaced by Sugar Cubes (2%); the current fruit beverage base powders should be replaced by the "White Wings" brand (2%); the immediate pack should be a resealable plastic bag which can be resealed when not in use to maintain the pack items and keep out foreign material (2%).

RECOMMENDATIONS

The previous recommendations (Badcock and Lichtenstein, 1978) which have not yet been implemented are still valid as a result of this trial. It is recommended that a further trial be undertaken using 2 representative platoons from 2 other battalions to substantiate the data on the Combat Ration (One Man) 76/77 Ration Packing Programme. However, there is no need to conduct any further trials on the Combat Ration (One Man) 75/76 Ration Packing Programme, as sufficient data has been generated on this pack.

ACKNOWLEDGEMENTS

My thanks are to HQ 1 Div, HQ 6 TF, 6 RAR and 8/9 RAR for allowing the trial to take place and the excellent organisation which lead to the success of the trial. Special thanks are accorded to the participants in the trial and their commanders who had to forgo, among other things, a fresh meal.

I was ably assisted in the field by Maj A. H. Fairbrother (Det) AFFSE. I acknowledge also the assistance of Messrs. W. Badcock and D. Dunkley in the final analysis of the questionnaires.

REFERENCE

Badcock, W. E. and Lichtenstein, D. J. (1978), AFFSE Report 4/78.

TABLE 1

Exercise: Brahman Drive
Unit: 5 Pl, B Coy, 6 RAR

COMBAT RATION (ONE MAN) QUESTIONNAIRE RESULTS

No. of Subjects = 21

Average Age = 21.1

Av Yrs Service = 3.1

% Married

ITEMS	ACCEPTABILITY				AMOUNT						
	Acceptability Mean	%Dis-like	%Not tried	%Not replied	%Alright	%Not suff	%Too much	%Discard	%Not replied	%Alright	%To share
Cereal Block	-1.10	67	5	0	33	0	10	57	0	81	0
Survival Biscuits	-0.45	43	5	0	33	5	24	38	0	76	0
Sweet Biscuits	0.86	19	0	0	71	29	0	0	0	71	0
Cheese	1.40	10	5	0	38	52	0	10	0	86	10
Chocolate	0.86	14	0	0	62	33	0	5	0	48	14
Chewing Gum	0.24	19	0	0	52	24	5	19	0	81	5
Candy Creamy Fudge	-1.29	71	0	0	33	0	10	57	0	86	0
Sweetened Condensed Milk	1.43	10	0	0	38	57	5	0	0	95	0
Sugar	1.38	0	0	0	67	19	14	0	0	57	5
Tea Bags	1.52	0	0	0	57	38	0	5	0	100	0
Instant Coffee	1.05	14	0	0	38	57	5	0	0	100	0
Salt	0.76	5	19	0	81	5	0	10	5	100	0
Instant Rice	0.27	14	29	0	57	10	5	29	0	95	0
Curry Powder	0.38	14	38	0	48	10	5	33	5	100	0
Orange Drink Powder	0.00	33	24	0	38	10	5	48	0	86	0
Lemon Drink Powder	-0.25	43	24	0	43	5	5	48	0	86	0
Lime Drink Powder	-0.12	38	19	0	43	10	5	43	0	86	0
Ham and Eggs	0.65	24	5	0	52	43	0	5	0	67	33
Plum Jam	1.10	0	5	0	71	19	0	10	0	95	0
Beef and Vegetables	1.05	10	0	0	67	24	5	0	5	71	29
Pork and Beans	0.70	19	5	0	57	33	0	10	0	71	29
Raspberry Jam	0.95	5	5	0	67	24	0	5	5	95	0
Corned Beef Hash	0.50	24	5	0	67	14	10	5	5	71	29
Camp Pie	0.41	29	19	0	57	24	0	19	0	71	29
Apricot Jam	1.00	0	5	0	76	19	0	5	0	95	0
Beef and Gravy	0.52	29	0	0	71	19	5	5	0	71	29
Sausages and Vegetables	0.81	24	0	0	48	48	5	0	0	71	29
Blackberry Jam	1.00	5	5	0	62	29	0	10	0	95	0
Beef Soup Powder	0.28	19	14	0	76	5	0	19	0	95	0
Luncheon Meat	-0.60	52	5	0	52	5	19	24	0	71	29
Beef and Egg	0.70	19	5	0	67	29	5	0	0	71	29
Peach Jam	1.00	5	5	0	62	29	0	10	0	95	0
Chicken Soup Powder	0.50	14	14	0	81	5	0	14	0	95	0
Corned Beef	-0.25	48	5	0	52	14	10	24	0	71	29

Overall Average = 0.51

PACKAGING

TABLE 2

Exercise: Brahman Drive COMBAT RATION (ONE MAN) QUESTIONNAIRE RESULTS

Unit: 8 Pl, C Coy, 8/9 RAR

No. of Subjects = 22

Average Age = 22.6

Av Yrs Service = 3.1

% Married = 3

ITEMS	ACCEPTABILITY				AMOUNT						
	Acceptability Mean	%Dis-like	%Not tried	%Not replied	% Alright	%Not suff	%Too much	%Discard	%Not replied	% Alright	% Too shiny
Cereal Block	-0.52	50	5	0	45	0	18	36	0	100	0
Survival Biscuits	0.19	14	5	0	64	0	32	5	0	95	0
Sweet Biscuits	0.73	5	0	0	64	14	18	5	0	82	0
Cheese	1.27	9	0	0	59	32	9	0	0	86	14
Chocolate	0.77	14	0	0	77	9	5	9	0	64	14
Chewing Gum	0.18	14	0	0	68	5	9	18	0	55	27
Candy Creamy Fudge	-0.14	41	0	0	36	14	14	36	0	100	0
Sweetened Condensed Milk	1.50	0	0	0	59	27	14	0	0	64	0
Sugar	1.27	0	0	0	64	9	27	0	0	64	0
Tea Bags	0.91	9	0	0	64	18	9	9	0	91	0
Instant Coffee	1.57	0	5	0	55	32	9	5	0	100	0
Salt	0.95	0	0	0	91	5	5	0	0	91	0
Instant Rice	1.55	0	0	0	64	32	5	0	0	100	0
Curry Powder	0.68	18	0	0	73	5	14	9	0	100	0
Orange Drink Powder	0.33	27	5	0	64	14	5	18	0	100	0
Lemon Drink Powder	0.29	27	5	0	68	9	5	18	0	100	0
Lime Drink Powder	0.24	32	5	0	59	14	5	23	0	100	0
Ham and Eggs	0.09	41	0	0	41	27	18	14	0	64	36
Plum Jam	1.36	0	0	0	77	14	9	0	0	86	0
Beef and Vegetables	1.59	0	0	0	55	36	9	0	0	64	36
Pork and Beans	1.18	14	0	0	41	50	9	0	0	64	36
Raspberry Jam	1.41	0	0	0	77	14	9	0	0	86	0
Corned Beef Hash	0.32	32	0	0	77	9	14	0	0	64	36
Camp Pie	0.05	41	0	0	45	23	18	14	0	64	36
Apricot Jam	1.27	5	0	0	73	18	9	0	0	86	0
Beef and Gravy	1.41	5	0	0	59	27	9	5	0	64	36
Sausages and Vegetables	1.68	0	0	0	32	64	5	0	0	68	32
Blackberry Jam	1.36	0	0	0	73	18	9	0	0	82	5
Beef Soup Powder	1.09	5	0	0	73	23	5	0	0	91	5
Luncheon Meat	-0.36	50	0	0	50	9	23	18	0	64	32
Beef and Egg	0.00	41	0	0	41	23	23	14	0	68	32
Peach Jam	1.27	5	0	0	77	14	9	0	0	82	5
Chicken Soup Powder	1.18	9	0	0	73	23	5	0	0	95	5
Corned Beef	-0.18	41	0	0	68	0	18	14	0	64	32

Overall Average = 0.78

d = 36

PACKAGING				
Too shiny	%Too crackly	%Too flimsy	%Too bulky	%Not replied
0	0	0	0	0
0	0	5	0	0
0	0	9	5	5
14	0	0	0	0
14	23	0	0	0
27	5	14	0	0
0	0	0	0	0
0	0	36	0	0
0	9	23	5	0
0	5	5	0	0
0	0	0	0	0
0	9	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
36	0	0	0	0
0	0	14	0	0
36	0	0	0	0
36	0	0	0	0
0	0	14	0	0
36	0	0	0	0
36	0	0	0	0
0	0	14	0	0
36	0	0	0	0
32	0	0	0	0
5	0	14	0	0
5	0	5	0	0
32	0	0	5	0
32	0	0	0	0
5	0	14	0	0
5	0	0	0	0
32	0	0	5	0

2

TABLE 3

Exercise: Brahman Drive COMBAT RATION (ONE MAN) QUESTIONNAIRE RESULTS

Unit: 5 Pl, B Coy, 6 RAR

No. of Subjects = 20

Average Age = 20.8

Av Yrs Service = 2.9

% Married =

ITEMS	ACCEPTABILITY				AMOUNT						
	Acceptability Mean	%Dis-like	%Not tried	%Not replied	%Alright	%Not suff	%Too much	%Discard	%Not replied	%Alright	%Too shiny
Cereal Block	-0.89	60	10	0	45	0	15	40	0	90	0
Survival Biscuits	-0.61	50	10	0	40	5	15	40	0	85	0
Sweet Biscuits	0.75	15	0	0	85	10	0	0	5	85	0
Butter Concentrate	0.82	10	10	5	70	0	10	10	10	95	0
Cheese	1.21	10	5	0	50	40	0	5	5	100	0
Chocolate	0.95	10	5	0	60	15	5	10	10	70	10
Chewing Gum	0.30	20	0	0	55	20	10	10	5	85	5
Butterscotch	1.20	0	0	0	65	25	5	0	5	50	0
Sweetened Condensed Milk	1.15	5	0	0	55	35	5	0	5	90	0
Sugar	1.20	0	0	0	75	10	10	0	5	55	5
Tea Bags	1.45	0	0	0	55	40	0	0	5	100	0
Instant Coffee	1.35	5	0	0	55	35	5	0	5	100	0
Salt	0.74	5	5	0	85	0	5	5	5	90	0
Instant Rice	0.28	20	10	0	65	5	5	20	5	90	0
Potato with Onion Powder	1.35	5	5	10	65	20	0	5	10	85	0
Curry Powder	0.47	15	15	0	65	5	0	25	5	95	0
Orange Drink Powder	1.00	5	5	0	75	10	0	10	5	100	0
Lemon Drink Powder	0.74	15	5	0	75	10	0	10	5	100	0
Lime Drink Powder	1.00	5	5	0	80	10	0	5	5	100	0
Peaches	2.00	0	0	0	35	60	0	0	5	75	0
Pears	2.00	0	0	0	35	60	0	0	5	75	0
Two Fruits	2.00	0	0	0	35	60	0	0	5	75	0
Ham and Eggs	0.58	30	5	0	45	30	10	15	0	65	35
Plum Jam	1.25	0	0	0	90	10	0	0	0	90	0
Beef and Vegetables	0.90	20	0	0	85	10	0	5	0	60	35
Pork and Beans	0.65	25	0	0	65	30	5	0	0	60	35
Raspberry Jam	1.30	0	0	0	90	10	0	0	0	90	0
Corned Beef Hash	0.75	20	0	0	75	15	5	5	0	60	35
Camp Pie	0.40	30	0	0	55	20	10	15	0	70	30
Apricot Jam	1.30	0	0	0	85	15	0	0	0	90	0
Beef with Gravy	0.65	20	0	0	70	15	5	10	0	65	30
Sausages and Vegetables	0.75	25	0	0	50	35	15	0	0	65	35
Blackberry Jam	1.25	0	0	0	90	10	0	0	0	90	0
Beef Soup Powder	0.78	10	10	0	90	0	5	5	0	100	0
Luncheon Meat	-0.63	55	5	0	60	5	10	25	0	60	35
Beef and Eggs	0.53	30	5	0	45	35	15	5	0	70	30
Peach Jam	1.20	0	0	0	90	10	0	0	0	90	0
Chicken Soup Powder	1.00	5	10	0	90	0	0	10	0	95	5
Corned Beef	0.00	40	0	5	70	5	10	15	0	60	35

Overall Average = 0.85

ried = 25

PACKAGING				
%Too shiny	%Too crackly	%Too flimsy	%Too bulky	%Not replied
0	5	0	5	0
0	5	5	0	5
0	5	10	0	0
0	0	5	0	0
0	0	0	0	0
10	15	0	0	5
5	5	0	0	5
0	40	10	0	0
0	0	10	0	0
5	0	40	0	0
0	0	0	0	0
0	0	0	0	0
0	0	10	0	0
0	0	10	0	0
0	0	5	0	10
0	0	5	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	25	0	0
0	0	25	0	0
0	0	25	0	0
35	0	0	0	0
0	0	10	0	0
35	0	0	5	0
35	5	0	0	0
0	0	10	0	0
35	5	0	0	0
30	0	0	0	0
0	0	10	0	0
30	0	0	5	0
35	0	0	0	0
0	0	10	0	0
0	0	0	0	0
35	0	0	5	0
30	0	0	0	0
0	0	10	0	0
5	0	0	0	0
35	0	0	5	0

TABLE 4

Exercise: Brahman Drive

COMBAT RATION (ONE MAN) QUESTIONNAIRE RESULTS 76

Unit: 8 Pl, C Coy, 8/9 RAR

No. of Subjects = 22

Average Age = 22.3

Av Yrs Service = 3.1

% Married = 3

ITEMS	ACCEPTABILITY				AMOUNT						
	Acceptability Mean	%Dis-like	%Not tried	%Not replied	% Alright	%Not suff	%Too much	%Discard	%Not replied	% Alright	%Too shiny
Cereal Block	-0.68	55	0	0	41	0	5	50	5	91	0
Survival Biscuits	0.32	18	0	0	59	18	9	9	5	91	0
Sweet Biscuits	0.95	14	0	0	82	5	14	0	0	73	0
Butter Concentrate	0.82	9	0	0	73	0	14	14	0	86	0
Cheese	1.55	0	0	0	55	45	0	0	0	86	14
Chocolate	0.91	14	0	0	77	9	0	14	0	59	14
Chewing Gum	0.59	14	0	0	68	14	0	18	0	68	18
Butterscotch	1.00	14	0	0	73	14	0	14	0	50	5
Sweetened Condensed Milk	1.45	0	0	0	68	23	9	0	0	82	0
Sugar	1.27	0	0	0	86	0	14	0	0	68	9
Tea Bags	1.10	5	5	0	68	23	0	9	0	86	9
Instant Coffee	1.33	0	5	0	68	23	5	5	0	91	5
Salt	0.64	5	0	0	95	0	5	0	0	86	9
Instant Rice	1.41	5	0	0	64	32	0	5	0	95	0
Potato with Onion Powder	1.67	0	0	5	73	23	0	0	5	95	0
Curry Powder	0.64	18	0	0	77	9	5	9	0	100	0
Orange Drink Powder	-0.15	36	9	0	59	9	0	32	0	100	0
Lemon Drink Powder	-0.10	36	9	0	64	5	0	32	0	100	0
Lime Drink Powder	-0.10	36	9	0	59	9	0	32	0	100	0
Peaches	2.00	0	0	0	36	59	0	0	5	86	9
Pears	2.00	0	0	0	36	59	0	0	5	86	9
Two Fruits	2.00	0	0	0	36	59	0	0	5	82	9
Ham and Eggs	0.09	32	0	0	41	32	5	23	0	55	45
Plum Jam	1.18	5	0	0	77	14	5	5	0	91	0
Beef and Vegetables	1.52	0	0	0	77	18	0	0	5	50	45
Pork and Beans	0.64	23	0	0	32	55	5	9	0	55	45
Raspberry Jam	1.36	5	0	0	82	14	5	0	0	91	0
Corned Beef Hash	0.36	32	0	0	77	14	5	5	0	50	45
Camp Pie	-0.05	41	0	0	41	23	18	18	0	55	45
Apricot Jam	1.05	9	0	0	77	14	9	0	0	91	0
Beef with Gravy	1.36	5	0	0	77	23	0	0	0	55	45
Sausages and Vegetables	1.50	0	0	0	50	50	0	0	0	55	45
Blackberry Jam	1.09	9	0	0	82	14	5	0	0	95	0
Beef Soup Powder	0.91	14	0	0	73	18	0	9	0	95	0
Luncheon Meat	0.00	36	0	0	64	0	18	18	0	45	50
Beef and Eggs	0.23	36	0	0	41	27	9	23	0	55	45
Peach Jam	1.09	5	0	0	82	14	5	0	0	91	0
Chicken Soup Powder	1.18	9	0	0	82	9	0	9	0	100	0
Corned Beef	-0.05	41	0	0	68	0	14	18	0	50	45

Overall Average = 0.87

PACKAGING

	%Too crackly	%Too flimsy	%Too bulky	%Not replied
	5	0	0	5
	5	5	0	0
	5	18	5	0
	0	14	0	0
	0	0	0	0
23	0	5	0	
0	9	0	5	
41	0	0	5	
	5	14	0	0
	9	14	0	0
	5	0	0	0
	0	5	0	0
	0	5	0	0
	5	0	0	0
	0	0	0	5
	0	0	0	0
	0	0	0	0
	0	0	0	0
	0	0	0	5
	0	0	0	5
	0	0	0	9
	0	0	0	0
	0	9	0	0
	0	0	0	5
	0	0	0	0
	0	9	0	0
	0	0	5	0
	0	0	0	0
	0	9	0	0
	0	0	0	0
	0	0	0	0
	0	5	0	0
	0	5	0	0
	0	0	5	0
	0	0	0	0
	0	9	0	0
	0	0	0	0
	0	0	5	0



Exercise: Brahman Drive
Unit: 5 Pl. B Coy. 6 RAR

TABLE 5
COMBAT RATION (ONE MAN)
POPULARITY RATINGS AND OBJECTIVE DISCARDS
75/76 RPP

ACCEPTABILITIES (Mean Score)	DISLIKES (% Users)		DISCARDS (% Users)		DISCARDS (% Components)
Tea Bags	1.5	Tea Bags	0	Sugar Sweetened Condensed Milk Beef and Vegetables Instant Coffee Sweet Biscuits Sausages and Vegetables Beef and Egg Pork and Beans Corned Beef Hash Beef and Gravy Camp Pie Sweetened Condensed Milk	0
Sugar	1.4	Sugar Plum Jam Apricot Jam Peach Jam Blackberry Jam Salt	0 0 0 5 5 6	Corned Beef Apricot Jam Sausages and Vegetables Beef and Egg Pork and Beans Corned Beef Hash Beef and Gravy Camp Pie Sweetened Condensed Milk	2 5 5 5 5 5 5 7
Sweetened Condensed Milk	1.4			Instant Coffee Tea Bags Cheese Peach Jam	0 0 0 0
Cheese	1.4				0
Plum Jam	1.4				0
Apricot Jam	1.1				0
Peach Jam	1.0				0
Blackberry Jam	1.0				0
Beef and Vegetables	1.0				0
Instant Coffee	1.0				0
Raspberry Jam	0.9	Beef and Vegetables Instant Coffee	10 14	Chocolate Ham and Eggs Corned Beef Hash Beef and Gravy Cheese Plum Jam Peach Jam Blackberry Jam Salt	5 5 5 5 10 10 10 10
Chocolate	0.9	Chocolate	14	Chocolate Raspberry Jam	9
Sweet Biscuits	0.9	Chicken Soup Powder	17	Plum Jam Peach Jam Blackberry Jam Salt	9
Salt	0.8	Sweet Biscuits Chewing Gum Beef and Egg Pork and Beans Ham and Eggs Chicken Soup Powder	19 19 20 20 20 20	Plum Jam Peach Jam Blackberry Jam Salt	10 10 10 10
Sausages and Vegetables	0.8	Beef and Vegetables Pork and Beans Ham and Eggs Chicken Soup Powder	19 19 20 20	Blackberry Jam Salt	19
Beef and Egg	0.7	Instant Rice Beef Soup Powder	20 22	Pork and Beans	19
Pork and Beans	0.7				
Ham and Eggs	0.6				
Chicken Soup Powder	0.5				
Corned Beef Hash	0.5				
Beef and Gravy	0.5	Curry Powder	23	Chicken Soup Powder Camp Pie Beef Soup Powder	14
Curry Powder	0.4	Sausages and Vegetables Ham and Eggs	24 25	Chewing Gum Corned Beef Luncheon Meat Instant Rice Curry Powder Survival Biscuits Lime Drink Powder	19
Camp Pie	0.4				24
Instant Rice	0.3	Corned Beef Hash	25	Corned Beef Luncheon Meat Instant Rice Curry Powder Survival Biscuits Lime Drink Powder	24
Beef Soup Powder	0.3	Beef and Gravy	29	Lemon Drink Powder	31
Chewing Gum	0.2	Camp Pie	35	Chewing Gum	37
Orange Drink Powder	0.0	Orange Drink Powder	44	Chicken Soup Powder	38
Lime Drink Powder	-0.1	Survival Biscuits	45	Beef Soup Powder	43
Corned Beef	-0.3	Lime Drink Powder	47	Candy Creamy Fudge	44
Lemon Drink Powder	-0.3	Corned Beef	50	Salt	49
Survival Biscuits	-0.5			Curry Powder	49
Luncheon Meat	-0.6	Luncheon Meat	55	Survival Biscuits	56
Cereal Block	-1.1	Lemon Drink Powder	56	Lemon Drink Powder	64
Candy Creamy Fudge	-1.3	Cereal Block	70	Cereal Block	81
		Candy Creamy Fudge	71	Instant Rice	

Exercise: Brahman Drive
Unit: 8 Pl, C Coy, 8/9RAR

TABLE 6
COMBAT RATION (ONE MAN)
POPULARITY RATINGS AND OBJECTIVE DISCARDS

ACCEPTABILITIES (Mean Score)	DISLIKES (% Users)		DISCARDS (% Users)		DISCARDS (% Components)
	DISLIKES (% Users)	DISCARDS (% Users)	DISCARDS (% Users)	DISCARDS (% Users)	
Sausages and Vegetables	1.7	Sausages and Vegetables	0	Sausages and Vegetables	0
Beef and Vegetables	1.6	Beef and Vegetables	0	Beef and Vegetables	0
Instant Coffee	1.6	Instant Coffee	0	Instant Rice	0
Instant Rice	1.5	Instant Rice	0	Sweetened Condensed Milk	0
Sweetened Condensed Milk	1.5	Sweetened Condensed Milk	0	Raspberry Jam	0
Plum Jam	1.4	Plum Jam	0	Plum Jam	0
Raspberry Jam	1.4	Raspberry Jam	0	Blackberry Jam	0
Blackberry Jam	1.4	Blackberry Jam	0	Sugar	1
Beef and Gravy	1.4	Sugar	0	Peach Jam	2
Sugar	1.3	Salt	0	Apricot Jam	3
Peach Jam	1.3	Beef and Gravy	5	Cheese	4
Apricot Jam	1.3	Peach Jam	5	Chicken Soup Powder	5
Cheese	1.3	Apricot Jam	5	Pork and Beans	5
Chicken Soup Powder	1.2	Beef Soup Powder	5	Beef Soup Powder	5
Pork and Beans	1.2	Sweet Biscuits	5	Salt	5
Beef Soup Powder	1.1	Cheese	9	Corned Beef Hash	8
Salt	1.0	Chicken Soup Powder	9	Instant Coffee	9
Tea Bags	0.9	Tea Bags	9	Beef and Gravy	9
Chocolate	0.8	Pork and Beans	14	Sweet Biscuits	10
Sweet Biscuits	0.7	Chocolate	14	Survival Biscuits	10
Curry Powder	0.7	Survival Biscuits	14	Tea Bags	11
Lemon Drink Powder	0.3	Chewing Gum	14	Chocolate	12
Orange Drink Powder	0.3	Curry Powder	18	Curry Powder	12
Corned Beef Hash	0.3	Lemon Drink Powder	29	Ham and Eggs	13
Survival Biscuits	0.2	Orange Drink Powder	29	Beef and Egg	13
Chewing Gum	0.2	Corned Beef Hash	32	Camp Pie	14
Lime Drink Powder	0.2	Lime Drink Powder	33	Corned Beef	14
Ham and Eggs	0.1	Ham and Eggs	41	Lemon Drink Powder	18
Beef and Egg	0.0	Beef and Egg	41	Orange Drink Powder	18
Camp Pie	0.0	Camp Pie	41	Chewing Gum	18
Candy Creamy Fudge	-0.1	Candy Creamy Fudge	41	Camp Pie	18
Corned Beef	-0.2	Corned Beef	41	Luncheon Meat	18
Luncheon Meat	-0.4	Luncheon Meat	50	Lime Drink Powder	23
Cereal Block	-0.5	Cereal Block	52	Candy Creamy Fudge	23
				Cereal Block	36
				Survival Biscuits	54

Exercise: Brahman Drive
Unit: 5 Pl, B Coy, 6 RAR

TABLE 7
COMBAT RATION (ONE MAN)
POPULARITY RATINGS AND OBJECTIVE DISCARDS
76/77 RPP

ACCEPTABILITIES (Mean Score)	DISLIKES (% Users)			DISCARDS (% Users)			DISCARDS (% Components)		
	Peaches	Pears	Two Fruits	Peaches	Pears	Two Fruits	Peaches	Pears	Two Fruits
Peaches	2.0			0	0	0	0	0	0
Pears	2.0			0	0	0	0	0	0
Two Fruits	2.0			0	0	0	0	0	0
Tea Bags	1.4			0	0	0	0	0	0
Potato with Onion Powder	1.4			0	0	0	0	0	0
Raspberry Jam	1.3			0	0	0	0	0	0
Apricot Jam	1.3			0	0	0	0	0	0
Instant Coffee	1.3			0	0	0	0	0	0
Butterscotch	1.2			0	0	0	0	0	0
Blackberry Jam	1.2			0	0	0	0	0	0
Plum Jam	1.2			0	0	0	0	0	0
Peach Jam	1.2			0	0	0	0	0	0
Sugar	1.2			0	0	0	0	0	0
Instant Coffee	1.2			5	5	5	0	0	0
Sweetened Condensed Milk	1.2			5	5	5	0	0	0
Lime Drink Powder	1.1			5	5	5	0	0	0
Orange Drink Powder	1.1			5	5	5	0	0	0
Salt	1.0			5	5	5	0	0	0
Potato with Onion Powder	1.0			6	6	6	0	0	0
Chicken Soup Powder	1.0			6	6	6	0	0	0
Cheese	0.9			11	11	11	0	0	0
Chocolate	0.9			11	11	11	0	0	0
Beef and Vegetables	0.9			11	11	11	0	0	0
Beef Soup Powder	0.8			11	11	11	0	0	0
Butter Concentrate	0.8			12	12	12	0	0	0
Salt	0.7			15	15	15	0	0	0
Sweet Biscuits	0.7			15	15	15	0	0	0
Lemon Drink Powder	0.7			16	16	16	0	0	0
Curry Powder	0.7			18	18	18	0	0	0
Beef and Vegetables	0.7			20	20	20	0	0	0
Corned Beef Hash	0.7			20	20	20	0	0	0
Beef with Gravy	0.6			20	20	20	0	0	0
Chewing Gum	0.6			20	20	20	0	0	0
Instant Rice	0.6			22	22	22	0	0	0
Curry Powder	0.5			25	25	25	0	0	0
Beef and Eggs	0.5			25	25	25	0	0	0
Camp Pie	0.4			30	30	30	0	0	0
Chewing Gum	0.3			32	32	32	0	0	0
Instant Rice	0.3			32	32	32	0	0	0
Corned Beef	0.0			42	42	42	0	0	0
Survival Biscuits	-0.6			56	56	56	0	0	0
Luncheon Meat	-0.6			58	58	58	0	0	0
Cereal Block	-0.9			67	67	67	0	0	0

Exercise: Brahman Drive
Unit: 8 PI, C Coy, 8/9RAR

76/77 RPP

COMBAT RATION (ONE MAN)
POPULARITY RATINGS AND OBJECTIVE DISCARDS

ACCEPTABILITIES (Mean Score)	DISLIKES (% Users)	DISCARDS (% Users)	DISCARDS (% Components)
Peaches	Peaches Pears Two Fruits	0 0 0	Peaches Pears Two Fruits
Pears	Pears	0	0
Two Fruits	Two Fruits	0	0
Potato with Onion Powder	Potato with Onion Powder	0	Sausages and Vegetables
Beef and Vegetables	Beef and Vegetables	0	Beef and Vegetables
Sausages and Vegetables	Sausages and Vegetables	0	Raspberry Jam
Cheese	Cheese	0	Beef with Gravy
Sweetened Condensed Milk	Sweetened Condensed Milk	0	Pork and Beans
Raspberry Jam	Raspberry Jam	0	Canned Beef Hash
Beef with Gravy	Beef with Gravy	0	Luncheon Meat
Instant Rice	Instant Coffee	0	0
Sugar	Sugar	0	Cheese
Instant Coffee	Peach Jam	0	Potato with Onion Powder
Plum Jam	Blackberry Jam	0	Ham and Eggs
Chicken Soup Powder	Apricot Jam	0	Canned Beef
Peach Jam	Sweet Biscuits	0	Butterscotch
Tea Bags	Salt	0	Blackberry Jam
Blackberry Jam	Instant Rice	0	Instant Coffee
Apricot Jam	Instant Coffee	5	Beef and Eggs
Sweet Biscuits	Plum Jam	5	Tea Bags
Butterscotch	Canned Beef Hash	5	Instant Rice
Beef Soup Powder	Chicken Soup Powder	9	0
Chocolate	Blackberry Jam	9	0
Butter Concentrate	Apricot Jam	9	0
Salt	Salt	9	0
Chewing Gum	Chicken Soup Powder	9	Sweetened Condensed Milk
Curry Powder	Tea Bags	9	Plum Jam
Pork and Beans	Beef Soup Powder	9	Beef Soup Powder
Canned Beef Hash	Curry Powder	9	Sweet Biscuits
Survival Biscuits	Pork and Beans	9	Camp Pie
Beef and Eggs	Survival Biscuits	9	Chocolate
Ham and Eggs	Pork and Beans	9	Butter Concentrate
Luncheon Meat	Canned Beef Hash	14	Chicken Soup Powder
Canned Beef	Ham and Eggs	18	Salt
Camp Pie	Beef and Eggs	18	Sugar
Lemon Drink Powder	Luncheon Meat	18	0
Lime Drink Powder	Canned Beef	18	Apricot Jam
Orange Drink Powder	Ham and Eggs	23	Peach Jam
Cereal Block	Lemon Drink Powder	23	Curry Powder
	Orange Drink Powder	32	Lemon Drink Powder
	Cereal Block	55	Chewing Gum
			Survival Biscuits
			Lime Drink Powder
			Orange Drink Powder
			Cereal Block

TABLE 8

COMBAT RATION (ONE MAN)
POPULARITY RATINGS AND OBJECTIVE DISCARDS

ACCEPTABILITIES (Mean Score)	DISLIKES (% Users)	DISCARDS (% Users)	DISCARDS (% Components)
Peaches	2.0	Peaches	0
Pears	2.0	Pears	0
Two Fruits	2.0	Two Fruits	0
Potato with Onion Powder	1.7	Potato with Onion Powder	0
Beef and Vegetables	1.5	Beef and Vegetables	0
Sausages and Vegetables	1.5	Sausages and Vegetables	0
Cheese	1.5	Cheese	0
Sweetened Condensed Milk	1.5	Sweetened Condensed Milk	0
Raspberry Jam	1.4	Raspberry Jam	0
Beef with Gravy	1.4	Beef with Gravy	0
Instant Rice	1.4	Sugar	5
Sugar	1.3	Peach Jam	5
Instant Coffee	1.3	Blackberry Jam	5
Plum Jam	1.2	Apricot Jam	5
Chicken Soup Powder	1.2	Sweet Biscuits	0
Peach Jam	1.1	Salt	5
Tea Bags	1.1	Instant Rice	0
Blackberry Jam	1.1	Instant Coffee	5
Apricot Jam	1.0	Plum Jam	5
Sweet Biscuits	1.0	Corned Beef Hash	5
Butterscotch	1.0	Chicken Soup Powder	9
Beef Soup Powder	0.9	Tea Bags	5
Chocolate	0.9	Beef Soup Powder	9
Butter Concentrate	0.8	Curry Powder	9
Salt	0.6	Pork and Beans	9
Chewing Gum	0.6	Survival Biscuits	9
Curry Powder	0.6	Butterscotch	14
Pork and Beans	0.6	Chocolate	14
Corned Beef Hash	0.4	Butter Concentrate	14
Survival Biscuits	0.3	Chewing Gum	18
Beef and Eggs	0.2	Luncheon Meat	18
Ham and Eggs	0.1	Corned Beef	18
Luncheon Meat	0.0	Camp Pie	18
Corned Beef	0.0	Beef and Eggs	23
Camp Pie	0.0	Ham and Eggs	23
Lemon Drink Powder	-0.1	Lemon Drink Powder	40
Lime Drink Powder	-0.1	Lime Drink Powder	40
Orange Drink Powder	-0.2	Corned Beef	41
Cereal Block	-0.7	Camp Pie	41
		Cereal Block	55
			50

TABLE 9
SUMMARY: ACCEPTABILITY - COMPARISONS WITH PREVIOUS SURVEYS
Exercise: Brahman Drive

Ration Packing Programme	75/76	75/76		76/77	
Sub-units	Average All Units	5 PI, B Coy 6 RAR	8 PI, C Coy 8/9 RAR	5 PI, B Coy 6 RAR	8 PI, C Coy 8/9 RAR
Dates	75-77	10-15 Oct	16-20 Oct	16-20 Oct	10-15 Oct
Average Age	23.8	21.1	22.6	20.8	22.3
Av Yrs Service	4.7	3.1	3.1	2.9	3.1
Percent Married	40	24	36	25	32
No of Subjects	2112	21	22	20	22
Cereal Block	-0.19	-1.10	-0.52	-0.89	-0.68
Survival Biscuits	-0.31	-0.45	0.19	-0.61	0.32
Sweet Biscuits	0.84	0.86	0.73	0.75	0.95
Butter Concentrate	*****	*****	*****	0.82	0.82
Cheese	1.60	1.40	1.27	1.21	1.55
Chocolate	1.06	0.86	0.77	0.95	0.91
Chewing Gum	0.93	0.24	0.18	0.30	0.59
Candy Creamy Fudge	-0.28	-1.29	-0.14	*****	*****
Butterscotch	*****	*****	*****	1.20	1.00
Sweetened Condensed Milk	1.66	1.43	1.50	1.15	1.45
Sugar	1.63	1.38	1.27	1.20	1.27
Tea Bags	1.32	1.52	0.91	1.45	1.10
Instant Coffee	1.54	1.05	1.57	1.35	1.33
Salt	1.22	0.76	0.95	0.74	0.64
Instant Rice	1.16	0.27	1.55	0.28	1.41
Potato with Onion Powder	*****	*****	*****	1.35	1.67
Curry Powder	0.81	0.38	0.68	0.47	0.64
Orange Drink Powder	0.46	0.00	0.33	1.00	-0.15
Lemon Drink Powder	0.41	-0.25	0.29	0.74	-0.10
Lime Drink Powder	0.33	-0.12	0.24	1.00	-0.10
Peaches	*****	*****	*****	2.00	2.00
Pears	*****	*****	*****	2.00	2.00
Two Fruits	*****	*****	*****	2.00	2.00
Ham and Eggs	0.57	0.65	0.09	0.58	0.09
Plum Jam	1.00	1.10	1.36	1.25	1.18
Beef and Vegetables	1.32	1.05	1.59	0.90	1.52
Pork and Beans	1.09	0.70	1.18	0.65	0.64
Raspberry Jam	1.12	0.95	1.41	1.30	1.36
Corned Beef Hash	0.68	0.50	0.32	0.75	0.36
Camp Pie	0.51	0.41	0.05	0.40	-0.05
Apricot Jam	1.02	1.00	1.27	1.30	1.05
Beef with Gravy	1.06	0.52	1.41	0.65	1.36
Sausages and Vegetables	0.87	0.81	1.68	0.75	1.50
Blackberry Jam	1.11	1.00	1.36	1.25	1.09
Beef Soup Powder	1.07	0.28	1.09	0.78	0.91
Luncheon Meat	0.41	-0.60	-0.36	-0.63	0.00
Beef and Eggs	0.52	0.70	0.00	0.53	0.23
Peach Jam	0.97	1.00	1.27	1.20	1.09
Chicken Soup Powder	1.14	0.50	1.18	1.00	1.18
Corned Beef	0.40	-0.25	-0.18	0.00	-0.05
Overall Average	0.89	0.51	0.78	0.85	0.87

TABLE 10
SUMMARY: PERCENT DISLIKE - COMPARISONS WITH PREVIOUS SURVEYS
Exercise: Brahman Drive

Ration Packing Programme	75/76	75/76		76/77	
Sub-units	Average All Units	5 PI, B Coy 6 RAR	8 PI, C Coy 8/9 RAR	5 PI, B Coy 6 RAR	8 PI, C Coy 8/9 RAR
Dates	75-77	10-15 Oct	16-20 Oct	16-20 Oct	10-15 Oct
Average Age	23.8	21.1	22.6	20.8	22.3
Av Yrs Service	4.7	3.1	3.1	2.9	3.1
Percent Married	40	24	36	25	32
No of Subjects	2112	21	22	20	22
Cereal Block	45	67	50	60	55
Survival Biscuits	45	43	14	50	18
Sweet Biscuits	17	19	5	15	14
Butter Concentrate	**	**	**	10	9
Cheese	3	10	9	10	0
Chocolate	12	14	14	10	14
Chewing Gum	12	19	14	20	14
Candy Creamy Fudge	49	71	41	**	**
Butterscotch	**	**	**	0	14
Sweetened Condensed Milk	2	10	0	5	0
Sugar	2	0	0	0	0
Tea Bags	9	0	9	0	5
Instant Coffee	7	14	0	5	0
Salt	3	5	0	5	5
Instant Rice	10	14	0	20	5
Potato with Onion Powder	**	**	**	5	0
Curry Powder	17	14	18	15	18
Orange Drink Powder	27	33	27	5	36
Lemon Drink Powder	28	43	27	15	36
Lime Drink Powder	31	38	32	5	36
Peaches	**	**	**	0	0
Pears	**	**	**	0	0
Two Fruits	**	**	**	0	0
Ham and Eggs	25	24	41	30	32
Plum Jam	9	0	0	0	5
Beef and Vegetables	7	10	0	20	0
Pork and Beans	13	19	14	25	23
Raspberry Jam	8	5	0	0	5
Corned Beef Hash	23	24	32	20	32
Camp Pie	27	29	41	30	41
Apricot Jam	10	0	5	0	9
Beef with Gravy	14	29	5	20	5
Sausages and Vegetables	20	24	0	25	0
Blackberry Jam	9	5	0	0	9
Beef Soup Powder	9	19	5	10	14
Luncheon Meat	29	52	50	55	36
Beef and Eggs	26	19	41	30	36
Peach Jam	10	5	5	0	5
Chicken Soup Powder	9	14	9	5	9
Corned Beef	30	48	41	40	41
Overall Average	16	14	15	17	22

Exercise

Annex A

*Armed Forces Food Science Establishment
Scottdale, Tasmania*

**COMBAT RATION (ONE MAN)
USER QUESTIONNAIRE**

1. As a consumer of the rations you are in the best position to advise us on any changes that should be made.
2. Please complete this questionnaire by recording your *honest* reactions.
3. All answers will be treated as confidential.

Name and Rank

Unit Squadron Company Regiment Corps ARA
Battery ARes

(Delete words not applicable)

Age

Married

Single

Years of Service

Please tick whichever boxes (in either of the three sets) you think apply.

ITEMS COMMON TO MORE THAN

Menu A

Menu B

Menu C

think describe the particular food item best.

N ONE VARIETY

Salt	Instant Rice	Potato With Onion Powder	Curry Powder	Orange Drink Powder	Lemon Drink Powder	Lime Drink Powder	Peaches	Pears	Two Fruits
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Comments:

Please tell us what aspects of the rations you found faulty. Can you suggest any improvements? (Include any "extras" that you may have taken with you into the field).

Thank you for your help. When the results are gathered and analysed, your thoughts could be important in improving the ration packs.

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