

APOLLO 15 FOOD SYSTEM

The food system for the Apollo 15 Command Module (CM) included a new stowage area in the A-7 locker, in addition to the lower equipment bay (LEB) and the left hand equipment bay (LHEB) food containers. Three new stowage areas were also utilized in the Lunar Module (LM). One container was located in the ascent stage (A/S) on the aft bulkhead and 2 stowage areas in the descent stage (D/S). Table 1 and 2 outlines the food orientation for the CM and LM, respectively.

The CM food for the first 10 days of the mission was arranged in meal packages and was supplemented with food from the pantry. For the remainder of the mission the crewmen selected food for their meals from the pantry on a realtime preference basis. The 4-day menu cycle for the Command Module is shown in Table 3 and the contents of the pantry are listed in Table 4. Table 5 shows the LM menu.

The menus were designed to provide approximately 2400 Kilocalories per man per day, with 400 additional calories in beverages and foods supplied in the pantry for a total of 2800 calories per man per day. Preliminary estimations of food consumption, derived from the onboard logs and returned foods, indicate that an average of 2892, 2372, and 2568 Kilocalories per day were consumed by the CDR, CMP, and LMP, respectively.

New foods included in the menu for this mission were: a) freeze dehydrated Romaine Soup and Crab Mushroom Soup, b) thermostabilized (wet pack) Beef Steak and Hamburger, c) intermediate moisture Apricot

Food Bar and Tropical Chocolate Bar, and d) a Citrus Beverage powder.

There were a total of 562 primary food packages in the CM food system and 99 in the LM. The package types and quantities are outlined in Table 6.

PREFLIGHT

The crew selected their menu after evaluating about 100 available flight food items. Crewmembers were briefed on spacecraft stowage, food preparation procedures, opening the canned food items, and waste storage.

As on the previous 4 missions, after suiting up and prior to departure for the launch pad on F-0, each crewman was supplied with a specially prepared and packaged frozen sandwich, a package of bacon squares and a beverage powder. These items were stowed in a suit pocket for consumption within 6 to 8 hours after launch. The sandwiches were prepared in the MSC Food and Nutrition Laboratory with Quality Control inspection and met all applicable spacecraft and food system requirements.

INFLIGHT

Comments on the quality of the inflight foods and the food systems were favorable. The crew commented that they were very satisfied with the food supplied for this mission. They recommended that additional food be stowed on the LM. The crew supplemented the LM food supply with food from the CM pantry. The inflight food consumption logs were maintained by the crew throughout most of the mission. All crewmembers adhered to and consumed the food as presented in the programmed menu plus additional food items, snacks, and beverages from the pantry. The crew commented that they would have preferred to have packaged meals throughout the mission, but the pantry should not be eliminated.

As on Apollo 14, evaluation and observations were made on the use of nominal moisture thermostabilized food items packaged in aluminum cans with full pull-out lids. This crew reported that they carefully removed the lids and encountered difficulty initially with some dispersion of food and liquid, however, after the initial opening there were no problems in consuming the food.

The crew reported the flavor of both the CM and LM water was good, however, there was some gas in the CM water supply. The amount of gas increased with utilization, but the quantity apparantly did not interfere with food rehydration.

The crew encountered problems with using the in-suit drinking device, thus, the quantity of water consumed during the EVA periods was less than anticipated. On EVA-1, the CDR consumed about 16 ounces, while

the LMP was unable to drink water from the device. During EVA-2, the CDR's drinking device slipped under the neck ring and he was unable to drink water. Following EVA-2, both the CDR and the LMP consumed the contents, approximately 32 ounces, to conserve vehicle water. The in-suit drinking device was not used during the third EVA.

The in-suit food bar assembly was utilized successfully on both EVA-1 and 2. The assembly consisted of an apricot food bar, measuring 9"x1"x1/4", in an elastic pouch dispenser. The assembly is attached to the in-suit drinking device and then is installed in the suit where it is attached to the helmet neck ring as shown in Figure 1 and 2.

APOLLO 15 CM - 112 FOOD ORIENTATION

<u>STOWAGE LOCATION</u>	<u>P/N</u>	<u>VOLUME CU. IN.</u>	<u>WEIGHT LBS</u>	<u>CONTENTS</u>
A7	14-0150	2815	30.70	33 overwrapped meals with associated wet packs Day 1 Meal C thru Day 5 Meal A; Oral Hygiene Kit (1) and Spoons (3)
B1 LFB	14-0122	2080	29.73	28 overwrapped meals with associated wet packs Day 5 Meal B thru Day 8 Meal B for CMP and Day 8 Meal C thru Day 10 Meal B for CDR, CMP, and LMP
L3 LHFB	14-0123	2923	36.64	Pantry Stowage 236 primary food packages Gum (10), Wet Wipes (20), and Contingency Feeding System (1)

Table 1

APOLLO 15 LM-10 FOOD ORIENTATION

<u>LOCATION</u>	<u>P/N</u>	<u>WEIGHT</u> <u>LBS</u>	<u>CONTENTS</u>
A/S	14-0121-301	7.4	3 overwrapper meals, Day 3 Meal B and Day 6 Meals A and B In-Suit Drinking Device (2) In-Suit Food Bar Assembly (6), Extra Beverages (6) and Spoons (2)
D/S Pallet No. 1	14-0121-302	4.1	Day 7 Meals A and B
D/S Pallet No. 2	14-0121-303	3.9	Day 8 Meals A and B

Table 2

APOLLO XV - CSM-112

David R. Scott, CDR - RED VELCRO
 Alfred M. Worden, CMP - WHITE VELCRO
 James B. Irwin, LMP - BLUE VELCRO

MEAL	DAY 1*, 5**, 9	DAY 2, 6**, 10***	DAY 3, 7**	DAY 4, 8**
A	Peaches RSB Scrambled Eggs RSB Bacon Squares (8) IMB Grapefruit Drink R Cocoa R	Fruit Cocktail R Sausage Patties R Spiced Fruit Cereal RSB Orange Drink R Cocoa R	Peaches R Scrambled Eggs R Bacon Squares (8) RSB Grape Drink R Cocoa R	Mixed Fruit WP Canadian Bacon & Applesauce RSB Cornflakes IMB Pineapple-Grapefruit Drink R Cocoa R
B	Hamburger WP Pea Soup RSB Salmon Salad RSB Applesauce RSB Cheese Cracker DB Cubes (4) DB Orange-Grapefruit Drink R	Turkey & Gravy WP Cranberry-Orange RSB Pineapple Fruitcake (4) DB Vanilla Pudding WP Citrus Beverage R	Lobster Bisque RSB Bread Slices (2) WP Sandwich Spread RSB Butterscotch Pudding R Pineapple-Orange Drink R	Chicken & Rice Soup RSB Meatballs w/Sauce WP Lemon Pudding WP Sugar Cookie Cubes (4) DB Grape Punch R
C	Cream Tomato Soup RSB Spaghetti & Meat RSB Peach Ambrosia RSB Chocolate Bar IMB Grape Drink R	Cream Chicken Soup RSB Frankfurters WP Banana Pudding RSB Brownies (4) DB Pineapple-Grapefruit Drink R	Shrimp Cocktail RSB Beef Steak WP Peaches IMB Caramel Candy IMB Orange-Grapefruit Drink R	Beef & Gravy WP Pork & Scalloped Potatoes RSB Chocolate Pudding RSB Apricots IMB Grapefruit Drink R

*Day 1 consists of Meal C only
 **Day 5 Meal B thru Day 8 Meal B for White only
 ***Day 10 consists of Meals A and B only
 DB = Dry Bite
 IMB = Intermediate Moisture Bite
 R = Rehydratable
 RSB = Rehydratable Spoon Bowl
 P = Wet Pack

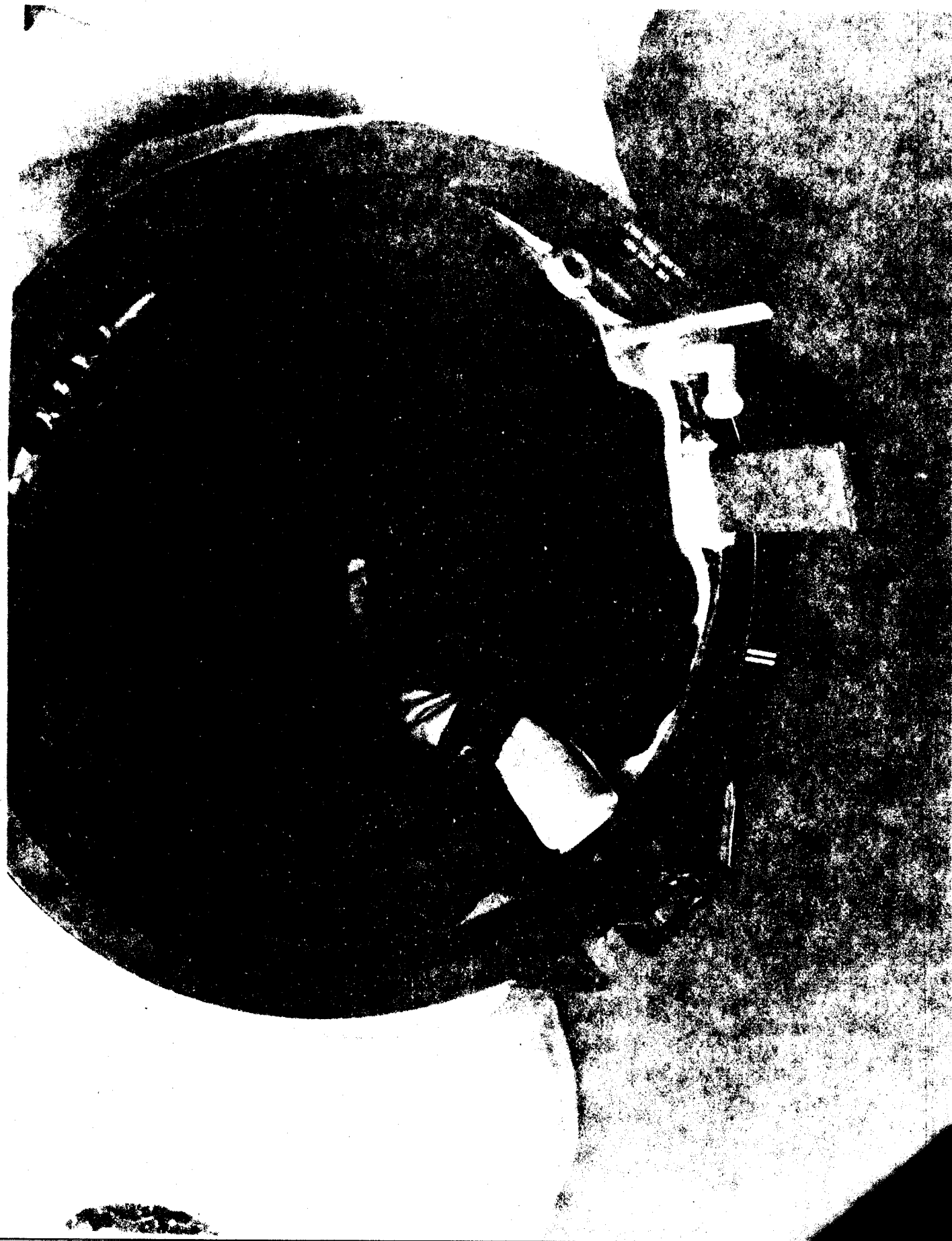
APOLLO XV

PANTRY STOWAGE

P/N: 14-0123
Line Item 17-T & 17-U

<u>BEVERAGES</u>		<u>SALADS/SOUPS</u>	
Cocoa	6	Chicken & Rice Soup (RSB)	3
Coffee (B)	8	Lobster Bisque (RSB)	3
Coffee (C&S)	8	Crab Mushroom Soup	3
Grape Drink	3	Romaine Soup	3
Grapefruit Drink	6	Shrimp Cocktail (RSB)	3
Grape Punch	3	Tomato Soup (RSB)	3
Orange-Grapefruit Drink	3	Tuna Salad (RSB)	3
Orange Juice	16	Salmon Salad (RSB)	3
Pineapple-Grapefruit Drink	3		24
Pineapple-Orange Drink	3	<u>SANDWICH SPREADS/BREAD</u>	
Citrus Beverage	11	Bread (Slice) Rye	6
	70	Chicken Salad (8 oz.)	1
		Cheddar Cheese (2 oz.)	3
		Jelly	3
<u>BREAKFAST ITEMS</u>		Peanut Butter	3
Bacon Squares (8) (IMB)	9	Ham Salad (8 oz.)	1
Peaches (RSB)	3	<u>MEAT ITEMS</u>	
Spiced Fruit Cereal (RSB)	2	Beef Stew (RSB)	2
Cornflakes (RSB)	2	Beef & Vegetables (RSB)	2
Fruit Cocktail (R)	3	Chicken & Rice (RSB)(LRP)	3
Sausage Patties (R)	2	Chicken Stew (RSB)(LRP)	2
Scrambled Eggs (RSB)	6	Pork & Scalloped Potatoes (RSB)(LRP)	3
Apricot (IMB)	6	Spaghetti w/Meat Sauce (RSB)(LRP)	3
Peaches (IMB)	6		15
	39		
		<u>WET PACK FOOD</u>	
<u>CUBES/CANDY</u>		Beef & Gravy	2
Brownies (4)	3	Beef Steak	2
Caramel Candy (4)	3	Frankfurters	2
Chocolate Bar	3	Hamburger	2
Cheese Cracker (4)	6	Meatballs w/Sauce	2
Cheese Sandwiches (4)	3	Turkey & Gravy	2
Beef Sandwiches (4)	3	Catsup	3
Jellied Fruit Candy	3	Mustard	3
Apricot Food Bar	3		
Pecans (6)	3	<u>ACCESSORIES</u>	
Date Fruitcake (4)	2	Chewing Gum	10
Sugar Cookies (4)	3	Wet skin cleaning towels	20
	35	Contingency Feeding System	1
		3 food restrainer pouches	
<u>DESSERTS</u>		3 beverage packages	
Applesauce (RSB)	3	1 valve adapter (pontube)	
Butterscotch Pudding (RSB)	3	Germicidal Tablets (42)	2
Chocolate Pudding (RSB)	3	Index Card	1
Peach Ambrosia (RSB)	3		
Lemon Pudding (WP)	3		
	15		

Table 4



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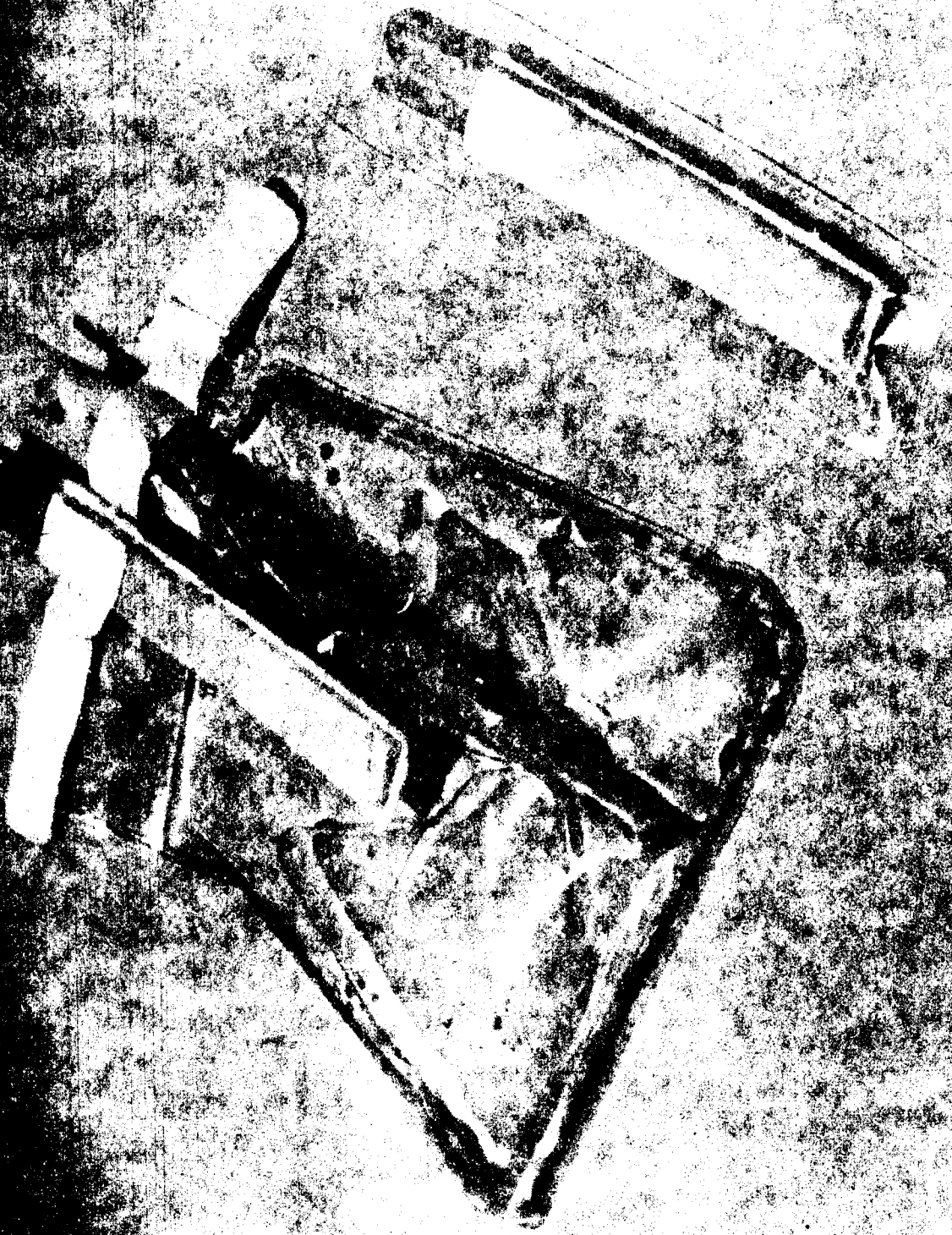


Figure 2

APOLLO XV - LM-10 MENU

David R. Scott, CDR - RED VELVET
James B. Irwin, IMP - BLUE VELVET

PALLET NO. 2, 14-0121-303

DAY 8

PALLET NO. 1, 14-0121-302

A/S FOOD ASSEMBLY 14-0121-301

MEAL	DAY 5	DAY 6	DAY 7	DAY 8
A	<p>Peaches Bacon Squares (8) Scrambled Eggs Graham Cracker Cubes (6) Orange-Pineapple Drink Cocoa</p>	<p>RSB DB RSB DB R R Peaches Bacon Squares (8) Scrambled Eggs Graham Cracker Cubes (6) Orange-Pineapple Drink Cocoa</p>	<p>IMB WP R RSB R R Apricots Beef Steak Sausage Patties Cornflakes Grapefruit Drink Cocoa</p>	<p>IMB DB DB RSB WP R R Peaches Bacon Squares (8) Cinn. Toasted Bread (6) Pork & Scalloped Potatoes Beef Steak Orange-Pineapple Drink Cocoa</p>
B	<p>RSB WP IMB IMB RSB R Cream Tomato Soup Bread Slice (2) and Ham Salad Spread Caramel Candy Pineapple-Grapefruit Drink Grapefruit Drink</p>	<p>RSB WP IMB IMB RSB R Salmon Salad Frankfurters Chocolate Bar Pecans Peach Ambrosia Orange-Grapefruit Drink</p>	<p>RSB RSB WP DB DB R R Shrimp Cocktail Ham & Applesauce Meatballs w/Sauce Brownies (6) Cheese Crackers (6) Orange Drink Grape Drink</p>	<p>RSB RSB WP RSB R Tuna Salad Chicken & Rice Turkey & Gravy Chocolate Pudding Grape Punch</p>

In-Suit Food Bar Assembly (1) 6 ea P/N: SEEL3100218-301
In-Suit Drink Device (1) 2 ea P/N: 14-0151-01
Spoon Assembly (2) 1 ea P/N: 14-0144-01
Germicidal Tablets Pouch (42) 1 ea P/N: 14-02166
Beverages (6)*

DB = Dry Bite
IMB = Intermediate Moisture Bite
R = Rehydratable
RSB = Rehydratable Spoon Bowl
WP = Wet Pack

* 4 Citrus flavor
2 Orange-Grapefruit

APOLLO 15 FOOD PACKAGE INVENTORY

<u>FOOD PACKAGES</u>	<u>CSM</u>	<u>LM</u>
Rehydratable	46	8
Rehydratable Spoon Bowl	171	24
Beverage	125	24
Bite Size	106	22
Wet Packs		
Flexible - meat items	44	10
- misc.*	23	
Rigid - cans/tubes	29	1
Bread	18	4
Food Bar Assembly	0	6
TOTAL	562	99
Overwraps	61	11

*Jelly, Mustard, Catsup
Peanut Butter, Cheese

Table 6