

thanks for the MREs

All jokes aside, you have to marvel at a meal in a bag that can be stored for three years and tossed from a helicopter ... and still beats airline food any day.

IT'S WELL AFTER NOON AND OUR LAND ROVER IS BUMPING along what used to be a highway, bouncing us against the truck's side walls whenever it hits a deep rut. We're rolling past Iraqi oil fields somewhere near Basra, and it's been a quiet day, *insh'allah*. The corporal in charge of the squad is doing his best to alleviate the boredom, leading the boys in one country-western song after another, but it's not really working. Part of the problem is that this squad of Scotsmen really can't sing; the other part is that the rumblings in my stomach are getting louder by the minute.

Then I notice a movement that brightens my mood. The private in the corner, Roger, has pulled out his bag of rations, also known as an MRE. (Leave it to the military to never use a word when you can use an acronym. In this case, MRE stands for Meals, Ready to Eat.)

Wedging himself in place, rifle jammed between his arm and the back hatch to keep his hands free, Roger begins laying out the contents of his bag, which is a plastic version of the brown lunch bag you carried to school. It's a typical MRE menu: there's a main course; a starch; crackers with a spread (in this case, peanut butter); a dessert; and a powdered beverage mix.

Roger's mother would be proud: Once he's laid out his food, using his knees as a food prep bench, he offers to share his peanut butter on a biscuit all around. Despite some trepidations, I take the private up on his offer, and nibble on a cracker smeared with peanut butter. To my surprise, I find it really isn't bad.

As I'm discovering, the modern MRE is no longer an assault on the taste buds or an insult to the palate. Introduced in the early '80s as a replacement for the universally reviled C-rations, MREs didn't fare well at first, quickly acquiring the nickname "Meals, Rejected by Everyone." But two decades of product development and field testing have brought about big changes. Mystery meat has given way to chicken fajitas, New England clam chowder, and mango peach applesauce. The menus have been expanded from 12 to 24, and now include kosher and vegetarian selections. Today's versions even come with a cleverly designed "flameless ration heater" to heat up the food.

Calorie counters

The challenge of feeding troops on the march (or in the field) is as old as war itself. But modern military food science dates back to 1800, when Napoleon Bonaparte offered a 12,000 franc reward to anyone who



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could devise an effective method of preserving food from spoilage. The winner of Napoleon's prize was Nicholas Appert, who pioneered the use of sealed, airtight bottles. Appert used the money to found the first commercial cannery, the House of Appert.

The U.S. military's modern-day equivalent to the House of Appert is the Combat Feeding Directorate of the U.S. Army's Soldier Research, Development, and Engineering Center located in Natick, Mass. At the center, commonly known as Natick Labs, food scientists are following in the best Appert traditions, developing non-perishable field rations that will keep warfighters going under heavy physical exertion.

A big part of their challenge is figuring out ways to pack

a lot of calories—but not empty calories—into a lightweight package. A full day's ration provides close to 4,000 calories, well above the caloric requirement of the average adult who's not running around a battle zone. (There's a lot of salt and fat in some meals—which is not a problem if you're active, but if you're a sluggish middle-aged guy with a weight problem, you'll want to go easy on the spreads and desserts.) One MRE meal bag provides an average of 1,250 calories. It also provides one-third of the Military Recommended Daily Allowance of protein, carbohydrates, fat, vitamins, and minerals.

The recipes concocted by the Natick staff are executed by suppliers around the United States. Nothing but American cooking for our troops ... AmeriQual Packaging in Indiana,

SOPAKCO in South Carolina, and the Wornick Co. in Texas. The food is pumped or placed into flexible bags, vacuum sealed, and cooked in large pressure-cookers called retorts. Because it's fully cooked, the food can be eaten straight out of the bag—heated or unheated.

Eat and run ...

The challenges of developing MREs go well beyond finding the right recipes. There's also the matter of packaging. As is so often the case, packaging design is heavily dictated by supply chain requirements, which in this instance include the ability to withstand long journeys, extended storage periods, and extreme temperatures. The packages, for example, must weigh less than two pounds, be impervious to insects and

rodents, and be able to withstand aerial drops. The food within those packages must be edible for a minimum of three years at 80 degrees Fahrenheit or six months at 100 F (the products' shelf life can be extended through the use of cold storage facilities prior to distribution).

If that sounds like a classic case of military over-specification, consider the conditions under which a shipment of MREs travels to Iraq. The MREs first move halfway around the world in cargo containers. Upon arrival in the Mideast, they may be stockpiled in the desert before being hauled by flatbed truck up the Main Supply Route into Iraq's interior. Combat rations are unlikely to be hauled in reefers, and climate-controlled storage facilities aren't widely available in the battlespace, which explains why the MREs must be able

to withstand short-term temperatures of up to 120 F. (They're also designed to remain stable at temperatures as low as -60 F.)

When they arrive at a break-bulk point, the container loads are broken down into pallets, which are forwarded to consuming units. Each shipping pallet contains 48 cases, 12 different meals to a case. If you're moving out on patrol, you just rip open a case, grab an MRE, and drop it into a pouch on your fatigue pants. (MREs are designed to fit in the pockets of military field clothing.)

From the container on down to the individual ration, the product is designed to break down without ever requiring repackaging. The goal is to make sure that the rations can move to the point of consumption with a minimum of friction.

Then there's the "last mile challenge," which takes on new meaning in the military supply chain. When it comes to MREs, final delivery isn't always a matter of rolling up in a truck. Sometimes, troops are operating beyond the lines—think Navy Seals, Army Special Forces, or Marine Recon—which means the last mile may be vertical. For that reason, MREs must be able to withstand aerial delivery. Check the specifications yourself: MREs must be capable of surviving parachute drops from 1,250 feet, and non-parachute drops of 100 feet.

But how does it taste?

Given the depth of the design challenges, it seems downright frivolous to

what's in and what's out

IT'S TIME FOR THEM TO GO: Based on warfighter surveys, Natick Labs will be tweaking its MRE menus this year and next. Don't tell the boys from New Orleans, but the jambalaya and cajun rice with sausage are out.

YEAR	ITEMS IN	ITEMS OUT
MRE XXVII (24 Menus) 2007 Production	Meatballs w/marinara sauce Chicken and dumplings Cornbread stuffing Fried rice Skittles: Wild Berry, Tropical Marble pound cake Green pepper hot sauce Seasoning packets (BBQ, pizza) Apple butter Chunky peanut butter Reese's Pieces	Jambalaya Cajun rice w/sausage Yellow & wild rice
MRE XXVIII (24 Menus) 2008 Production	Chicken Pesto Pasta Lasagna w/vegetables Granola w/milk & blueberries Instant vanilla or chocolate pudding Toaster pastries, chocolate chip & French toast Chipotle snack bread Chocletos candy Twizzler Nibs Chocolate-covered coffee beans Patriot cookies Cheez-Its, hot & spicy Coffee, Irish cream Dairy shake, banana/strawberry Salsa verde Butter Buds Splenda packet	Chicken w/cavatelli Vegetable manicotti

SOURCE: U.S. ARMY SOLDIER RESEARCH, DEVELOPMENT, AND ENGINEERING CENTER

ask whether MREs taste good. But it turns out that the military takes that question very seriously. It has even established a program with a polysyllabic name—the Fielded Individual Ration Improvement Program—whose goal is to make combat food more palatable. The program’s mission, according to Natick Labs, is “to improve variety, acceptability, consumption, and nutritional intake of individual combat rations to enhance performance on the battlefield.” It carries out that mission through extensive testing and surveys aimed at developing menus that appeal to a warfighter’s palate.

Since the program’s inception, hundreds of new items have cycled through the MRE menu. Some are “keepers” and remain on the menu to this day. Others have been dropped from the rotation and replaced by more appetizing alternatives. (See sidebar for a look at what’s in and out for this year and next.) According to the Natick Labs Web site, “The decisions are based on Warfighter survey results. All changes are ‘Warfighter recommended, Warfighter tested, and Warfighter approved.’” This is con-



sumer product development with a vengeance, with all of it tempered by supply chain constraints.

I decide to conduct a focus group of my own: I ask my Scottish friends in the back of the Land Rover what they thought of the MREs. While they all were able to name meals they didn’t like, they all could point to some favorites as well. They pronounced MREs as a whole to be “all right.” Then again, these guys are from a country that considers haggis to be good food, so I’m not sure how much weight to give their opinion.

But to a supply chain practitioner, the proof isn’t really in the pudding; it’s in the pudding’s arrival at a dusty oil field near Basra in good condition. And by that measure, MREs are a supply chain marvel—particularly when you consider that the folks in Natick have figured out how to do it for around \$7.25 a meal, Made in America.

If you want to see for yourself, go to eBay. You’re not supposed to be able to, but you’ll find them there. Buy a case and take some on your local Boy Scout troop’s next camping trip. I guarantee they’ll be a big hit. □