JOINT USC LAW CLEO WORKSHOP and
USC FBE APPLIED ECONOMICS WORKSHOP
presented by Andrea Prat
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How much public money is wasted, and why?

Evidence from a change in procurement law

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Public Waste

1. Could government provide the same level of service at lower cost?
   - Optimal extent of public provision.
   - Structure of public service.
   - Limited empirical evidence.
2. What is it due to?
   - *Active waste*: Direct benefit for employees.
   - *Passive waste*: No direct benefit.

Active Waste

- High procurement prices are directly beneficial to some individual public employees, for instance because high prices incorporate bribes, which raise the employee's utility directly
- Corruption—World Bank Challenge: "#4. Combat corruption. Or there is not much else that can be done that is effective."

Passive Waste

- High procurement prices are not directly beneficial to individual employees. For instance, high prices due to:
  - inability to seek lowest price/best spec
  - excessive rules and low level of discretion
- Kelman 1990, 2005. Excessive rules, complex decision making, distance between decision-makers and users.
- Example: Milspecs: US army procurement – e.g. detailed military recipe for chocolate chip cookies..no rents, but...

Policy Implications

- If possible, always make the employee a residual claimant. But: limited liability, risk aversion, multi-task...
- Tradeoff between rules and discretion.
  - Active waste $\Longrightarrow$ Control employees
  - Passive waste $\Longrightarrow$ Empower employees
- Kelman: "Practices justified only on the ground that they reduced abuse were applied at the cost of sacrificing good decisions under circumstances."

Existing Estimates of Public Waste

- Vast literature on corruption (Svensson 2005, Rose-Ackerman 2004)
- Production function of public sector: cost of inputs for a unit of output
  - Ben Olken (2005, 2006), Svensson-Reinikka (2004): vanishing grants
  - Di Tella-Schargrodski (2003): high procurement prices for hospitals

Our Data

- Public procurement purchases by a variety of Italian public bodies: ministries, agencies, regions, cities, health authorities
- Survey designed and implemented by ISTAT (Italian Central Statistical Agency)
- Prices, quantity and exact specification for over 20 categories of goods: paper, chairs, computers, telephone contracts, cars, etc
- Strengths:
  - Macro relevance: Sample data covers 80% of public procurement of non-specific goods (2.5% of GDP)
  - Heterogeneous public bodies (modes of accountability, cultural norms, centralization)
  - Policy experiment allows us to disentangle active and passive waste

Policy Experiment

- Introduction of central procurement agency – Consip
- Consip "buys goods on the open market and resells to PBs at the same price"
- After the introduction of Consip, PBs face the decision to buy any good from the Consip catalog or from other suppliers
- Information on the decision whether to buy from Consip or not sheds light on the rationale for waste

Road Map

1. Background information on Consip
2. Model of procurement with incentives and bounded rationality
3. Sample and data description
4. Estimates of administration-specific waste
5. Estimate the relationship between waste and the propensity to switch to Consip –disentagle active vs passive waste
6. Structural estimate of the relative importance of active vs passive waste

Public Procurement in Italy

- In 2002: 96 billions euros, approximately 6% of GDP.

Public Body	*bns euros*
State (Ministries)	16.0
Regions	3.4
Health Authorities	48.1
Cities, Provinces	22.8
Universities	1.6
Other	3.5

- Consip estimates:
  - Specific goods (56 bns): roads, buildings, special software, specific equipment, etc.
  - Generic goods (40 bns): computers, stationery, gas, telephone services, etc.

Consip

- A state-owned company, began procurement activity in 2000. Mode of operation:

1. Consip announces a tender for 'up to' n units of a given good (e.g. boxes of copier A4 white recycled paper)
2. Suppliers submit bids (unit price + potentially other characteristics), one wins
3. Until n units are sold the deal is 'active', i.e. winning supplier commits to supplying any public body at the winning price
4. 6bn euros of sales in 2002

Procurement Choices

- While no Consip deal is active:
  - Public body buys the good autonomously (according to procurement law)
- While a Consip deal is active:
  - Public body buys the good autonomously
  - Public body buys the good from the Consip catalog (either by click-and-buy or order by fax/phone)

A Model of Public Procurement

- If no consip deal is active, the price paid by PB i for good g at time t is:

$$p_{igt}\left(b_{igt}, \mu_i\right)$$

where:

- b_{igt}: active waste, e.g. bribe paid to the administrator, endogenous
- μ_i: passive waste, e.g rules, lack of ability of that administration, exogenous
- p_{igt} increasing in both b_{ig} and μ_i

Active Waste in Practice

- Typically, goods are produced by large firms and sold through local representatives (usually paid by commission)
- Local reps may have a relationship with public managers and/or elected politicians, or directly with purchasing manager
- Higher price in exchange for direct benefit (which takes various forms)
- Accountability: judicial prosecution, voters' backlash
- Level of bribe depends on the actions of the purchasing manager – endogenous

Passive Waste in Practice

- Procurement rules that eliminate discretion
- Extreme legal complexity of tenders. Court appeals can block purchases. Aggressive prosecution of formal errors.
- Purchasing managers terrified of “taking responsibility” and “getting into trouble”.
- Lack of initiative, follow tried and tested route.

Purchasing Manager's Objective

- The manager has the following objective function

$$-F(p_{igt}\left(b_{igt}, \mu_i\right)) + \beta_i b_{igt},$$

  Where $F' > 0$, that is, the manager's utility is decreasing high prices (e.g. accountability) and directly increasing in bribes —For simplicity $F(p_{igt}) = p_{igt}$

- The parameter β_i indicates the taste for bribes:
  - Cultural norms, preferences, accountability, transparency
- The parameter μ_i captures the effect of rules, managers' ability.

Pre-Consip Equilibrium

- Price $\hat{p}_{igt}$ and bribe $\hat{b}_{igt}$ determined by first-order condition

$$\frac{\partial}{\partial b_{igt}} p_{igt}\left(b_{igt}, \mu_i\right) = \beta_i$$

Equilibrium payoff for the manager

$$\hat{\Omega}_{igt} = -\hat{p}_{igt} + \beta_i \hat{b}_{ig}$$

Proposition 1 The pre-Consip equilibrium price is an increasing function of both μ_i and β_i.

Post-Consip Equilibrium

- Consip price p_{gt}^{c}
- Buying from Consip implies $b^{c} = 0$. Hence, the payoff from buying from Consip is

$$\hat{\Omega}_{igt}^{c} = -p_{gt}^{c} + \nu_{igt},$$

  where ν_{igt} is some idiosyncratic preference for Consip

- The off-Consip price function may change because of competitive pressure or negative publicity (because the Consip price is public): $p_{igt}\left(b_{igt}, \mu_{i}\right) - \delta_{g}$. If the manager buys off Consip he maximizes

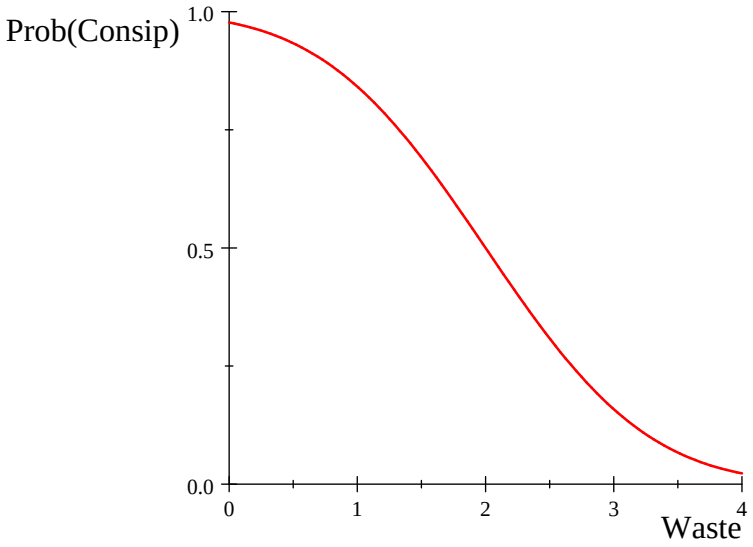
$$\delta_{g} - p_{igt}\left(b_{igt}, \mu_{i}\right) + \beta_{i} b_{igt},$$

- So, now the manager solves $\max\left\{\hat{\Omega}_{igt}, \hat{\Omega}^{c}_{igt}\right\}$.

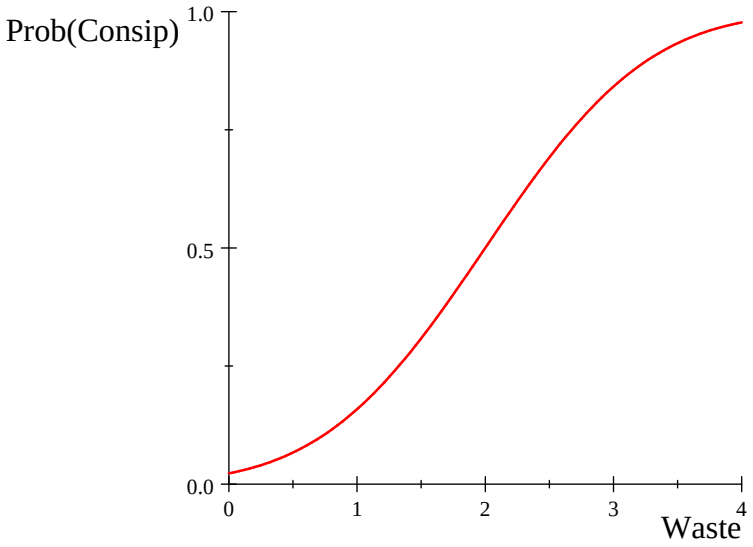
Proposition 2 The probability that the PB switches to Consip is an increasing function of μ_i and a decreasing function of β_i.

Proof: $\hat{\Omega}_{igt}$ is increasing in β_i but decreasing in μ_i.

Waste and Switching



Active Waste Only ($\mu_i = 0$).



Passive Waste Only ($\beta_i = 0$)

Sample Description

- Table 1: 6K observations, 208 PBs, 21 goods over 6 years (2000-05)
- Observations equally split between periods with active and no active Consip deals (goods can be purchased via Consip only when a deal is active)
- Large variation in prices paid by different PBs when no deal is active for the same good in the same year (Figure 1 shows variation for paper purchases)
- We observe
  - the same PB buying several goods (Figure 2a)
  - the same PB buying both when a Consip deal is active and when not (Figure 2b)
  - the same goods being purchased both when a Consip deal is active and when not (Figure 2c)

Methodology

1. Estimate PB specific 'waste' when there is no active Consip deal
2. Estimate the relationship between "waste" and the probability of switching to Consip when a deal is active
   - a positive relation (those who pay relatively more, switch) provides support for the passive waste hypothesis
   - a negative relation (those who pay relatively less, switch) provides support for the active waste hypothesis
3. Identify correlates of waste (central vs local, north vs south, big vs small)
4. Develop and estimate a structural model to assess the relative magnitude of active vs passive waste

Identification

- Timing of deals is exogenous to the individual PBs
- However, timing of purchase might not because:
  - corrupt managers might anticipate or posticipate purchases to avoid active deal time (e.g. to avoid having to justify paying a higher price outside)
  - managers might anticipate or posticipate purchases to wait for an active deal (e.g. to minimize effort)
  - if managers with different μ_i, β_i follow different strategies our estimates will be biased
- Table A1 and Figure A1 show no evidence of strategic timing

1. Waste

- Using data on purchases made when no Consip deal is active for good g, we estimate:

$$\ln p_{git} = X_g\gamma + \delta \ln Q_g + \eta t_g + \theta_g + \omega_i + \varepsilon_{igt}$$

  where p_{igt} is the price paid by i for good g at time t (at 2005 values), X_g is a vector of good specific characteristics, Q_g is the quantity purchased, t_g is a good specific trend and θ_g are goods FE

- Discard top/bottom centile of prices for every good.
- ω_i is the PB fixed effect, rescaled so that the smallest $\omega_i = 0$
- $\omega_i = waste$, interpretation: conditional on observable characteristics, PB i pays, on average, ω_i% more

1. Waste: Findings

- Figure 3 shows that there is considerable variation in ω_i
- The PB at the 90th percentile pays, on average, 30% higher prices than the PB at the 10th percentile
- Back of the envelope calculation: if all PBs were to reduce waste to the level of the 10th percentile, sample expenditure would be 116 million euros lower (over 819 total)
- If goods were representative of public procurement, savings would be approximately 1% of Italy's GDP.

1. Waste: Robustness

- Show evidence that ω_i captures PB specific "features" as opposed to noise
  - compare to RE model: Hausman test rejects the null
  - compare to "placebo" waste: estimate $\tilde{\omega}_i$ when i buys from Consip – as expected $\tilde{\omega}_i$ exhibits much less variation than ω_i (Figure 3b)
  - the Hausman test fails to reject the null when waste is estimated from Consip purchases
- Rule out composition effect: estimate ω_i dropping one good at the time,
- Rule out spillovers after deals: estimate ω_i using only observations before the start of the first deal

2. Active vs Passive Waste

- Using data on purchases made while a Consip deal is active for good g, we estimate:

$$C_{igt} = \alpha\omega_i + \theta_g + \eta t_g + D_t + \upsilon_{igt}$$

Where $C_{igt} = 1$ if PB i buys good g at time t from Consip, 0 otherwise

- To control for composition effect due to timing or good specific deal quality, we control for good specific trends t_g, goods FE θ_g, and deal order dummies D_t
- υ_{igt} are clustered at the PB-good level to account for interdependence of purchases of the same good made by the same PB (findings robust to clustering at PB level)
- The coefficient of interest is α

2. Active vs Passive Waste

- Table 2 and Figure 4 provides support to the "Passive Waste" hypothesis, namely PBs that on average pay more when no deal is active are more likely to buy from Consip when a deal is active ($\alpha > 0$)
- An increase in waste from the 10th to the 90th percentile, increases the probability of buying from Consip by 9.7 percentage points, 25% of the sample mean (.37)
- Within PB, Consip prices are on average 28% lower, across PBs 12% (consistent with the fact that PBs that pay the highest prices are more likely to switch)

3. Correlates of Waste

- We estimate:

$$\omega_i = Z_i\lambda + \varepsilon_{igt}$$

- where Z_i is a vector of PB characteristics: geography, size and type
- Table 3 show that there are no geographical differences but larger PB pay higher unit prices

3. Correlates of Waste (cont'd)

- Key differences by **type**–universities pay the cheapest prices, compared to these:
  - ministries and central government bodies pay 21% more
  - social security agencies 14% more
  - towns and regional councils 7-10% more
  - health authorities and mountain councils 1-2% more (not significant)

4. Structural Model

- Make functional form assumptions to assess the magnitude of active and passive waste
- Pre-Consip price:

$$p_{igt}\left(b_{igt},\mu_i\right) \equiv \bar{p}_{gt}(1+\mu_i+b_{igt}^2)\varepsilon_{igt},$$

  where $\bar{p}_{gt}$ is a 'reference' price and ε_{igt} is lognormally distributed iid error (realized after the manager makes his decision).

- Pre-Consip purchasing manager's payoff:

$$\Omega_{igt} = -F(p_{igt}\left(b_{igt},\mu_i\right)) + 2\beta_i b_{igt} = -\frac{p_{igt}\left(b_{igt},\mu_i\right)}{\bar{p}_{gt}} + 2\beta_i b_{igt}$$

- The maximum is attained when $b_{igt} = \beta_i$ yielding

$$\hat{p}_{igt} = \bar{p}_{gt}\left(1 + \mu_i + \beta_i^2\right)\varepsilon_{igt}$$

and the maximal expected payoff is

$$\hat{\Omega}_{igt} = -\left(1 + \mu_i - \beta_i^2\right)$$

- Consip price: $p^c_{gt} = \gamma_g \bar{p}_{gt}$.
- Post-Consip purchasing manager's payoff if buying from Consip:

$$\Omega^c_{igt} = -\frac{p^c_{gt}}{\bar{p}_{gt}} + \nu_{agt},$$

where ν_{agt} is normally distributed and iid.

- Post-Consip purchasing manager's payoff if buying off Consip:

$$\Omega_{igt} = -\frac{p_{igt}\left(b_{igt}, \mu_i\right)}{\bar{p}_{gt}} - \delta_g + \frac{1}{2}\beta_i b_{igt}^2,$$

  where δ_g captures a direct (positive or negative) effect of the presence of Consip on incentives.

- The expected maximum is

$$\hat{\Omega}_{igt} = -\left(1 + \mu_i - \beta_i^2\right) - \delta_g,$$

- The manager buys from Consip iff $\hat{\Omega}_{igt} \leq \Omega_{igt}^c$, namely,

$$\nu_{agt} \leq \left(1 + \mu_i - \beta_i^2\right) + \gamma_g - \delta_g$$

1. When a deal is not active, the price equation (in logarithms) yields:

$$\log p_{igt} = \log \bar{p}_{gt} + \log(1 + \mu_i + \beta_i^2) + \log \varepsilon_{igt}$$

   thus our previous estimate of waste $\omega_i = \log(1 + \mu_i + \beta_i^2)$

2. when a deal is active, solving the manager's choice problem yields:

$$\Pr(\text{consip}) = \Pr\left(\nu_{agt} \leq \left(\mu_i - \beta_i^2\right) + \left(1 + \gamma_g - \delta_g\right)\right) = \Pr(-\nu_{agt} < \sigma_i + c_g)$$

3. thus we can estimate $\sigma_i = \mu_i - \beta_i^2$

4. combining the two, yields values for μ_i and β_i

4. Structural Estimates of Active and Passive Waste

- Figure 4 shows the structural estimates of active and passive waste. Key findings:
  - consistent with reduced form evidence, passive waste is larger–accounts for 2/3 of the estimated waste
  - estimates by PB class (Figure 5)

Conclusions

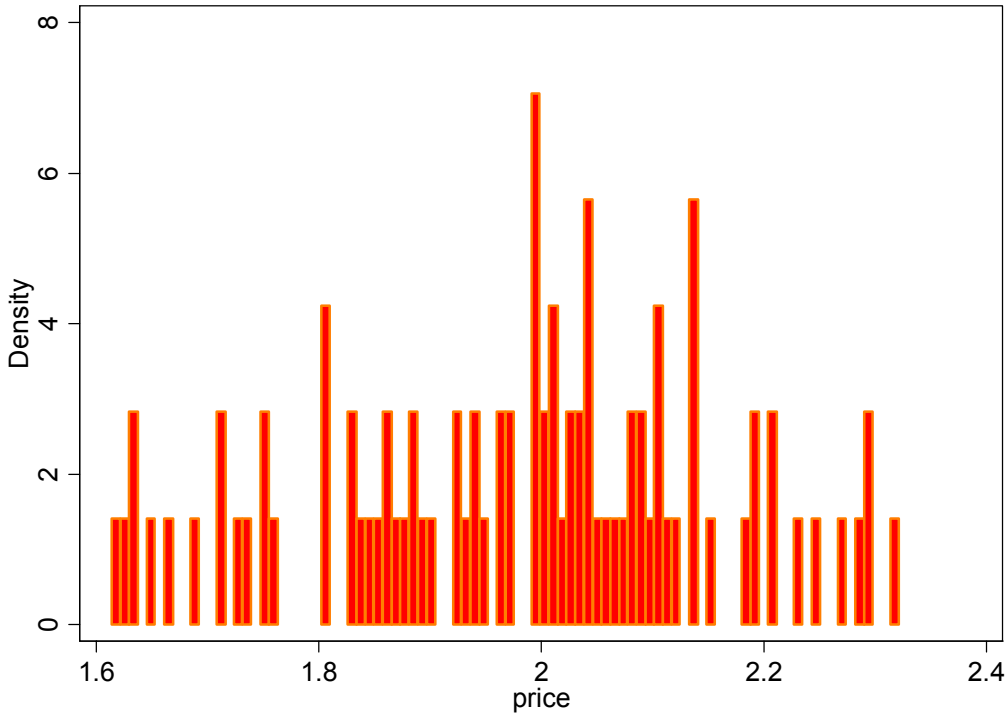
- How much waste?
  - variation in prices between PBs, estimates indicate that the PB at the 90th percentile of the distribution of waste pays 30% more than the PB at the 10th percentile
  - for those who switch, Consip prices are 28% lower than out of Consip prices
  - if waste were reduced for all PBs to the level of the 10th pc, sample expenditure would be 14% lower (116 million euros)

- Why?
  - evidence supports the "passive" waste hypothesis (structural estimates: 2/3 passive, 1/3 active)
  - institutions vs geography: large differences between different types of PBs –ministries pay, on average, 21% more than universities
- What can we do?
  - Rules vs discretion
  - Simple, empowering, market-oriented mechanisms like Consip may save a lot of money.

External Validity

- Other goods? Procurement of one-of-a-kind products or services.
- Other countries?
  - Transparency International: Italy: score 5/10.
  - Highest perceived corruption in Western Europe.
  - Comparable to Malaysia, Hungary, South Korea, Tunisia.
- Private firms?

Figure 1: Distribution of Paper Prices 2003



Notes: The figure plots the 5-95% distribution of prices paid by 90 individual PB for a 500 sheet pack of A4 white recycled paper in 2003.

Figure 2a: Number of Goods Purchased by PB

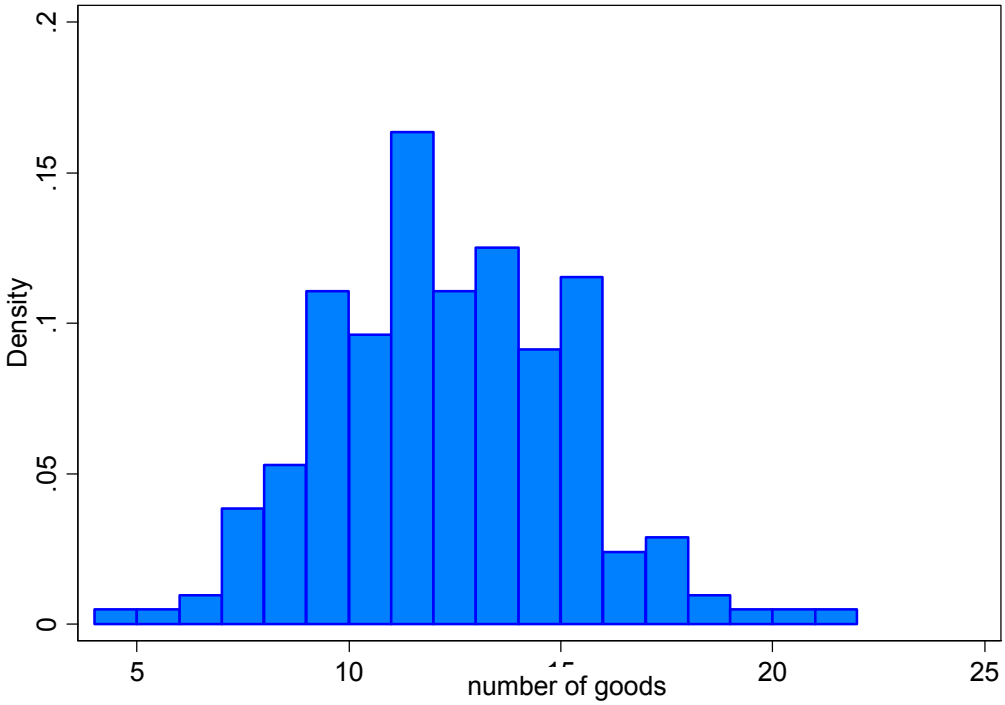


Figure 2b: Share of Purchases while Consip Active by PB

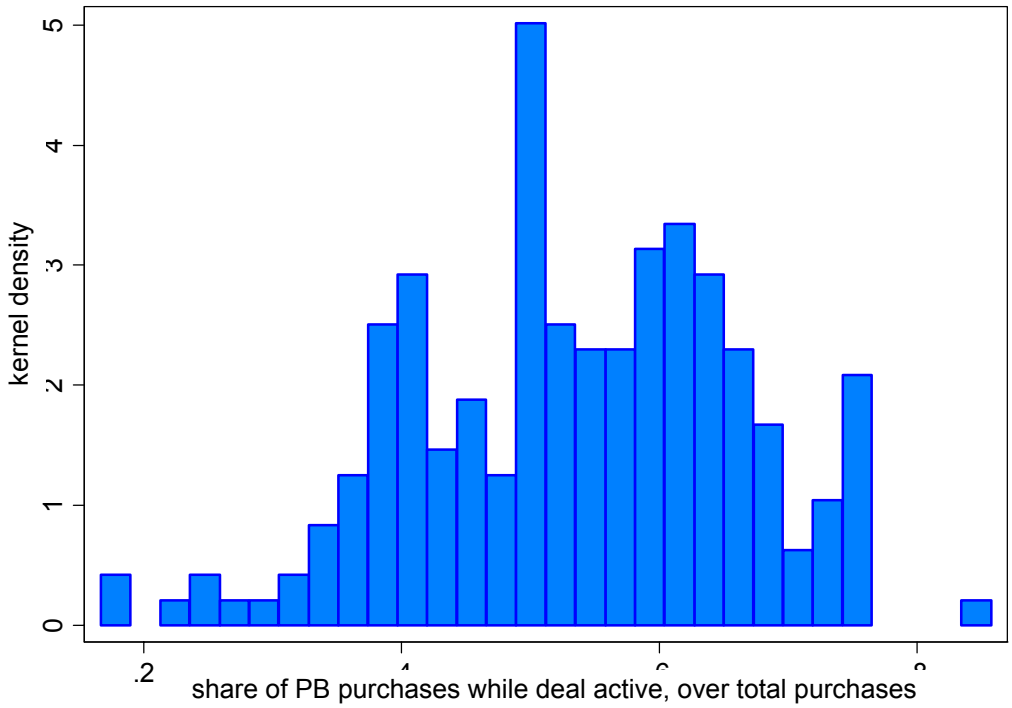


Figure 2c: Share of Purchases while Consip Active by good

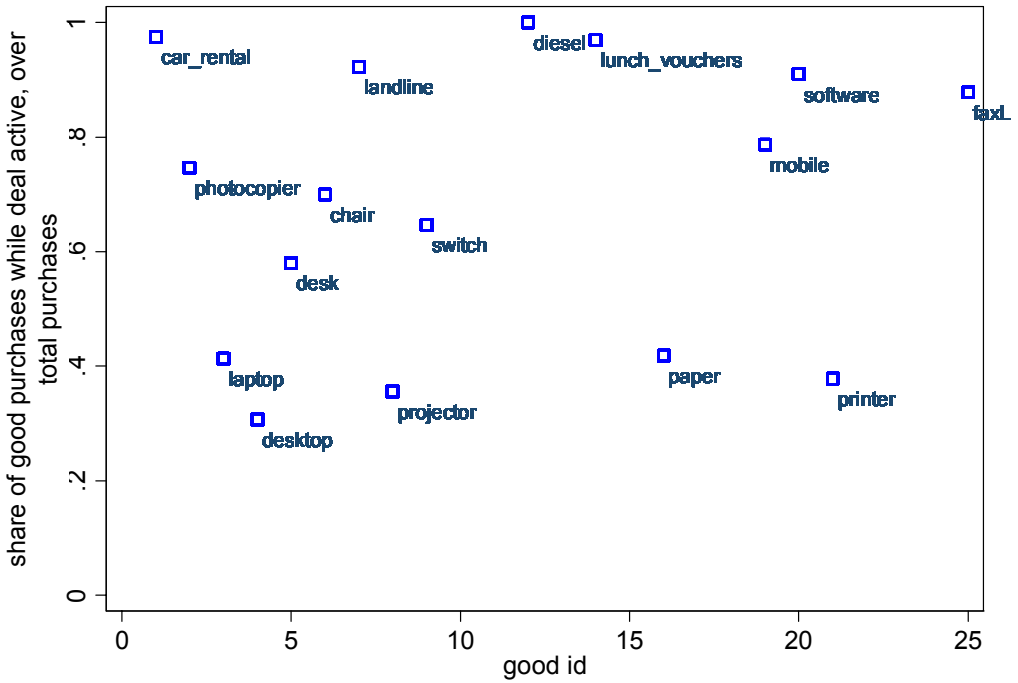
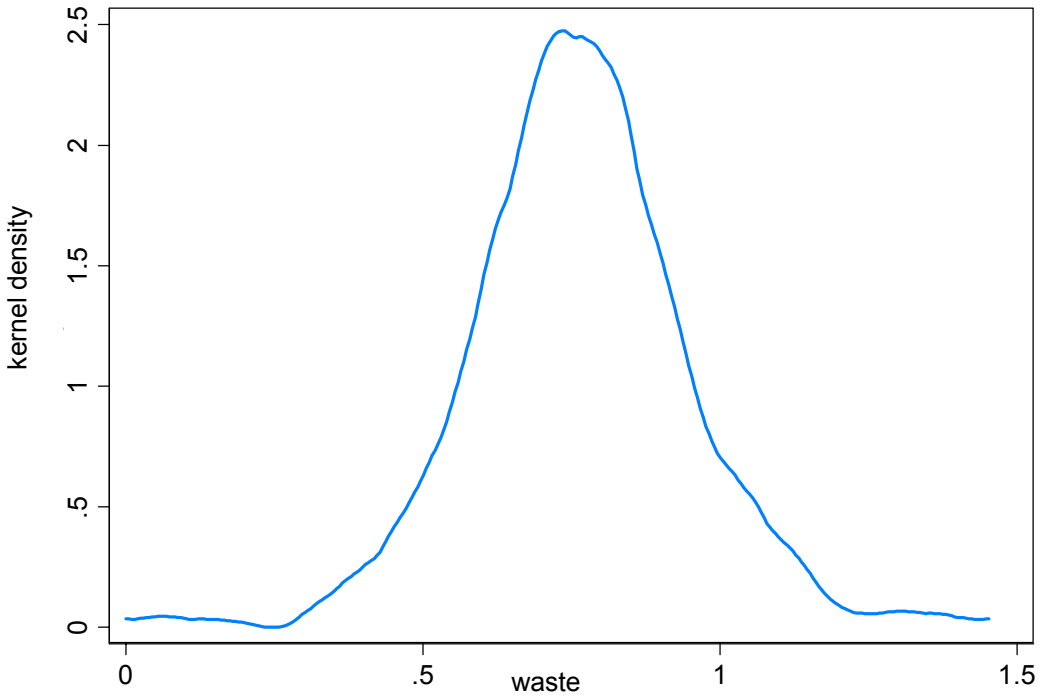


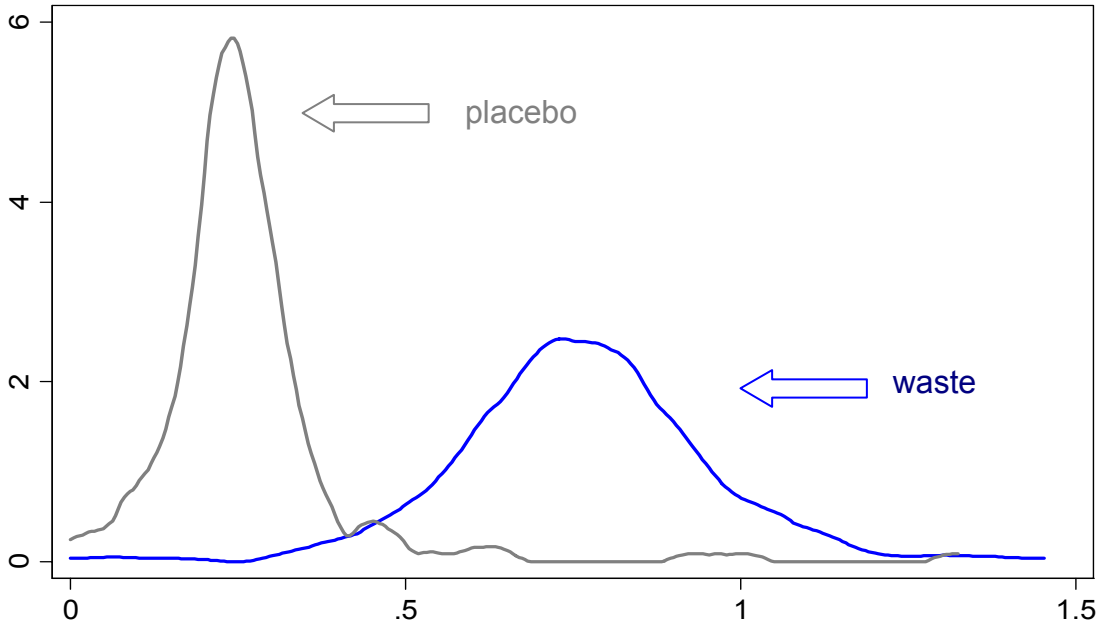
Figure 3: Estimated Waste



percentile	1	10	50	90	99
waste	0.36	0.54	0.76	0.99	1.29

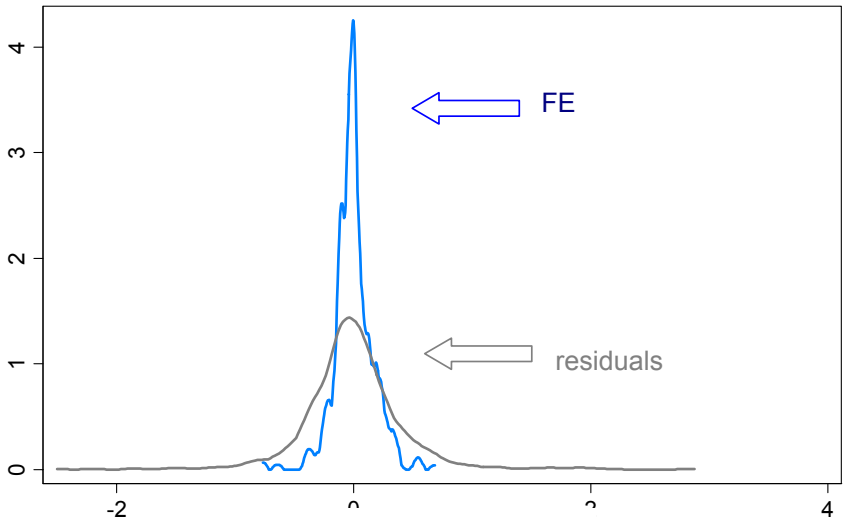
Note: Waste for each PB equals the PB's fixed effect in a regression of log price of good i, purchased by the PB at time t on: goods fixed effects, good specific trends, good specific quantities and good specific characteristics as specified in the appendix.

Figure 3b: Estimated "Placebo" Waste



Note: Waste for each PB equals the PB's fixed effect in a regression of log price of good i, purchased by the PB at time t when no Consip deal is active on: goods fixed effects, good specific trends, good specific quantities and good specific characteristics as specified in the appendix. "Placebo" waste equals the PB's fixed effect in a regression of log price of good i, purchased by the PB at time t *from the Consip catalogue* on: goods fixed effects, good specific trends, good specific quantities and good specific characteristics as specified in the appendix.

Residuals and PB FE -- purchases while no deal is active



Residuals and PB FE -- purchases from Consip Catalog

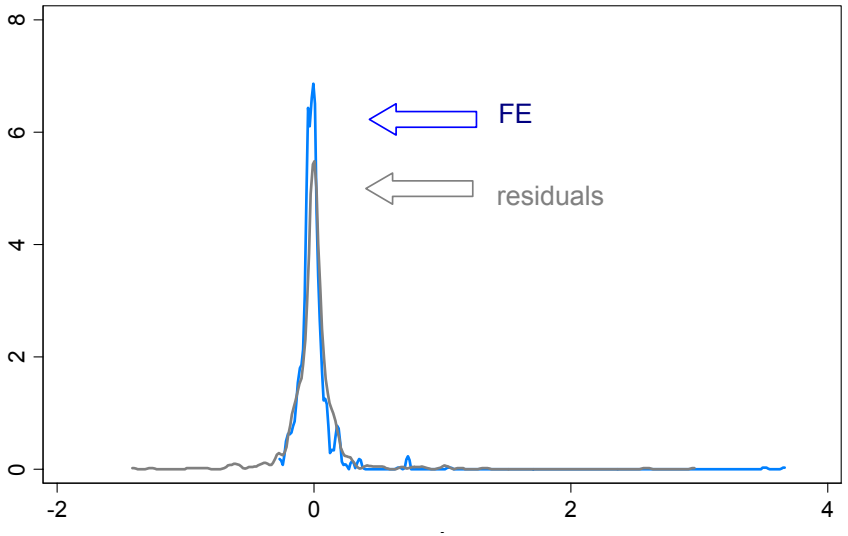
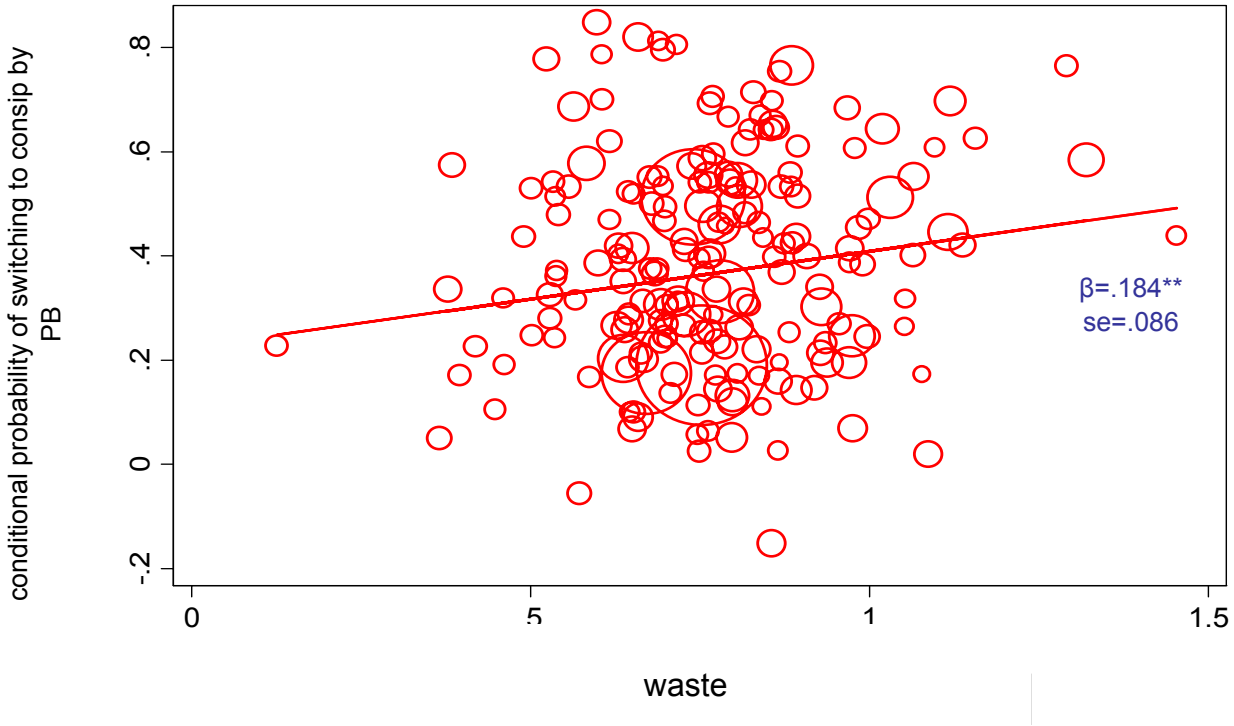


Figure 4: Switching Probability and Waste



Notes: To compute the conditional probability for each PB, we estimate the decision to buy from consip while a deal is active as a function of good and PB dummies. Larger circles correspond to PBs with more observations.

Figure 5: Active and Passive Waste by PB

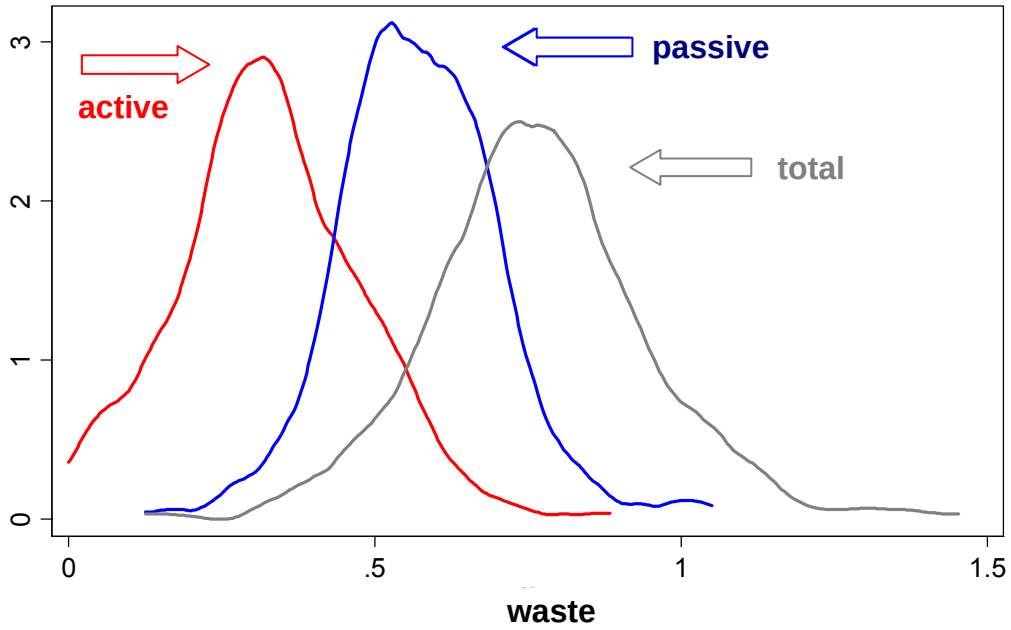


Table 1: Sample Description

1a: Public Bodies Sample

Type	Observations	Number of Offices	Sample Expenditure (E million)
Ministries and Government	769	12	76.34
Social Security Administration	61	3	12.26
Research Institutes	692	5	12.87
Regional Councils	325	12	148.2
Province and Town Councils	1532	70	352.6
Health Authorities	1784	81	198.1
Mountain Village Councils	172	11	1.48
Universities	714	13	17.24

1b: Goods Sample

Good Type	Observations	Average Price	Average Quantity per Order
Car Rentals	160	399.5	4.81
		(208.6)	(9.58)
Photocopier Rental	466	510.69	13.06
		(844.52)	(30.18)
Laptop	775	1219.7	6.5
		(458.52)	(30.1)
Desktop	644	992.5	16.0
		(587.5)	(62.84)
Office Desk	245	232.1	11.9
		(171.9)	(26.02)
Office Chair	280	96.6	30.4
		(52.7)	(86.2)
Landline*	143	1.89	125272
		(.74)	(292636)
Projector	191	1438.0	1.82
		(647.3)	(2.44)
Switch	215	138.7	164.4
		(269.9)	(298.5)
Diesel	248	3.85	293583
		(13.81)	(504625)
Lunch Vouchers*	231	70.04	665895
		(4.57)	(1418723)
Paper	755	2.40	6546.5
		(.922)	(22626.2)
Mobile*	183	.041	1244620
		(.102)	(5011294)
Software	155	233.2	151.1
		(91.5)	(483.1)
Printer	294	483.95	22.6
		(576.7)	(96.9)
Server	297	5967.5	3.45
		(6772.6)	(9.24)
Car Purchases	345	10710.3	4.02
		(6112.7)	(11.23)
Fax Machine	181	384.13	7.76
		(153.4)	(20.29)
Other	256		
Total	6068		

Notes: Other Goods with less than 100 observations are: InkJet Fax Machines, Optical Cables, Copper Cables, Engine Oil, Refuse Bins. (*) For these goods, Quantity=Yearly Outlay.

Table 2 Switching to Consip as a Function of Waste
Dependent Variable =1 if good purchased via Consip
Linear Probability Model-Standard Errors Clustered by PB-good in parenthesis

	Baseline	Good FE	Trends	Deal Order	Without Ministries and Government
Waste	.226***	.230***	.216***	.217***	.143**
	(.080)	(.063)	(.059)	(.058)	(.068)
Second Deal				.220***	.224***
				(.063)	(.066)
Third Deal				.298***	.251**
				(.107)	(.117)
Good FE	No	Yes	Yes	Yes	Yes
Good Specific Trends	No	No	Yes	Yes	Yes
R-squared	.0059	.2451	.2780	.2880	.2880
Observations	3122	3122	3122	3122	2675

Notes: *** (**) (*), indicate significance at the 1, 5, and 10% respectively. Second (third) deal=1 when the second (third) deal for the good is active, 0 otherwise.

Table 3 Correlates of Waste
Dependent Variable is Estimated Waste
Linear Model- Robust Standard Errors in Parenthesis

	geography	size
geography (omitted: south, no oc)		
south-oc	.024	
	(.053)	
south	-.001	
	(.034)	
centre	.076**	
	(.031)	
size		
log expenditure		.026**
		(.011)
R-squared	.0377	.0322
Observations	207	207

Notes: *** (**) (*), indicate significance at the 1, 5, and 10% respectively. The omitted category for the geographical variable is "north", the omitted category for the type variable is "Universities".

Table 3 Correlates of Waste
Dependent Variable is Estimated Waste
Linear Model- Robust Standard Errors in Parenthesis

	type	all	implied percentage price difference
geography (omitted: south, no oc)			
south-oc		.001	
		(.054)	
south		-.016	
		(.033)	
centre		.012	
		(.029)	
size			
log expenditure		.002	
		(.014)	
type (omitted: university)			
Ministries and Government	.336***	.319***	21%
	(.083)	(.106)	
Social Security	.231***	.214***	14%
	(.036)	(.055)	
Research Institutes	.131**	.125**	8%
	(.055)	(.055)	
Regional Councils	.168***	.165***	10%
	(.054)	(.059)	
Province and Town Councils	.112***	.111***	7%
	(.032)	(.033)	
Health Authorities	.040	.036	2%
	(.031)	(.035)	
Mountain Village Councils	.017	.019	1%
	(.075)	(.055)	
R-squared	.1954	.1969	.1969
Observations	207	207	207

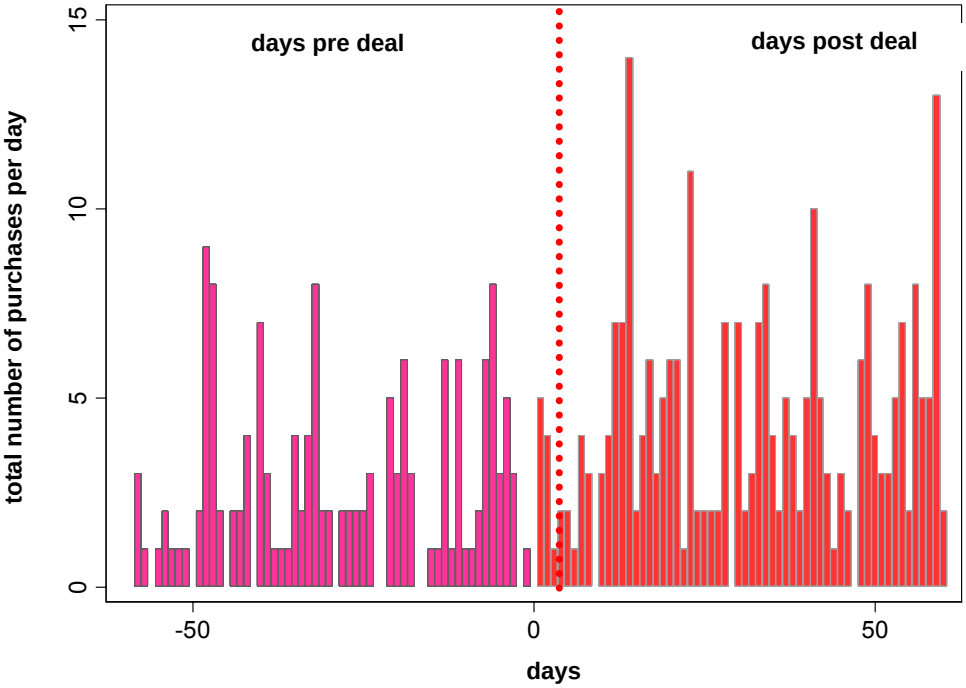
Notes: *** (**) (*), indicate significance at the 1, 5, and 10% respectively. The omitted category for the geographical variable is "north", the omitted category for the type variable is "Universities".

Table 4: Estimated Savings

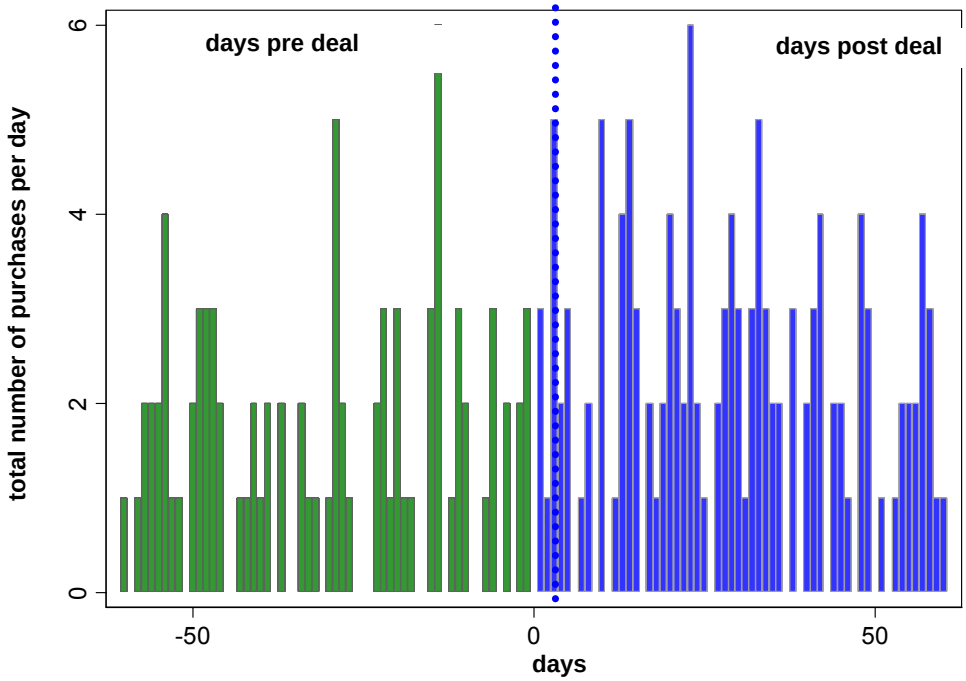
Type	Sample Expenditure (E million)	Savings if Waste = p10	*% of Sample Expenditure*	Savings if Waste = Average Uni. Waste	*% of Sample Expenditure*
Ministries and Government	76.34	16.9	*22.1*	11.7	*15.3*
Social Security Administration	12.26	2.6	*21.2*	1.8	*14.7*
Research Institutes	12.87	2.5	*19.4*	1.62	*12.6*
Regional Councils	148.2	9.6	*6.5*	4.8	*3.2*
Province and Town Councils	352.6	64.8	*18.4*	40.4	*11.5*
Health Authorities	198.1	18.9	*9.5*	*8.*1	*4.1*
Mountain Village Councils	1.48	0.08	*5.4*	0.03	*2.0*
Universities	17.24	1.3	*7.5*	0	*0.0*
TOTAL	819.09	116.68	*0.142*	68.45	*0.08*

Figure A1: Purchase Timing

Panel A: PBs that do not buy from Consip



Panel B: PBs that do buy from Consip



Note: The figure illustrates the number of purchases of all goods on the 60 days before the start of a consip deal and on the 60 days after the end of the deal. For each good, panel A only includes purchases by PB that do not buy the good from Consip when the deal is active, whereas panel B only includes purchases by PB that buy the good from Consip when the deal is active

Table A1: Purchase Timing

Dependent Variable =1 if good is purchased on day, 0 otherwise
OLS estimates; robust standard errors in parenthesis

	PBs that do not buy from Consip					PBs that buy from Consip			
	60 days before deal		60 days after deal			60 days before deal		60 days after deal	
number of days before deal	.016					.001			
	(.017)					(.011)			
number of days after deal			-.0002					.015	
			(.023)					(.015)	
number of days before/after deal:									
11-20		.004		.111			.017		.016
		(.023)		(.042)			(.016)		(.029)
21-30		-.002		.040			.003		.024
		(.024)		(.036)			(.013)		(.030)
31-40		.015		.074			-.023		.018
		(.026)		(.038)			(.020)		(.030)
41-50		.003		.042			-.007		.009
		(.029)		(.038)			(.032)		(.028)
51-60		-.042		.074			-.020		-.004
		(.029)		(.039)			(.021)		(.030)
good FE	yes	yes	yes	yes		yes	yes	yes	yes
good specific trend	yes	yes	yes	yes		yes	yes	yes	yes
year and month FE	yes	yes	yes	yes		yes	yes	yes	yes
observations	1338	1338	858	858		1338	1338	858	858
R-squared	.1431	.1303	.2939	.2765		.1497	.1427	.2649	.2557

Note: Omitted category for number of days before/after deal is 1-10

INCH-POUND

MIL-C-44072C
30 April 1990
SUPERSEDING
MIL-C-44072B
9 December 1987
W/CHANGE 12 February 2003

MILITARY SPECIFICATION

COOKIES, OATMEAL; AND BROWNIES; COCOLATE COVERED

This specification is approved for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This specification covers chocolate covered oatmeal cookies and chocolate covered brownies inflexible bags for use by the Department of Defense as a component of operational rations.

1.2 Classification. The product shall be of the following types as specified (see 6.1):

Type I - Brownies, chocolate covered
Type II - Oatmeal cookies, chocolate covered

2. APPLICABLE DOCUMENTS

2.1 Government documents

2.1.1 Specifications, standards and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation (see 6.1)

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commander, U.S. Army Soldier Systems Command, Natick Research, Development, and Engineering Center, ATTN: SSCNC-WRE, Natick, MA 01760-5018 by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

AMSC N/A FSC 8920

FEDERAL

L-P-378 - Plastic Sheet and Strip, Thin Gauge, Polyolefin
QQ-A-1876 - Aluminum foil
PPP-B-636 - Boxes, Shipping, Fiberboard

STANDARDS

FEDERAL

FED-STD-595 - Colors

MILITARY

MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes
MIL-STD-129 - Marking for Shipment and Storage

(Unless otherwise indicated, copies of federal and military specifications, standards, and handbooks are available from the Standardization Documents Order Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.)

2.1.2 Other Government documents, drawings, publications. The following other Government documents, drawings, and publications form a part of this document to the extent specified herein. Unless otherwise specified, the issues are those cited in the solicitation.

ENVIRONMENTAL PROTECTION ACENCY (EPA)

National Primary Drinking Water Regulations

(Copies are available from the Office of Drinking Water, Environmental Protection Agency, WH550D, 401 M Street, S.W., Washington, DC 20460.)

U.S. DEPARTMENT OF AGRIGULTURE (USDA)

Regulations Governing the Inspection of Eggs and Egg Products (7 CFR Part 59)

(Copies are available from Poultry Division, Agricultural Marketing Service, U.S. Department of Agriculture, Room 3932, South Building, P.O. Box 96456, Washington, DC 20090-6456.)

U.S. Standards for Grades of Shelled Almonds
U.S. Standards for Grades of Shelled Pecans

U.S. Standards for Shelled English Walnuts

(Copies are available from the Head, Standardization Section, Fresh Products Branch, Fruit and Vegetable Division, Agricultural Marketing Service, U.S. Department of Agriculture, Room 2056, South Building, Washington, DC 20090-6456.)

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES (HHS)

Federal Food, Drug, and Cosmetic Act and regulations promulgated thereunder (21 CFR Parts 1-199)

(Copies are available from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402-0001.)

2.2 Non-Government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents which are DOD adopted are those listed in the issue of the DODISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DODISS are the issues of the documents cited in the solicitation (see 6.1).

AMERICAN ASSOCIATION OF CEREAL CHEMISTS (AACC)

Approved Methods of the American Association of Cereal Chemists

(Application for copies should be addressed to the American Association of Cereal Chemists, 3340 Pilot Knob Road, St. Paul, MN 55121.)

AMERICAN OIL CHEMIST SOCIETY (AOCS)

Official and Tentative Methods of the American Oil Chemists Society

(Application for copies should be addressed to the American Oil Chemists Society, 508 South Sixth Street, Champaign, IL 61820.)

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

D 882 - Tensile Properties of Thin Plastic Sheeting
D 1238 - Flow Rates of Thermoplastics by Extrusion Plastometer
D 1505 - Density of Plastics by Density Gradient Technique

(Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103-1187.)

ASSOCIATION OF OFFICIAL ANALYTICAL CHEMISTS (AOAC)

Official Methods of Analysis of the Association of Official Analytical Chemists

(Application for copies should be addressed to AOAC International, 2200 Wilson Boulevard, Suite 400-CD, Arlington, VA 22201-3301.)

NATIONAL ACADEMY OF SCIENCES

Food Chemicals Codex

(Application for copies should be addressed to the National Academy Press, 2101 Constitution Avenue, N.W., Washington, DC 20418.)

(Non-Government standards and other publications are normally available from the organizations that prepare or distribute the documents. These documents also may be available in or through libraries or other informational services.)

2.3 Order of precedence. In the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 First article. When specified (see 6.1), a sample shall be subjected to first article inspection (see 6.2), in accordance with 4.4.

3.2 Ingredients. All ingredients shall be clean, sound, wholesome, and free from foreign material, evidence of rodent or insect infestation, extraneous material, off-odors, off-flavors, and off-colors.

3.2.1 Sugar. Sugar shall be white, refined, granulated, cane or beet sugar. Powdered sugar of equivalent quality may be substituted for part of the granulated sugar in the brownie formula to control spread.

3.2.2 Oatmeal. Oatmeal shall be the commercial product known as quick cooking oatmeal. It shall have natural rolled oat flavor and odor and shall be clean and free from burned particles, rancid, musty, sour, or other undesirable flavors and odors.

3.2.3 Flour. Flour for brownies shall be enriched wheat flour made from hard or soft wheat, shall be bleached or unbleached, and shall be of the commercial grade known as bread flour. For the oatmeal cookies, the flour shall be from soft wheat, shall be of the type know as cookie flour, and shall be enriched, bleached or unbleached.

3.2.4 Shortening, hydrogenated. Shortening shall be a refined, hydrogenated vegetable oil or combination of refined vegetable oils which are in common use by the baking industry. Coconut and palm kernel oils may be used only in the coating. The shortening shall have a stability of not less than 100 hours as determined by the Active Oxygen Method (AOM) in Method Cd 12-57 of the

Commercial Fats and Oils chapter in the Official and Tentative Methods of the American Oil Chemists Society. The shortening may contain alpha monoglycerides and an antioxidant or combination of antioxidants, as permitted by the Federal Grain Inspection Service (FGIS), and the Federal Food, Drug, and Cosmetic Act and regulations promulgated thereunder.

3.2.5 Nuts.

3.2.5.1 Nuts, almonds, shelled. Shelled almond pieces shall be of the small piece size classification and shall be U.S. No. 1 Pieces of the U.S. Standards for Grades of Shelled Almonds. A minimum of 95 percent, by weight, of the pieces shall pass through a 4/16-inch diameter round hole screen and not more than 5 percent, by weight, shall pass through a 2/16-inch diameter round hole screen. The shelled almonds shall be coated with an approved food grade antioxidant and shall be of the latest season's crop.

3.2.5.2 Nuts, pecans, shelled. Shelled pecan pieces shall be of the small piece size classification, shall be of a light color, and shall be U.S. Grade No. 1 Pieces of the U.S. Standards for Grades of Shelled Pecans. A minimum of 90 percent, by weight, of the pieces shall pass through a 4/16-inch diameter round hole screen and not more than 2 percent, by weight, shall pass through a 2/16-inch diameter round hole screen. The shelled pecans shall be coated with an approved food grade antioxidant and shall be of the latest season's crop.

3.2.5.3 Nuts, walnuts, shelled. Shelled walnut pieces shall be of the small piece size classification, shall be of a light color, and shall be U.S. No. 1 of the U.S. Standards for Shelled English Walnuts. A minimum of 90 percent, by weight, of the pieces shall pass through a 4/16-inch diameter round hole screen and not more than 1 percent, by weight, shall pass through a 2/16-inch diameter round hole screen. the shelled walnuts shall be coated with an approved food grade antioxidant and shall be of the latest season's crop.

3.2.6 Whole eggs, liquid or frozen. Whole eggs may be liquid or frozen and shall have been processed and labeled in accordance with the Regulations Governing the Inspection of Eggs and Egg Products (7 CFR Part 59). The whole eggs shall be egg whites and egg yolks in their natural proportions as broken directly from the shell eggs as evidenced by a USDA Egg Products Inspection Certificate. For liquid whole eggs, the USDA certificate shall state the date and time of pasteurization. Liquid whole eggs shall be held at a temperature of 40^0F or lower and shall be held for not more than 72 hours from the time of pasteurization until the start of formulation of the product in which they are used. Frozen whole eggs shall be held at 10^0F or lower and used within 120 days from the date of production. The whole eggs shall be free from off-odors and off-flavors, such as sulfide-like, fruity, sour, musty, or metallic, and shall be free from foreign materials.

3.2.6.1 Eggs, whole, dried. Dried whole eggs or free-flowing dried whole eggs may be used. The anticaking ingredient in the free-flowing dried whole eggs may be either silicon dioxide or sodium silicoaluminate. The amount of silicon dioxide shall be not more than 1 percent by weight of the dried whole eggs, and the amount of sodium silicoaluminate shall be less than 2 percent by weight of the dried whole eggs. The dried whole eggs and free-flowing dried whole eggs shall contain not less

than 95 percent by weight of the dried whole eggs. The dried whole eggs and free-flowing dried whole eggs shall contain not less than 95 percent by weight total eggs solids, and shall have been processed and labeled in accordance with the Regulations Governing the Inspection of Eggs and Egg Products (7 CFR Part 59), as evidenced by the USDA egg products inspection shield on the label. Dried whole eggs and free-flowing dried whole eggs shall be smooth and free from lumps that do not fall apart under light pressure; free from scorched, burnt, sulfurous, or other pronounced off-odors and off-flavors; and free from foreign materials.

3.2.7 Water. Water used for ice making, formulation, and washing shall conform to the National Primary Drinking Water Regulations.

3.2.8 Cocoa. Cocoa shall be natural process cocoa of the type known as medium fat cocoa.

3.2.9 Dextrose. Dextrose shall be anhydrous or dextrose hydrate.

3.2.10 Soda. Soda shall be fine powdered sodium bicarbonate, which meets the requirements of the Food Chemicals Codex.

3.2.11 Salt. Salt shall be white, noniodized, refined sodium chloride, with or without anticaking agents.

3.2.12 Chemical leavening. chemical leavening shall be any combination of edible leavening agents used in the commercial production of brownies.

3.2.13 Flavoring. Flavoring shall be vanillin, ethyl vanillin, or a mixture thereof.

3.2.15 Vitamins. Vitamin A shall be a refined concentrate of vitamin A ester (palmitate). When added to the chocolate or confections, it shall not impart a fishy or objectionable odor or flavor to the finished product. Ascorbic acid (vitamin C) and thiamine hydrochloride, thiamine mononitrate, and pyridoxine hydrochloride shall be of Food Chemicals Codex grade.

3.2.16 Pregelatinized starch. Pregelatinized starch shall be derived from corn, tapioca, or any other farinaceous product. It shall be precooked and processed to produce a food grade thickener stabilizer of a white color and a powdery texture.

3.2.17 Wheat gluten. Wheat gluten shall be made from wheat flour which has been treated for the almost complete removal of the starch. It shall have been processed to an off-white powder.

3.2.18 Emulsifiers. Lecithin, polyoxyethylene (20) sorbitan monostearate, and sorbitan monostearate shall comply with the Food Chemicals Codex.

3.2.19 Fat. Vegetable fat for the chocolate coating shall be natural or hydrogenated coconut, palm kernel, babasu, tucum, or other high lauric acid oils or mixtures thereof, or a mixture of one or more of these which not more than 25 percent hydrogenated peanut oil or cottonseed oil, or both combined. The fats shall have a minimum stability of 100 hours when measured by the active oxygen method (AOM). They shall retain satisfactory odor, flavor, and color after heating to a temperature of 400^0F. The free fatty acid content shall be not greater than 0.08 percent prior to the addition of an

antioxidant mixture or 0.1 percent after the addition of antioxidant mixture A, B, C, D, or E specified in 3.2.19.1. The moisture and volatile matter shall not exceed 0.1 percent after the addition of antioxidant mixture A, B, C, D, or E. The fat shall be adequately protected against oxidative rancidity, at time of manufacture or by the processor, by the addition of 0.1 percent by weight of an antioxidant mixture specified in 3.2.19.1. The melting point and solid fat indices shall be as follows:

Wiley Melting Point:	117^0F to 119^0F	
Solid Ft Index:	^{0}F	Percent Solid
	50	68
	70	58
	80	52
	92	30
	110	12 maximum

3.2.19.1 Antioxidant mixture. Antioxidant mixtures shall consist of ingredients in the proportion specified as follows:

Ingredient	Percent of mixture				
	A	B	C	D	E
Edible solvent, not more than	70	74	60	67	70
Butylated hydroxyanisole, not less than	20	20	20	4	20
Butylated hydroxytoluene, not less than	--	--	20	20	--
Citric acid	4	6	--	4	4
Propyl gallate, not less than	6	--	--	5	--
TBHQ (Tertiary butylhydroquinone), not less than	--	--	--	--	6

Any one of the mixtures may be used. Antioxidants shall comply with the Food Chemical Codex.

3.3 Brownie, oatmeal cookie and chocolate coating preparation and processing.

3.3.1 Brownie formula. The formula for the brownie shall be as follows:

Ingredient	Parts by weight
Sugar 1/	23.0
Flour 2/	21.0
Shortening	16.8

Nuts 3/	16.0
whole eggs (liquid basis) 4/ 5/	13.0
Cocoa	5.5
Dextrose, anhydrous	4.4
Salt	.03
Chemical leavening	As required
Flavoring	Trace

1/ Powdered sugar may be substituted for part of the granulated sugar to control spread.

2/ Pregelatinized starch, malted barley flour, wheat gluten or any combination thereof may be substituted for a part of the flour to obtain proper dough consistency.

3/ Nuts shall be either almonds, pecans, or walnuts or any combination thereof.

4/ Frozen whole eggs shall be tempered/thawed and held at an internal temperature of 28^0F to 40^0F for not more than 24 hours prior to product preparation.

5/ Whole eggs, dried, may be substituted for whole eggs (liquid basis) by following the manufacturer's recommended rehydration and mixing procedures and shall have no less than the equivalent amount of whole egg solids as the liquid basis. The water shall be adjusted to ensure compliance with moisture requirements of the baked brownie prior to coating.

3.3.2 Brownie preparation. (NOTE: The contractor is not required to follow the exact procedure shown below provided that the brownies conform to all finished product requirements in 3.4.)

a. Whip eggs in large bowl on high speed until light and fluffy.
b. Combine sugars, cocoa, salt, and leavening; add to beaten eggs, and whip on high speed until thick.
c. Add shortening slowly while mixing on low speed.
d. Scrape bowl and whip on high speed until thick.
e. Mix flour, nuts, and flavors together and fold into batter; mix until uniform.
f. Pour batter into pan at a rate that will yield uncoated brownies which, when cut such as to meet the dimension requirements specified in 3.4f, will weigh approximately 35 grams each. (Experimentally, a panning rate of 14 to 16 grams per square inch was used.)
g. Bake at 350^0F until done (30 to 45 minutes).

3.3.3 Brownie cutting. The brownies shall be cut to the appropriate size when cool (see 3.4f).

3.3.4 Brownie moisture content. The moisture content of the uncoated brownie shall be not more than 8.0 percent.

3.3.5 Brownie coating. The brownies shall be completely enrobed with a continuous uniform chocolate coating (see 3.2.14) in an amount which shall be not less than 29 percent by weight of the finished product.

3.3.6 Oatmeal cookie formula. The formula for the oatmeal cookie shall be as follows:

Ingredient	Parts by weight
Sugar (sucrose)	34.0
Oatmeal	30.0
Shortening	17.0
Flour 1/	14.0
Water (variable)	10.0
Eggs (dry whole basis)	2.0
Dextrose	2.0
Soda (variable) 2/	0.5
Salt	0.5

1/ Pregelatinized starch may be substituted for a portion of the flour to obtain proper dough consistency.

2/ A slight amount of leavening acid may be used to control spread.

3.3.7 Oatmeal cookie preparation. The ingredients shall be mixed in a batter, deposited, and baked until done as indicated by normal color and texture. The oatmeal cookies shall be baked and handled in such a fashion that they remain intact.

3.3.8 Oatmeal cookie moisture content. The moisture content of the uncoated baked cookie bar shall be not more than 3.5 percent.

3.3.9 Oatmeal cookie coating. The oatmeal cookies shall be completely covered with a continuous uniform chocolate coating (see 3.2.14) in an amount which shall be not less than 40 percent by weight of the finished product.

3.3.10 Chocolate coating formula. The formula for the chocolate coating shall be as follows:

Ingredient 1/	Percent by weight
Cocoa powder, medium	Not less than 8.0
Nonfat dry milk	Not less than 12.0
Added fat	Not less than 30.0
Lecithin	Not more than 0.2
Sorbitan monostearate	Not more than 0.5

Polyoxyethylene (20) sorbitan monostearate	Not more than 0.5
Sugar	Not more than 48.5
Salt (per 100 pounds of coating)	2 ounces
Vanillin (per 100 pounds of coating)	1 ounce

1/ The coating shall be enriched with vitamins in not less than the following amounts:

Thiamine (as thiamine mononitrate)	8.0 mg per pound
Pyridoxine (as pyridoxine hydrochloride)	8.0 mg per pound
Ascorbic acid (vitamin C)	320.0 mg per pound
Vitamin A	20,000 I.U. per pound

(NOTE: Estimated loss of vitamins due to processing is approximately 15 percent for all but thiamine which is about 30 percent. The amounts cited above shall represent after-processing values.)

3.3.11 Chocolate coating preparation. The formula for chocolate coating shall be blended on a dry-solids basis. Sorbitan monostearate and polyoxyethylene (20) sorbitan monostearate shall be melted, mixed with the added fat and the dry-solids blend and brought to a temperature of not less than 150^0F. The mixture shall be held at that temperature or higher for a period of at least 30 minutes. The coating shall be refined (20 microns or less, 7/10,000 inch) so that is has a smooth mouthfeel without grittiness. The coating shall be such that, when the vacuum packaged product (at least 72 hours after manufacture) is held at a temperature of 100^0F for two hours, the product can be easily removed from the bag without loss of coating. The product shall be allowed to cool at a temperature between 40^0F and 70^0F, for resolidification to occur, for approximately one hour prior to performing the test. The chocolate coating shall be Salmonella free (see 4.5.1.4).

3.4 Finished product requirements (brownies and oatmeal cookies). The finished product shall comply with the following requirements, as applicable:

a. There shall be no foreign material such as, but not limited to, dirt, insect parts, hair, wood, glass, or metal.

b. There shall be no foreign odor or flavor such as, but not limited to, burnt, scorched, stale, sour, rancid, musty, or moldy.

c. There shall be no color foreign to the product.

d. Chocolate coating shall completely cover the product.

e. Product shall not be broken or crushed.

f. The dimensions of the coated brownie shall not exceed 3-1/2 inches by 2-1/2 inches by 5/8 inch.

g. The weight of the coated brownie shall be not less than 46 grams.

h. The texture of the brownie shall be firm but not hard.

i. The rectangular shaped coated oatmeal cookie shall not exceed 3-1/2 by 2-1/2 inches and shall not exceed 7/16 inch thickness.

j. The interior of the coated oatmeal cookie shall be crisp and have the characteristic flavor of oatmeal.

k. The weight of the coated oatmeal cookie shall be not less than 43 grams.

l. The chocolate coating shall be free from cracks, chips or rough spots.

3.4.1 Palatability. The finished product shall be equal to or better than the preproduction sample (see 6.1) in palatability and overall appearance.

3.5 Plant qualification. The product shall be prepared, processed, and packaged in establishments meeting the requirements of 21 CFR, code of Federal Regulations, Part 110, "Current Good Manufacturing Practice in Manufacturing, Packaging or Holding Human Food," and the plant sanitation requirements of the appropriate Government inspection agency.

3.6 Federal Food, Drug, and Cosmetic Act. All deliveries shall conform in every respect to the provisions of the Federal Food, Drug, and Cosmetic Act and regulations promulgated thereunder.

4. QUALITY ASSURANCE PROVISIONS

4.1 Contractor's responsibility. Inspection and acceptance by the USDA shall not relieve the contractor of obligation and responsibility to deliver a product complying with all requirements of this specification. The contractor shall ensure product compliance prior to submitting the product to the USDA for any inspection.

4.2 Inspection and certification. Product acceptability shall be determined by the USDA. The USDA will determine the degree of inspection and supervision necessary to ensure compliance with the requirements of this specification.

4.3 Classification of inspections. The inspection requirements specified herein are classified as follows:

a. First article inspection (see 4.4).
b. Quality conformance inspection (see 4.5).

4.4 First article inspection. When a first article is required (see 6.1), it shall be inspected in accordance with the quality assurance provisions of this specification and evaluated for overall appearance and palatability. Any failure to conform to the quality assurance provisions of this specification or any appearance or palatability failure shall be cause for rejection of the first article.

4.5 Quality conformance inspection. Unless otherwise specified, sampling for inspection shall be performed in accordance with MIL-STD-105.

4.5.1 Component and material examination. In accordance with 4.1, components and materials shall be inspected in accordance with all the requirements of referenced documents unless otherwise excluded, amended, modified, or qualified in this specification or applicable purchase document.

4.5.1.1 Ingredient and component examination. Conformance of ingredients and components to identity, condition, and other requirements specified in 3.2 shall be certified by the ingredient supplier or ingredient manufacturer, and compliance shall be verified by examination of pertinent labels, markings, U.S. Grade Certificates, certificates of analyses, or other such valid documents acceptable to the inspection agency. If necessary, each ingredient shall be examined organoleptically or inspected according to generally recognized test methods such as the standard methods described in the Official Methods of Analysis of the Association of Analytical Chemists and in the Approved Methods of the American Association of Cereal Chemists, to determine conformance to the requirements. Any nonconformance to an identity, condition, or other requirement shall be cause for rejection of the ingredient or component lot or of any involved products.

4.5.1.2 Laminated bag material certification. The material listed below may be accepted on the basis of a contractor's certificate of compliance to the indicated requirements. Thickness tolerances as specified in L-P-378 and QQ-A-1876, as applicable, shall apply.

Material requirement	Requirement paragraph	Test procedure
Ionomer or polyethylene film thickness	5.1.1.1 and 5.1.2.1	As specified in L-P-378 except that a machinists' micrometer may be used provided that its graduations and accuracy conform to the requirement of L-P-378

Material requirement	Requirement paragraph	Test procedure
Polyester film thickness	5.1.1.1 and 5.1.2.1	As above
Aluminum foil thickness	5.1.1.1 and 5.1.2.1	As specified in QQ-A-1876
Laminated material construction	5.1.1.1 and 5.1.2.1	Laboratory evaluation

Color of laminated material	5.1.1.1 and 5..2.1	Visual examination

4.5.1.3 Unfilled preformed bag seal strength testing. The unfilled preformed bags shall be tested for seal strength in accordance with Method A or B of ASTM D 882, except that testing speed may be 10 or 12 inches per minute. The lot size shall be expressed in bags. The sample size shall be the number of bags indicated by inspection level S-1. Three adjacent specimens shall be cut from each of the three sealed sides of each bag in the sample. The results shall be reported to the nearest 0.1 pound. The average seal strength of each seal shall be calculated by averaging the strengths of the three test specimens cut from that seal. Any test specimen failing to meet the individual test specimen seal strength requirement specified in 5.1.1.1.1 or any seal failing to meet the average seal strength requirement specified in 5.1.1.1.1 shall be cause for rejection of the lot.

4.5.1.4 Chocolate coating microbiological certification. The chocolate coating shall be Salmonella free when tested in accordance with the Official Methods of Analysis of the AOAC, method 967.26. The chocolate coating may be accepted on a contractor's certification of compliance to the Salmonella requirement in 3.3.11. Any nonconformance to the requirement in 3.3.11 shall be cause for rejection of the component lot or any involved product.

4.5.2 In-process inspection.

4.5.2.1 In-process examination. In-process examination shall be performed to determine conformance to the preparation, processing, holding, bag filling and sealing, and bulk pack handling requirements. Any nonconformance revealed by actual examination or by review of records of time, temperature, and formulation or of other valid documents shall be cause for rejection of the involved product.

4.5.2.2 In-process moisture content testing. The baked brownie or oatmeal cookie, as applicable, prior to coating, shall be tested for moisture content in accordance with the Official Methods of Analysis of the Association of Official Analytical Chemists (AOAC): Chapter: Cereal Foods; section: Total Solids (Moisture, Indirect Method); Method: Vacuum Oven Method except that the drying cycle shall be 16 hours at 70C under a pressure of not more than 100 mm Hg. The sample unit shall be one brownie or one oatmeal cookie. Results shall be reported to the nearest 0.1 percent. Any sample unit not conforming to the moisture content requirement in 3.3.4 or 3.3.8, as applicable, shall be classified as a major defect and shall be cause for rejection of the lot. The lot size shall be expressed in units of one brownie or one oatmeal cookie as applicable. The inspection level shall be S-2.

4.5.3 In-process coating weight examination. Prior to coating, a sample of 20 brownies or oatmeal cookie, as applicable, shall be randomly selected from the lot, identified, and weighed. After coating, the sample 20 brownies or oatmeal cookies shall be reweighed. The coating weight as a percentage of the product weight shall be calculated to the nearest 1 percent as follows:

$$\text{Coating weight, percent} = \frac{\text{Coated product weight} - \text{Uncoated product weight}}{\text{Coated product weight}} \times 100$$

Nonconformance with the coating weight requirements in 3.3.5 or 3.3.9, as applicable, shall be a major defect and be cause for rejection of the lot.

4.5.3 Product inspection (when unit packing in bags as specified in 5.1.1 is required).

4.5.3.1 Net weight inspection. The net weight of the filled and sealed bags shall be determined by separately weighing each sample unit on a suitable scale tared with an average weight of representative empty bags. Results shall be reported to the nearest gram. Any individual sample unit having a net weight of less than 46 grams for brownies or less than 43 grams for oatmeal cookies shall be classified as a minor defect. The lot size shall be expressed in bags. The sample unit shall be one filled and sealed bag. The inspection level shall be –3 and the acceptable quality level (AQL), expressed in terms of defects per hundred units, shall be 2.5.

4.5.3.2 Filled and sealed bag examination. The filled and sealed bags shall be examined for the defects listed in table I. The lot size shall be expressed in bags. The sample unit shall be one filled and sealed bag. The inspection level shall be I and the AQL, expressed in terms of defects pr hundred units, shall be 0.65 for major defects and 2.5 for minor defects.

TABLE I. Filled and sealed pouch defects 1/

Category		Defect
Major	Minor	
101		Tear, hole, or open seal.
102		Seal width less than 1/16 inch. 2/
103		Presence of delamination. 3/
104		Unclean pouch. 4/
105		Pouch has foreign odor.

106		Any impression or design on the heat seal surfaces which conceals or impairs visual detection of seal defects. 5/
107		Not packaged as specified.
108		Presence of stress cracks in the aluminum foil. 6/ 7/
	201	Label missing, incorrect, or illegible.
	202	Tear notch or serrations missing or does not facilitate opening.
	203	Seal width less than 1/8 inch but greater than 1/16 inch.
	204	Presence of delamination. 3/

1/ Any evidence of rodent or insect infestation shall be cause for rejection of the lot.

2/ The effective closure seal is defined as any uncontaminated, fusion bonded, continuous path, minimum 1/16 inch wide, from side seal to side seal that produces a hermetically sealed pouch.

3/ Delamination defect classification:

Major - Delamination of the outer ply in the pouch seal area that can be propagated to expose aluminum foil at the food product edge of the pouch after manual flexing of the delaminated area. To flex, the delaminated area shall be held between the thumb and forefinger of each hand with both thumbs and forefingers touching each other. The delaminated area shall then be rapidly flexed 10 times by rotating both hands in alternating clockwise-counterclockwise directions. Care shall be exercised when flexing delaminated areas near the tear notches to avoid tearing the pouch material. After flexing, the separated outer ply shall be grasped between thumb and forefinger and gently lifted toward the food product edge of the seal or if the separated area is too small to be held between thumb and forefinger, a number two stylus shall be inserted into the delaminated area and a gentle lifting force applied against the outer ply. If separation of the outer ply can be made to extend to the product edge of the seal with no discernible resistance to the gentle lifting, the delamination shall be classified as a major defect. Additionally, spot delamination of the outer ply in the body of the pouch that is able to be propagated beyond its initial borders is also a major defect. To determine if the laminated area is a defect, use the following procedure: Mark the outside edges of the delaminated area using a bold permanent marking pen. Open the pouch and remove the contents. Cut the pouch transversely not closer than 1/4 inch (±1/16 inch) from the delaminated area. The pouch shall be flexed in the area in question using the procedure described above. Any propagation of the delaminated area, as evidenced by the delaminated area exceeding the limits of the outlined borders, shall be classified as a major defect.

Minor - Minor delamination of the outer ply in the pouch seal area is acceptable and shall not be classified as a minor defect unless it extends to within 1/16 inch of the food product edge

of the seal. All other minor outer ply delamination in the pouch seal area or isolated spots of delamination in the body of the pouch that do not propagate when flexed as described above shall be classified as minor defects.

4/ Outer packaging shall be free from foreign matter which is unwholesome, has the potential to cause pouch damage (for example, glass, metal filings) or generally detracts from the clean appearance of the pouch. The following examples shall not be classified as defects for unclean:

a. Foreign matter which presents no health hazard or potential pouch damage and which can be readily removed by gently shaking the package or by gently brushing the pouch with a clean dry cloth.

b. Dried product which affects less than 1/8 of the total surface area of one pouch face (localized and aggregate).

c. Water spots.

5/ If doubt exists as to whether or not the sealing equipment leaves an impression or design on the closure seal surface that could conceal or impair visual detection of seal defects, samples shall be furnished to the contracting officer for a determination as to acceptability.

6/ Applicable to form-fill-seal pouches only.

7/ The initial examination shall be a visual examination of the closed package. Any suspected visual evidence of stress cracks in the aluminum foil (streaks, breaks, or other disruptions in the laminated film) shall be verified by the following physical examination. To examine for stress cracks, the inside surface of both tray-shaped bodies shall be placed over a light source and the outside surface observed for the passage of light. Observation of light through the pouch material in the form of a curved or straight line greater than 2 mm in length shall be evidence of the presence of stress cracks. Observation of light through the pouch material in the form of a curved or straight line 2 mm in length or smaller or of a single pinpoint shall be considered a pinhole. Observation of ten or more pinholes per pouch shall be evidence of material degradation.

4.5.3.3 Bag vacuum examination. The filled and vacuum sealed bags shall be visually examined for proper vacuum level not less than 96 hours after filling and sealing. The sealed bag shall continue to exhibit a tight adherence to the surface contours of the product when a pulling force is applied at the center of each side seal. This force shall be applied by holding each side seal between thumb and forefinger of each hand, and simultaneously exerting a slight pull with both hands. The bag material shall resist this pulling force as evidenced by the material quickly returning to conform to the product edges when the pulling force is relieved. Any evidence of loss of vacuum shall be considered a major defect. The lot size shall be expressed in bags. The sample unit shall be one filled and sealed bag. The inspection level shall be I and the AQL, expressed in terms of defects per hundred units, shall be 0.65.

4.5.3.4 Product inspection. The finished product shall be examined for the defects listed in table II. The lot size shall be expressed in bags. The sample unit shall be the contents of one filled and sealed bag. The sample unit shall be the contents of one filled and sealed bag. The inspection level

shall be S-4 and the AQL, expressed in terms of defects per hundred units, shall be 2.5 for major defects and 4.0 for minor defects.

TABLE II. Product defects. 1/ 2/

Category		Defect
Major	Minor	
101		Size not as specified.
102		Oatmeal cookie interior not crisp.
103		Texture of brownie hard or not firm.
104		Coating not completely covering product.
105		Brownie or oatmeal cookie crushed. 3/
	201	Brownie or oatmeal cookie broken (broken off edges not exceedi 1/16 inch maximum are considered acceptable.)
106		Flavor not characteristic of oatmeal (oatmeal cookie only).
107		Coating adheres to bag.
108		Coating not free from cracks, chips or rough spots.

1/ The presence of foreign material (for example, glass, dirt, insect parts, hair, wood, glass, or metal), foreign odor or off-flavor (for example, burnt, scorched, stale, sour, rancid, musty, moldy), or foreign color shall be cause for rejection of the lot.

2/ Product not equal to or better than the approved preproduction sample (see 6.1) in palatability and overall appearance shall be cause for rejection of the lot. (This comparison shall be performed only when deemed necessary by an Agricultural Marketing Service (AMS) agent.)

3/ A crushed item is one in which 1/8 or more the volume of the item has been reduced to crumbs.

4.5.5 Bag closure seal testing. The filled and sealed bags shall be tested in accordance with method A or B of ASTM D 882, except that the testing speed may be 10 or 12 inches per minute. For preformed bags, three adjacent specimens, 1/2 or 1 inch wide, shall be cut from the closure seal of each bag in the sample. For the form-fill-seal bags, three adjacent specimens, 1/2 or 1 inch wide shall be cut from each side and each end of each bag in the sample. For the preformed bag, the average seal strength of the closure seal shall be calculated by averaging the test results of the three test specimens cut from that seal. For the form-fill-seal bag, the average seal strength of each side and end of the bag shall be calculated by averaging the test results of the three specimens cut from that side or end. The results shall be reported to the nearest 0.1 pound per inch of width. The lot size

shall be expressed in bags. The sample unit shall be one filled and sealed bag. The sample size shall be the number of bags indicated by inspection level S-1. Any test specimen or average seal strength failing to meet the requirements of 5.1.1.1.2 and 5.1.2.1.1 shall be cause for rejection of the lot.

4.5.5.1 Internal pressure test. The internal pressure resistance shall be determined by pressurizing the pouches while they are restrained between two rigid plates. The sample size shall be the number of pouches indicated by inspection level S-1. If a three seal tester (one that pressurizes the pouch through an open end) is used, the closure seal shall be cut off for testing the side and bottom seals of the pouch. For testing the closure seal, the bottom seal shall be cut off. The pouches shall be emptied prior to testing. If a four seal tester (designed to pressurize filled pouches by use of a hypodermic needle through the pouch wall) is used, all four seals can be tested simultaneously. The distance between rigid restraining plates on the four seal tester shall be equal to the thickness of the product + 1/16 inch. Pressure shall be applied at the approximate rate of 1 pound per square inch gage (psig) per second until 14 psig pressure is reached. The 14 psig pressure shall be held constant for 30 seconds and then released. The pouches shall then be examined for separation or yield of the heat seals. Any rupture of the pouch or evidence of seal separation greater than 1/16 inch in the pouch manufacturer's seal shall be considered a test failure. Any seal separation that reduces the effective closure seal width to less than 1/16 inch shall be considered a test failure. Any test failure shall be cause for rejection of the lot.

4.5.6 Shipping container examination. Shipping containers shall be examined for defects in assembly, closure, and reinforcement (when applicable) in accordance with PPP-B-636. In addition, the following defects shall be classified as follows:

Major:	Marking missing, incorrect or illegible.
Minor:	More than 2 percent (to nearest unit) under marked count. Pad or liner missing or not material specified. Bulk pack layers not separated by food grade parchment or bleached greaseproof paper or oatmeal cookies or brownies not wrapped in cellophane, as applicable. Height of liner not as specified (see 5.2.2).

In addition, the lot shall be rejected if sample data indicate lot average is less than marked count.

5. PACKAGING

Meal, Ready-to-Eat, Individual"/Food Packet, Long Range Patrol.

When the chocolate covered oatmeal cookie is procured as a component of the MRE, the chocolate covered oatmeal cookie shall be packaged in accordance with 5.1.

Meal, Cold Weather.

When the chocolate covered oatmeal brownie or the chocolate covered oatmeal cookie are procured as components of the MCW, one chocolate covered brownie or one chocolate covered oatmeal cookie shall be packaged in accordance with 5.1.

5.1 Preservation. When specified (see 6.1), the product shall be preserved in accordance with level A.

5.1.1 Level A. One chocolate covered brownie or one chocolate covered oatmeal cookie shall be unit packed in bags as specified in 5.1.1.1 or 5.1.2.1. When product is held for more than 24 hours prior to unit packing, the product shall be stored at 80^0F or below and if storage time exceeds 30 days, the product shall be stored at 0^0F or below.

5.1.1.1 Preformed bags. The preformed bags shall be fabricated from 0.002-inch thick ionomer or polyethylene film laminated or extrusion coated to 0.00035-inch thick aluminum foil which is laminated to 0.0005-inch thick polyester. The three pliers shall be laminated so that the aluminum foil is between the other two layers. The bag shall be formed with the polyester on the exterior of the bag. The exterior bag color for MRE and LRP applications shall conform to number 20219, 30219, 30227, 30279, 30313, 30324, or 30450 of FED-STD-595. For MCW applications, the complete exterior of the bag shall be covered overall with a white color in the range of 37778 through 37886 of FED-STD-595. The material shall show no evidence of delamination or degradation when heat sealed or fabricated into bags and shall not transfer any foreign odor or flavor to the product being packed.

5.1.1.1.1 Bag construction. The bag shall be formed by heat sealing to the size and design configuration as shown in figure 1, except that squared or rounded corners are acceptable. The heat seals shall be made in a manner that will assure the hermetic quality of the bag. The side and bottom seals shall have an average seal strength of not less than 6 pounds per inch of width and no individual specimen shall have a seal strength of less than 5 pounds when tested as specified in 4.5.1.3.

5.1.1.1.2 Bag filling and sealing. The brownie or the oatmeal cookie shall be placed into the bag in such a manner as to avoid contamination of the closure seal area. The filled bag shall be closed under a vacuum of not less than 22 and not more than 25 inches of mercury (see 4.5.3.3) with a heat seal not less than 1/4 inch wide. If thermal impulse or combination (heated curved bar with thermal impulse) sealing is used, any seal width from 1/8 to 7/16 inch will be acceptable. The closure seal location shall be as shown in figure 1. The average seal strength shall be not less than 6 pounds per linear inch, and no individual test specimen seal strength shall be less than 5 pounds when tested as specified in 4.5.5.

5.1.2.1 Form-fill-seal bags. Form-fill-seal bags shall consist of a tray-shaped body with a heat

sealable cover. The tray-shaped body of each bag shall be fabricated from 0.002-inch thick linear low density polyethylene bonded to 0.0007-inch thick aluminum foil with 10 pounds per ream polyethylene, and the opposite side of the aluminum foil shall be bonded to 0.00075-inch thick oriented polypropylene with 10 pounds per ream polyethylene. The cover of each bag shall be fabricated from 0.002 inch thick linear low density polyethylene bonded to 0.00035-inch thick aluminum foil with 10 pounds per ream polyethylene and bonding 0.0005-inch thick polyester to the opposite side of the aluminum foil with 10 pounds per ream polyethylene. The linear low density polyethylene shall be the copolymer of ethylene and octene-1, having a melt index range of 0.8 to 1.2 g/10 minutes in accordance with ASTM D 1238 and a density range of 0.918 to 0.922 g/cm^3 in accordance with ASTM D 1505. The color requirements of the exterior (polyethylene or polyester sides) of each laminate shall be as specified in 5.1.1.1. the material shall show no evidence of delamination or degradation when heat sealed or fabricated into bags and shall not transfer any foreign odor or flavor to the product being packed.

5.1.2.1.1 Pouch construction. The tray-shaped body and the tray-shaped cover shall be formed by drawing the flexible laminate material into an appropriately shaped cavity. The flat cover shall be in the form of a flat sheet of the barrier material taken from roll stock. When specified, one unit of product shall be placed in the tray-shaped body of the pouch. The filled pouch body shall be hermetically sealed with a vacuum level of not less than 22 inches of mercury. Pouch closure shall be effected by heat sealing together the cover and body along the entire pouch perimeter. The closure seal width shall be a minimum of 1/8 inch. Pouch integrity and air tightness of the closure seals shall be tested in accordance with 4.5.3.3. The closure seal shall have an average seal strength of not less than 6 pounds per inch of width and no individual specimen shall have a seal strength of less than 5 pounds per inch of width when tested as specified in 4.5.5. Alternatively, the filled and sealed pouch shall exhibit no rupture or seal separation greater than 1/16 inch or seal separation that reduces the effective closure seal width to less than 1/16 inch when tested for internal pressure resistance as specified in 4.5.5.1. The maximum outside dimensions of the sealed pouch shall be 4 to 5-1/2 inches wide by 5-1/4 to 6 inches long. A tear notch or serrations shall be provided on one outside edge or two opposite outside edges of the pouch to facilitate easy opening of the filled and sealed pouch. The sealed pouch shall not show any evidence of material degradation, aluminum stress cracking, delamination or foreign odor. Heat seals shall be free of occluded matter. Seals shall be free of impression or design on the seal surface that would conceal or impair visual detection of seal defects.

5.2 Packing. Level C packing. Packing shall be in accordance with 5.2.1.

5.2.1 Oatmeal cookies and brownies unit packed. When oatmeal cookies or brownies are preserved in accordance with 5.1, not more than 200 unit packs shall be packed flat in a snug-fitting fiberboard box constructed and closed in accordance with style RSC-L, type CF, class domestic, variety SW, grade 175 of PPP-B-636.

5.3 Labeling and marking.

5.3.1 Unit packs. Each unit (see 5.1.1) shall be clearly printed or stamped with permanent ink in large letters which is free of carcinogenic elements or ingredients. The color of the printing ink shall conform to number 20045, 20122, 30045, 30099, 30108, 30111, or 30140 of FED-STD-595. The following information shall be included:

a. Product name
b. Date 1/
c. Net weight
d. Contractors name and address
e. "Nutrition Facts" label in accordance with the Nutritional Labeling and Education Act (NLEA) and all applicable FDA/USDA regulations.

5.3.2 Shipping containers. In addition to any special marking required by the contractor or purchase order, shipping containers shall be marked in accordance with MIL-STD-129.

6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Acquisition requirements. Acquisition documents must specify the following:

a. Title, number, and date of this specification.
b. Type of product required (see 1.2).
c. Issue of DODISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.1.1 and 2.2).
d. When a first article is required (see 3.1, 4.4, and 6.3).
e. Provisions for approved preproduction samples (see 3.4.1 and 6.3).
f. When unit packing in accordance with 5.1 is required.

6.2 Award of contract. Award of contracts for the product specified in this document will be limited to plants known to maintain the required sanitation conditions of 3.5.

6.3 First article. When a first article is required, it shall be inspected and approved under the appropriate provisions of FAR 52.209-4. The first article should be a preproduction sample. The contracting officer should specify the appropriate type of first article and the number of units to be furnished. The contracting officer should also include specific instructions in acquisition documents regarding arrangements for selection, inspection, and approval of the first article.

6.4 Appropriate level of pack. Based on the conditions known or expected to be encountered during shipment, handling and storage of the specific item being procured, the procuring activity should select the appropriate level of pack in accordance with the criteria established in AR 700-15/NAVSUPINST 4030.28/AFR 71-6/MCO 4030.33A/DLAR 4145.7.

6.5 Subject term (key word) listing.

Dessert
Operational rations

6.6 Changes from previous issue. Marginal notations are not used in this revision to identify

changes with respect to the previous issue due to the extensiveness of the changes.

Custodians:	Preparing activity:
Army – GL	Army - GL
Navy - SA	
Air Force – 50	(Project 8920-0530)

Review activities:
Army – MD, QM
Navy - MC
DP - SS

AMSSB-RCF—F(N) (Richards/5037) 12 February 2003

TO: DSCP-HRAC (Galligan/8030)

SUBJECT: Follow-Up to ES03-038-S, (DSCP-SS-03-01620), Reply to Request for specification changes; MIL-C-44072C, Cookies, Oatmeal, and Brownies, Chocolate Covered

1. Subsequent to our interim response in January 03 that this case required clarification, a teleconference was held between Clem Galligan, DSCP, Mr. Andy Lobmeyer, Sterling Foods and Mr. Peter Sherman, this Center. During teleconference Mr. Lobmeyer elucidated the intent of his request. In the spirit of the exchange among the parties involved in the teleconference and the understanding that the document was last updated in 1990, Mr. Sherman held further discussions with Mr. Andy Konrady, QA FEST, and document updates were agreed upon. Accordingly, the following changes to MIL-C-44072C, are provided for use in all current, pending and future procurements until the document is formally amended or revised:

- Paragraph 5.1.2.1.1, delete in its entirety and substitute:

" Pouch construction. The tray-shaped body and the tray-shaped cover shall be formed by drawing the flexible laminate material into an appropriately shaped cavity. The flat cover shall be in the form of a flat sheet of the barrier material taken from roll stock. When specified, one unit of product shall be placed in the tray-shaped body of the pouch. The filled pouch body shall be hermetically sealed with a vacuum level of not less than 22 inches of mercury. Pouch closure shall be effected by heat sealing together the cover and body along the entire pouch perimeter. The closure seal width shall be a minimum of 1/8 inch. Pouch integrity and air tightness of the closure seals shall be tested in accordance with 4.5.3.3. The closure seal shall have an average seal strength of not less than 6 pounds per inch of width and no individual specimen shall have a seal strength of less than 5 pounds per inch of width when tested as specified in 4.5.5. Alternatively, the filled and sealed pouch shall exhibit no rupture or seal separation greater than 1/16 inch or seal separation that reduces the effective closure seal width to less than 1/16 inch when tested for internal pressure resistance as specified in 4.5.5.1. The maximum outside dimensions of the sealed pouch shall be 4 to 5-1/2 inches wide by 5-1/4 to 6 inches long. A tear notch or serrations shall be provided on one outside edge or two opposite outside edges of the pouch to facilitate easy opening of the filled and sealed pouch. The sealed pouch shall not show any evidence of material degradation, aluminum stress cracking, delamination or foreign odor. Heat seals shall be free of occluded matter. Seals shall be free of impression or design on the seal surface that would conceal or impair visual detection of seal defects."

- Table I and associated footnotes, delete in its entirety and substitute new Table I and associated footnotes as follows:

AMSSB-RCF—F(N) (Richards/5037) 12 February 2003
SUBJECT: Follow-Up to ES03-038-S, (DSCP-SS-03-01620), Reply to Request for specification changes; MIL-C-44072C, Cookies, Oatmeal, and Brownies, Chocolate Covered

TABLE I. Filled and sealed pouch defects 1/

Category		Defect
Major	Minor	
101		Tear, hole, or open seal.
102		Seal width less than 1/16 inch. 2/
103		Presence of delamination. 3/

104		**Unclean pouch. 4/**
105		**Pouch has foreign odor.**
106		Any impression or design on the heat seal surfaces which conceals or impairs visual detection of seal defects. 5/
107		Not packaged as specified.
108		Presence of stress cracks in the aluminum foil. 6/ 7/
	201	Label missing, incorrect, or illegible.
	202	Tear notch or serrations missing or does not facilitate opening.
	203	Seal width less than 1/8 inch but greater than 1/16 inch.
	204	Presence of delamination. 3/

1/ Any evidence of rodent or insect infestation shall be cause for rejection of the lot.

2/ The effective closure seal is defined as any uncontaminated, fusion bonded, continuous path, minimum 1/16 inch wide, from side seal to side seal that produces a hermetically sealed pouch.

3/ Delamination defect classification:

Major - Delamination of the outer ply in the pouch seal area that can be propagated to expose aluminum foil at the food product edge of the pouch after manual flexing of the delaminated area. To flex, the delaminated area shall be held between the thumb and forefinger of each hand with both thumbs and forefingers touching each other. The delaminated area shall then be rapidly flexed 10 times by rotating both hands in alternating clockwise-counterclockwise directions. Care shall be exercised when flexing delaminated areas near the tear notches to avoid tearing the pouch material. After flexing, the separated outer ply shall be grasped between thumb and forefinger and gently lifted toward the food product edge of the seal or if the separated area is too small to be held between thumb and forefinger, a number two stylus shall be inserted into the delaminated area and a gentle lifting force applied against the outer ply. If separation of the outer ply can be made to extend to the product edge of the seal with no discernible resistance to the

AMSSB-RCF—F(N) (Richards/5037) 12 February 2003
SUBJECT: Follow-Up to ES03-038-S, (DSCP-SS-03-01620), Reply to Request for specification changes; MIL-C-44072C, Cookies, Oatmeal, and Brownies, Chocolate Covered

gentle lifting, the delamination shall be classified as a major defect. Additionally, spot delamination of the outer ply in the body of the pouch that is able to be propagated beyond its initial borders is also a major defect. To determine if the laminated area is a defect, use the

following procedure: Mark the outside edges of the delaminated area using a bold permanent marking pen. Open the pouch and remove the contents. Cut the pouch transversely not closer than 1/4 inch (±1/16 inch) from the delaminated area. The pouch shall be flexed in the area in question using the procedure described above. Any propagation of the delaminated area, as evidenced by the delaminated area exceeding the limits of the outlined borders, shall be classified as a major defect.

Minor - Minor delamination of the outer ply in the pouch seal area is acceptable and shall not be classified as a minor defect unless it extends to within 1/16 inch of the food product edge of the seal. All other minor outer ply delamination in the pouch seal area or isolated spots of delamination in the body of the pouch that do not propagate when flexed as described above shall be classified as minor defects.

4/ Outer packaging shall be free from foreign matter which is unwholesome, has the potential to cause pouch damage (for example, glass, metal filings) or generally detracts from the clean appearance of the pouch. The following examples shall not be classified as defects for unclean:

a. Foreign matter which presents no health hazard or potential pouch damage and which can be readily removed by gently shaking the package or by gently brushing the pouch with a clean dry cloth.

b. Dried product which affects less than 1/8 of the total surface area of one pouch face (localized and aggregate).

c. Water spots.

5/ If doubt exists as to whether or not the sealing equipment leaves an impression or design on the closure seal surface that could conceal or impair visual detection of seal defects, samples shall be furnished to the contracting officer for a determination as to acceptability.

6/ Applicable to form-fill-seal pouches only.

7/ The initial examination shall be a visual examination of the closed package. Any suspected visual evidence of stress cracks in the aluminum foil (streaks, breaks, or other disruptions in the laminated film) shall be verified by the following physical examination. To examine for stress cracks, the inside surface of both tray-shaped bodies shall be placed over a light source and the outside surface observed for the passage of light. Observation of light through the pouch material in the form of a curved or straight line greater than 2 mm in length shall be evidence of the

presence of stress cracks. Observation of light through the pouch material in the form of a curved or straight line 2 mm in length or smaller or of a single pinpoint shall be considered a pinhole. Observation of ten or more pinholes per pouch shall be evidence of material degradation.

Table II, delete defect 109 and associated footnotes 4/ and 5/.

DONALD A. HAMLIN
Team Leader
DoD Food Engineering
Services Team

(ARichards)

CF: NSC:
Acheson
Alyward
Arcidiacono
Friel
Hamlin
Hill
Konrady A.
Richards
Sherman
Trottier
Valvano

CF: DSCP & SVCs:
Anthony
Arthur
Beward
Ferrante
Kavanagh
Lowry
Malason
Miller
Richardson H.
Salerno