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THE HISTORY AND EFFECTIVENESS OF THE ENLISTMENT BONUS
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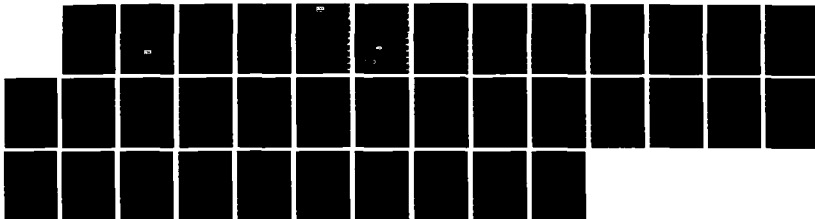
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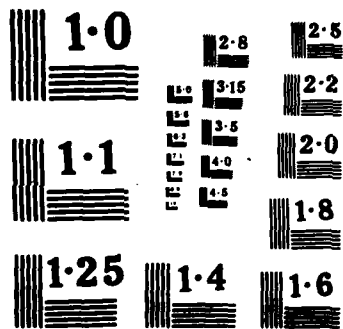
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RESEARCH MEMORANDUM

THE HISTORY AND
EFFECTIVENESS OF THE
ENLISTMENT BONUS PROGRAM
FOR PROCURING
NUCLEAR-FIELD PERSONNEL

Aline Quester
Sarah Jeffries

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1. Enclosure (1) is forwarded as a matter of possible interest.
2. This Research Memorandum documents the Navy's use of enlistment bonuses. Additionally it provides some evidence of their effectiveness for procuring nuclear field obligors.

Robert F. Lockman

ROBERT F. LOCKMAN
Director
Manpower Program

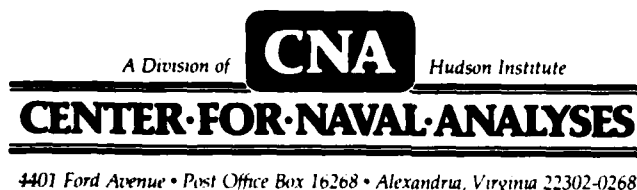
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THE HISTORY AND EFFECTIVENESS OF THE ENLISTMENT BONUS PROGRAM FOR PROCURING NUCLEAR-FIELD PERSONNEL

Aline Quester
Sarah Jeffries

Naval Planning, Manpower, and Logistics Division



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ABSTRACT

Enlistment bonuses are monetary incentives promised to potential recruits to induce them to sign contracts to join the Navy. The bonuses, paid upon successful completion of class A schools, have been awarded in military skill areas characterized by inadequate volunteer levels. This memorandum describes how the Navy has used enlistment bonuses. Additionally, it provides estimates of the efficacy of enlistment bonuses for procuring recruits for the nuclear field.

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INTRODUCTION

Enlistment bonuses are monetary incentives promised to potential recruits to induce them to sign contracts to join the Navy. The bonuses, paid upon successful completion of class A school, have been awarded in military skill areas characterized by chronically inadequate volunteer levels. This memorandum presents a short history of the Navy's Enlistment Bonus Program and then addresses the question of whether it has successfully prompted additional enlistments. The empirical focus here will be for obligors in the nuclear field.

BACKGROUND

Payment of enlistment bonuses is authorized by the Armed Forces Enlisted Personnel Bonus Revision Act of 1974 and its extensions; at present, legislative provisions governing enlistment bonuses have been extended to 30 September 1987. Although an enlistment bonus program was in effect in September 1974, the Navy terminated the program in March 1975. The current enlistment bonus program dates from July of 1978.

The Navy's use of the enlistment bonus program is flexible; eligible skill/ratings and bonus amounts are subject to modification based upon the Navy's current manpower requirements and are reviewed semiannually for this purpose. Table 1 provides a historical review of the enlistment bonuses given by the Navy.

The Navy applies the enlistment bonus to skill areas experiencing critical personnel shortages. Projected accession shortfalls are determined by identifying ratings that will not meet requirements set by the Navy based on strength-planning models. Enlistment quotas are then established for these designated skills. The bonus amount awarded a designated rating varies depending on the size of the projected shortfall relative to the overall accession requirement. Designated skills are reviewed periodically for increase, decrease, or termination of the bonus in accordance with the observed response to the award incentive.

For ratings in which the active-duty enlistment period is 6 years, the bonus is given to all recruits. If, however, the enlistment term for the rating is 4 years, recruits are given the choice of a 4-year enlistment without the bonus or a 5-year enlistment with the bonus. (No ratings with an initial enlistment period of 5 years have received a bonus, but probably for these ratings the choice would be a contract of 5-year/6-year (no bonus/bonus).) The enlistment bonus is contracted when an individual enlists and is paid upon successful completion of class A school. For accessions in the nuclear field, this training period is approximately 2 years.

TABLE 1
REVIEW OF THE NAVY'S EXPERIENCE WITH ENLISTMENT BONUSES

<u>Effective date</u>	<u>Program</u>	<u>Bonus amount</u>
1 Sep 1974 - Enlistment Bonus Program initiated	CTI	\$1,500
	CTR	\$1,500
	CTT	\$1,000
	EW	\$2,000
	GMM	\$1,500
	GMT	\$2,000
	MN	\$1,000
	TM	\$1,500
1 Jan 1975 - Changed	CTT	\$1,500
15 Mar 1975 - Enlistment Bonus Program terminated		
6 Jul 1978 - Enlistment Bonus Program reactivated	BT(ATF)	\$2,000
10 Dec 1979 - Added	NF (6YO)	\$2,000
21 Dec 1979 - Added	BT	\$1,500
	CTI	\$1,500
	CTR	\$1,500
	CTT	\$1,500
	GMG	\$1,500
	GMM	\$1,500
	MM	\$1,500
	MS	\$1,500
	OS	\$1,500
	SM	\$1,500
	ST	\$1,500
	TM	\$1,500
1 Oct 1982 - Changed	CTI	\$2,000
1 Jan 1983 - Added	CTO	\$1,500
	FTG/M (AEF)	\$1,500
	GMT (A)	\$2,000
	GSE (ATF)	\$1,500
	IM	\$1,500
	OM	\$1,500
	RM (ATF)	\$1,500
	SK	\$1,500

Deleted BT, MM, OS, ST, TM

TABLE 1 (Continued)

<u>Effective date</u>	<u>Program</u>	<u>Bonus amount</u>
1 Jan 1984 - Added	MR	\$1,500
Changed	CTI	\$3,000
	GMT (A)	\$1,500
	SM	\$2,000
Deleted BT (AEF), MS, GSE (ATF)		
23 Aug 1984 - Changed	NF	\$4,000
1 Oct 1984 - Added	GMT (B)	\$1,500
Changed	GMG/M	\$3,000
	GMT (A)	\$3,000
	MR	\$2,000
	SM	\$3,000
Deleted CTO, CTR/T, FTG/M, IM, OM, SK, RM (AEF)		
4 Jan 1985 - Changed	NF	\$5,000
1 Sep 1985 - Enlistment Bonus Program status	CTI	\$3,000
	GMG/M	\$3,000
	GMT (A)	\$3,000
	SM	\$3,000
	GMT (B)	\$1,500
	NF	
Targeted bonus	Sep-Nov	\$4,500
	Dec-Feb	\$5,250
	Mar-May	\$6,000
	Jun-Aug	\$3,750

Since September 1985, the Enlistment Bonus Program for obligors in the nuclear field has been based upon the shipment month. While the monthly volume of these accessions has historically been seasonal, the new bonus structure attempts to even the accession flows.

All nuclear-field candidates must be high school-diploma graduates in the upper mental groups. More qualified personnel have been available in the summer months immediately following high school graduation than in the winter months. Historically, summer accession goals have been approximately twice those of the winter months. Accommodating this surplus of recruits without building excess training capacity has required "pooling" personnel--accepting the excess supply of recruits, and having them wait in-service to enter training school until the more difficult recruiting months--a policy which costs an estimated \$3.1 million annually in wasteful delays and low-productivity job assignments.

The Targeted Bonus policy for nuclear personnel adopted in September 1985 is an attempt to set enlistment bonuses at a level so that school requirements can be met even in the most difficult accession months. Differential enlistment bonuses are set such that individuals are given sufficient incentives to delay entry until historically poor accession months, producing a level-loaded accession flow similar to training capacity. As table 1 indicates, these enlistment bonuses vary from \$3,750 in the historically high summer-accession months to \$6,000 in the spring (March-May).

Although the Navy has used the Enlistment Bonus Program extensively since 1980, CNA has never conducted a systematic analysis of the efficacy of bonuses. This paper provides a first step in that direction.

Before proceeding to the analysis, it is worthwhile to compare the Enlistment Bonus Program to other Navy program expenditures. Thus, table 2 compares the budget for the Enlistment Bonus Program to the budget for the Selected Reenlistment Bonus (SRB), as well as the amount spent for advertising. While the Enlistment Bonus Program is small relative to the SRB budget, it accounted for almost 70 percent of the Navy budget for advertising in FY 1984.

1. Steve Cylke and Lee Mairs, Memo OP-01B3, "Nuclear Field Accessions," 1 Aug 1984.

TABLE 2

THE ENLISTMENT BONUS PROGRAM BUDGET COMPARED
TO OTHER NAVY MANPOWER BUDGET ITEMS
(in millions of dollars)

<u>Fiscal year</u>	<u>Enlistment Bonus Program</u>	<u>Selected Reenlistment Bonus</u>	<u>Advertising expenditure</u>
1979	1.2	121.1	17.1
1980	5.8	162.9	21.5
1981	9.9	258.6	18.6
1982	10.6	211.1	17.2
1983	10.6	164.4	16.5
1984	11.1	182.9	14.2
1985	11.1	222.0	
1986 (projected)	12.1	269.6	

SOURCE: Enlisted and Selected Reenlistment bonus data are from LCdr. David B. Heine, OP-136C1. The advertising data are from historical FYDP information (program element 181712N (Advertising Activities: Operation and Maintenance, Navy)).

EFFICACY OF THE BONUS: AN ANALYSIS OF THE BONUS FOR THE NUCLEAR FIELD

To estimate the efficacy of the Enlistment Bonus Program, a data set for nuclear-field obligors that includes information from January 1974 to April 1985 was assembled. Data were collected on the unemployment rate, the levels of military and civilian pay, and the number of recruiters. During this period there were four bonus levels for new obligors in the nuclear field:

- o No bonus January 1974-November 1979
- o \$2,000 bonus December 1979-July 1984
- o \$4,000 bonus August 1984-December 1984
- o \$5,000 bonus January 1985-April 1985.

These bonus levels should provide enough variation to permit estimation of the efficacy of the bonus for attracting recruits. Since there are several potential measures of enlistment supply, reviewing these definitions will clarify the discussion that follows.

Enlistment Supply Definitions

Contracts measure the number of initial enlistment obligations signed, or contracted, within the month. Contracts may be divided into two types: direct ships and additions to the Delayed Entry Program (DEP). Direct ships in a month are those recruits who are shipping, i.e., commencing active duty, within the same month that they contracted their initial obligation. Additions to the DEP are recruits who sign a contract and enter the DEP to join a pool of recruits (formally enlisted in an Individual Ready Reserve (IRR) status) who have contracted to begin active duty in a specific future month, up to one year after their initial enlistment in DEP. Figure 1 illustrates the historical pattern for nuclear field additions to the DEP.

Monthly contracts are distinct from total shipments (accessions). Total shipments for a month are the number of recruits who commence active duty that month; figure 2 depicts how total shipments or accessions for the nuclear field have varied over time. These accessions can be either direct ships or shipments from the DEP (recruits who contracted their enlistment obligation and entered the DEP pool sometime in the past year). The Navy sets goals for these monthly accessions, and the accession or monthly shipment goal is the number of accessions regarded as optimal by the Navy for that month. Figure 3 illustrates both the accession goal and the actual accessions.

Another potential measure of enlistment supply is the accession shortfall, which is the difference between the accession or shipment goal and the number actually shipped. When this difference is positive, the Navy has missed its shipment goal; the number of accessions is short of what is desired. Figure 4 depicts the historical pattern of this difference.

Estimation

The model was estimated with a linear functional form by ordinary least squares, using monthly data from January 1974 to April 1985 (134 observations). Three dependent variables were used in the regression equation as a measure of first-term military enlistment: additions to the DEP (ADDEP), total shipments (TOTSHIP), and the difference between the shipment goal and shipments (SHORT). Table 3 contains the variable definitions and table 4 provides the means and standard deviations for the variables. Each of these dependent variables was used with three different specifications for the "economic conditions" which contribute to the general recruiting climate. The first specification contains only the unemployment rate (UNEMP), the second contains both the ratio of military to civilian pay (PAY) and UNEMP, while the third uses a constructed variable called EC INDEX. EC INDEX is defined as follows:

$$\text{Military pay} / (\text{Manufacturing wage index}) (1 - \text{Unemployment rate}).$$

Fig. 1: ADDITIONS TO DEP
(Nuclear Field)

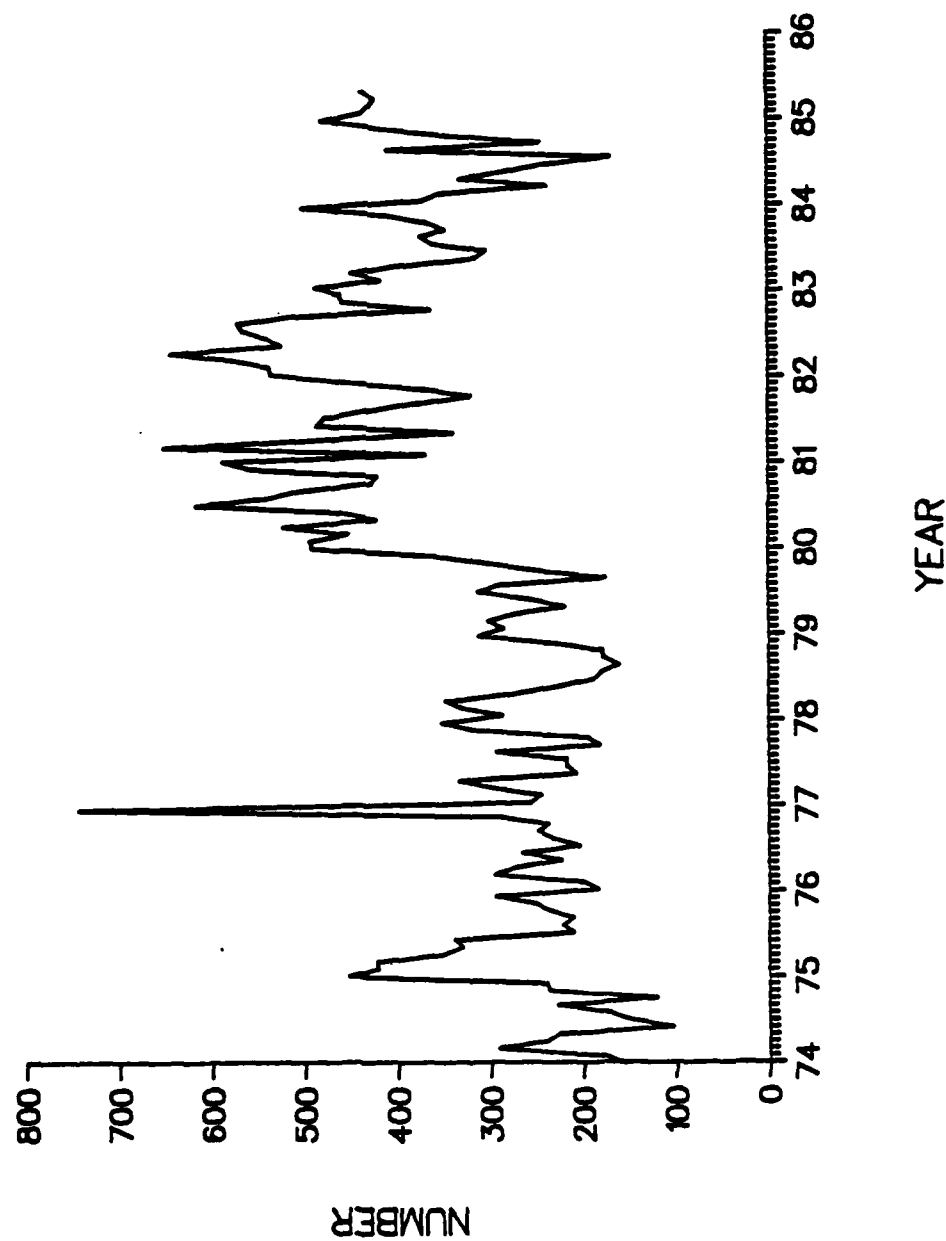


Fig. 2: TOTAL SHIPMENTS
(Nuclear Field)

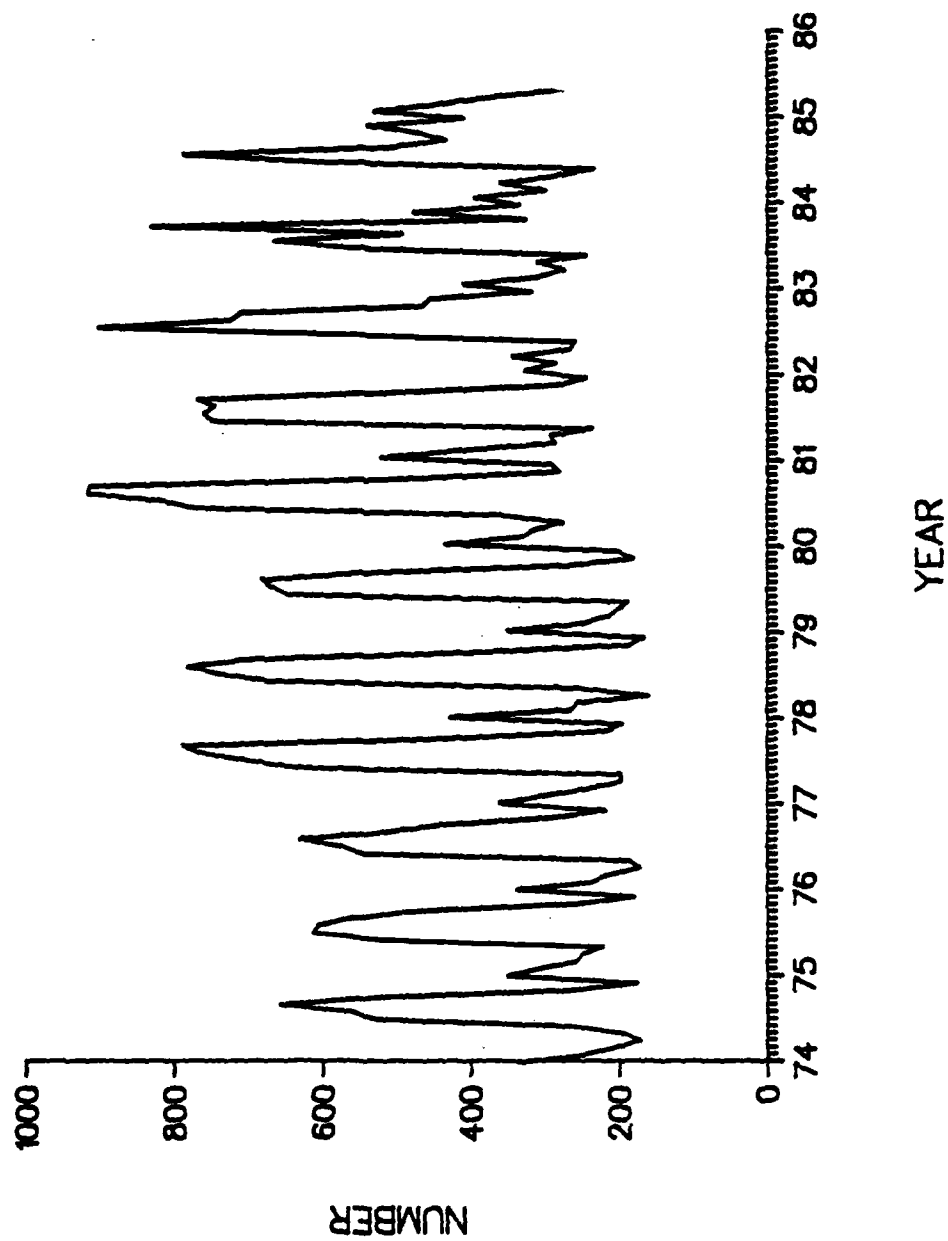


Fig. 3: TOTAL SHIPMENTS AND THE
ACCESSION GOAL (Nuclear Field)

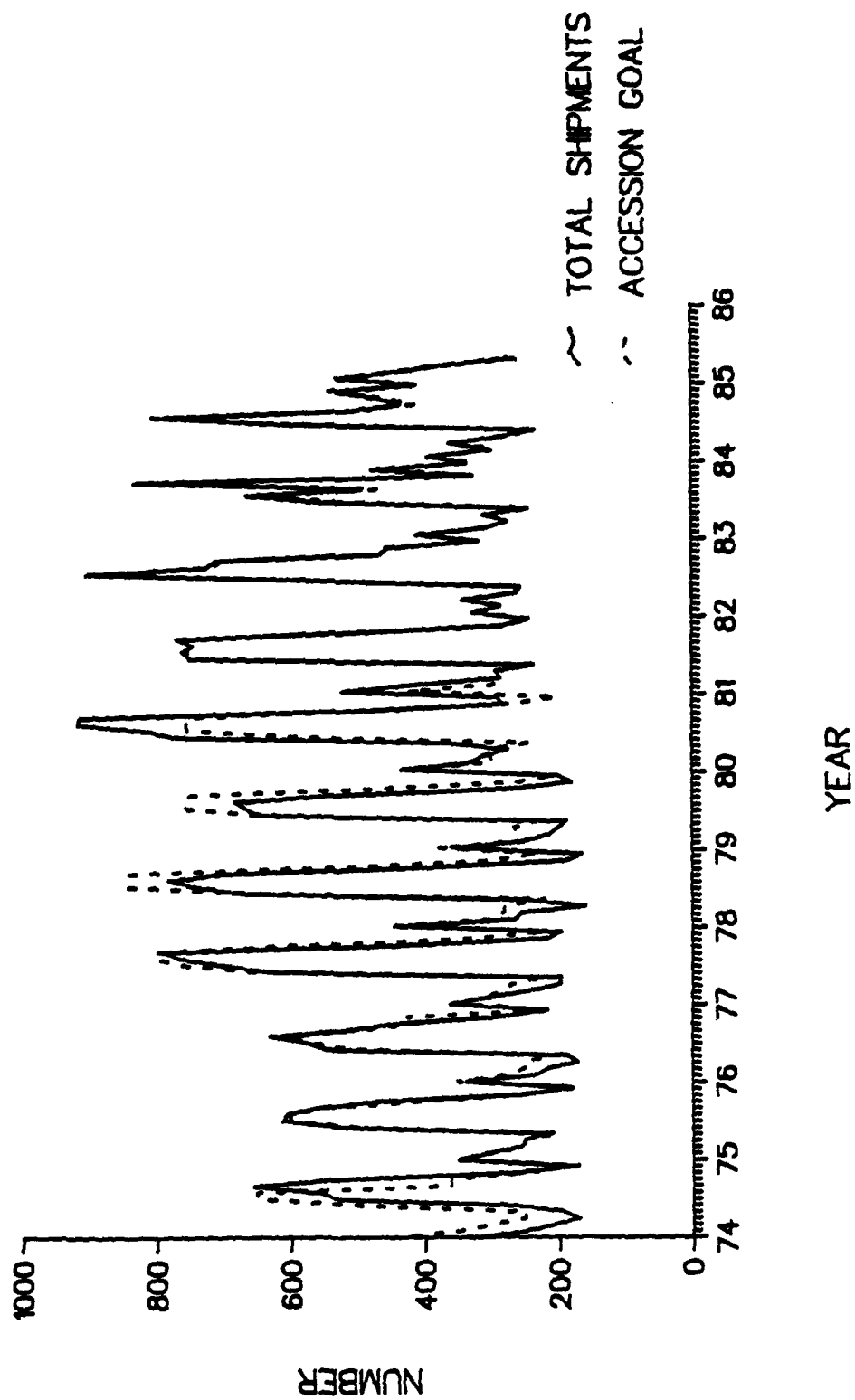


Fig. 4: SHIPMENTS SHORTFALLS
(Nuclear Field)

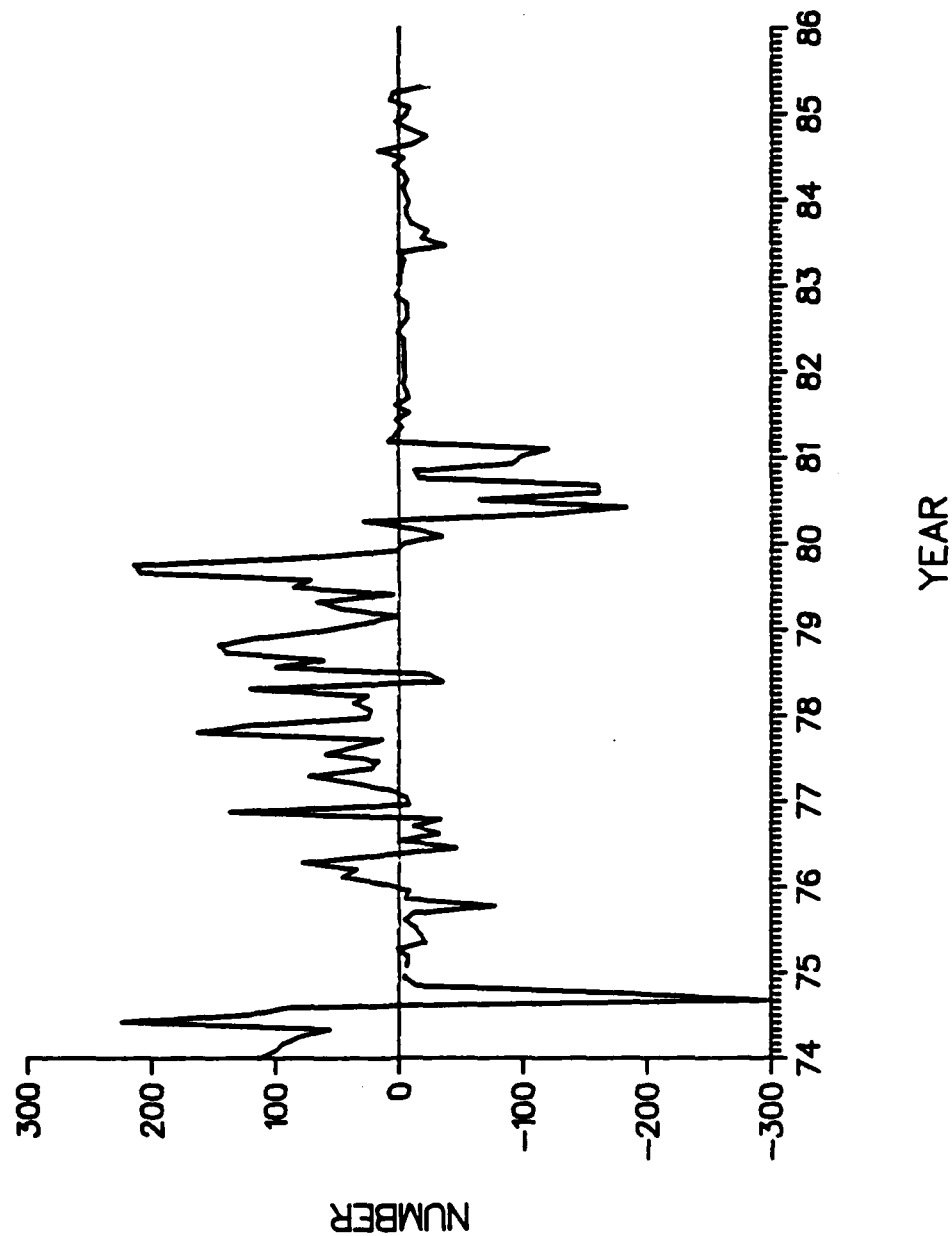


TABLE 3

VARIABLE DEFINITIONS

RECS:	The number of production recruiters for that month. Source: Navy Recruiting Command (CNRC).
BONUS:	Enlistment bonuses, in thousands of dollars, for the nuclear-field recruits. Source: OP-136.
PAY:	The ratio of military to civilian pay. To construct this variable, the annualized present value of a 4-year enlistee's pay (basic pay, quarters, and subsistence) was calculated. A 20 percent discount rate was used. Next, this military-pay variable, in thousands, was divided by the manufacturing wage (normalized to equal 1 in July 1973). Finally, PAY was calculated by filtering the variable (a 12-month moving average, centered at the current month). Source: <u>Uniformed Services Almanac</u> for military pay; <u>Monthly Labor Review</u> for manufacturing wage.
UNEMP:	Monthly unemployment rate (deseasonalized) for males 16-19 years. Source: <u>Monthly Labor Review</u> .
EC INDEX:	The expected value of military and civilian compensation. EC INDEX was calculated by adjusting the manufacturing wage for the probability of finding employment in the civilian sector, $(1 - \text{Unemployment rate})$, and then using this adjusted manufacturing wage in a recalculation of PAY. It is equivalent to dividing PAY by $(1 - \text{Unemployment rate})$.
DS:	Direct ships of nuclear-field recruits for the month, i.e., individuals commencing active duty within the same month that they contracted their initial obligations. Source: <u>Production Summaries</u> , CNRC.
GOAL:	Navy monthly accession goal for the nuclear field. Source: <u>Production Summaries</u> , CNRC.
M1 to M11:	Monthly dummy variables, January through November. Variable assumes the value 1 for the appropriate month, otherwise zero.
DRECS:	Dummy variable equal to 1 for those months in which no data are available for RECS. The RECS variable has the average number of recruiters (3,622) for these months.

TABLE 3 (Continued)

GI:	A dummy variable equal to 1 in December 1976, intended to capture the effect of the expiration of the GI Bill, otherwise zero.
TOTSHP:	Total number of nuclear-field accessions in the month. Source: <u>Production Summaries</u> , CNRC.
ADDEP:	Additions to DEP; the number of recruits who sign contracts to commence active duty sometime in the next 12 months (but not in the current month). Source: <u>Production Summaries</u> , CNRC.
SHORT:	The difference between the accession goal and the actual accessions ($SHORT = GOAL - TOTSHP$).

TABLE 4
VARIABLE MEANS AND STANDARD DEVIATIONS

	<u>Mean</u>	<u>Standard deviation</u>
TOTSHP	422.03	200.52
ADDEP	342.22	128.75
SHORT	8.54	70.44
RECS	3,620.37	131.14
BONUS	1.12	1.32
UNEMP	19.03	2.97
PAY	5.39	.19
EC INDEX	6.66	.37
DS	99.85	72.66
GOAL	430.57	193.47
DRECS	.43	.50

EC INDEX represents the expected relative military wage: the probability of obtaining the civilian wage is the probability of finding civilian-sector employment (1 - Unemployment rate) times the civilian wage.

Here is the general specification for the three additions to DEP (ADDEP) equations:

$$\text{ADDEP} = f(\text{BONUS, economic climate variables, RECS, DS, M1, ..., M11, DRECS, GI}).$$

More individuals are expected to enlist in the DEP when the enlistment bonus (BONUS) is larger and when economic conditions favor the military (PAY, UNEMP, and EC INDEX should all be positively related to ADDEP). The sign on the RECS variable is also expected to be positive; more recruiters should bring in more recruits. The monthly dummy variables (M1 to M11) are designed to capture seasonal patterns in contracts written for the DEP; fewer individuals are added to the DEP in the summer, but more are added in the early months of the calendar year.

The GI variable is a dummy variable for 1 month, December 1976. This was the last month for which individuals could obtain GI Bill eligibility. As figure 1 indicates, many more individuals signed contracts and were added to the DEP in this month. DRECS is simply a dummy variable to control for the months in which data for recruiters were unavailable (1/1974 to 9/1978). In these months the recruiter variable, RECS, was assigned the mean value for recruiters and DRECS was assigned the value 1. (In all other months DRECS assumes the value zero.) This procedure, which does not necessitate removing observations when one variable's information is missing, estimates the effect of recruiters only from the available recruiter data with the DRECS variable subsuming the effects of the missing data. The coefficient on DRECS cannot be unambiguously interpreted since it captures all influences specific to the period for which the recruiter data are missing.

All specifications of the additions to DEP equation control for the level of direct ships within the month. This is important because recruiters will only add recruits to the DEP if they do not need any more direct ships to meet their monthly shipment goals. Table 5 presents the results of the estimation.

Results of the Estimation

The coefficient estimates as well as the general explanatory power of the equation is similar across the three specifications for measures of the economic climate. Navy policy variables, BONUS and RECS, are positive and significant: more recruiters and higher bonuses are significant factors in stimulating nuclear-field enlistments into the DEP. The recruiter elasticity suggested by these estimates is 2.22.

TABLE 5

REGRESSION RESULTS WITH ADDITIONS TO DEP (ADDEP)
AS THE DEPENDENT VARIABLE

	Specifications		
	1	2	3
RECS	.215 (3.60)	.209 (3.47)	.210 (3.48)
BONUS	29.769 (3.45)	30.725 (3.53)	32.209 (3.73)
UNEMP	3.939 (1.22)	5.833 (1.50)	--
PAY	--	-48.000 (-.88)	--
EC INDEX	--	--	13.666 (.63)
DS	-.456 (-2.75)	-.427 (-2.52)	-.536 (-3.58)
M1	20.605 (.65)	18.445 (.58)	24.148 (.76)
M2	-11.205 (-.36)	-13.483 (-.42)	-8.263 (-.26)
M3	27.662 (.88)	25.350 (.80)	30.529 (.97)
M4	1.301 (.04)	-.636 (-.02)	2.672 (.09)
M5	-70.141 (-2.20)	-72.723 (-2.27)	-67.867 (-2.12)
M6	-58.046 (-1.76)	-60.999 (-1.84)	-55.185 (-1.67)
M7	-32.249 (-.96)	-34.454 (-1.02)	-26.466 (-.80)

TABLE 5 (Continued)

	Specifications		
	1	2	3
M8	-15.795 (-.47)	-18.712 (-.55)	-9.465 (-.28)
M9	-81.075 (-2.48)	-83.204 (-2.54)	-76.977 (-2.36)
M10	-88.621 (-2.72)	-90.057 (-2.76)	-84.425 (-2.60)
M11	-33.332 (-1.02)	-34.655 (-1.06)	-30.329 (-.93)
DRECS	-47.630 (-1.91)	-32.971 (-1.10)	-47.261 (-1.68)
GI	453.786 (5.89)	445.942 (5.74)	461.765 (5.99)
Constant	-454.268 (-1.95)	-217.224 (-.61)	-450.762 (-1.60)
R ²	.68	.68	.68

Increasing recruiters by 10 percent increases the number of individuals added to the DEP by 22.2 percent.¹ While these estimates may seem excessively high, it should be remembered that recruiters first fulfill their shipment goal with direct ships and only then add individuals to the DEP. Additions to the DEP are thus a residual and, as such, will respond much more sharply to the addition (or subtraction) of Navy resources.

To evaluate the effect of an increase in the nuclear field enlistment bonuses, a direct examination of the coefficient is probably more revealing than a computation of the elasticity. The estimates

1. The elasticity is defined as follows:

$$\frac{\partial \text{ADDEP}}{\partial \text{RECS}} \left(\frac{\text{RECS}}{\text{ADDEP}} \right).$$

It is evaluated at the mean of the data, thus:

$$.21 \left(\frac{3,620.37}{342.22} \right) = 2.22.$$

suggest that a \$1,000 increase in the bonus adds between 29 and 32 recruits to the DEP. (Historical changes in the enlistment bonuses have been in thousand-dollar increments.)

The variables designed to measure the economic climate are not statistically significant in any of the specifications. The PAY variable has the wrong sign and while UNEMP and EC INDEX are correctly signed, they also are not significant. These results suggest that a different approximation of the business cycle is needed to estimate the economic conditions of the military recruiting climate for the nuclear field. Variables that measure the military sector and civilian-sector opportunities for all youth apparently are not accurate proxies of the civilian-sector alternatives for recruits to the nuclear field.¹

DS, direct ships, is negative and significant; when the monthly accession goal is high, recruiters will encourage enlistees to ship directly rather than joining the DEP pool in order to meet the goal. Therefore, the higher the number of direct ships in a month, the fewer the additions to DEP.

Table 6 reports the results for total shipments or accessions. The three specifications are similar to those for additions to the DEP, except that instead of DS, the appropriate control variable for total shipments is the accession goal for the month (GOAL).

Again, the explanatory power of the BONUS and RECS variables are quite strong. Further, the variables estimating economic conditions have the expected sign and are more significant than those in the previous specification. This result suggests that perhaps those recruits who ship directly are more responsive to current economic conditions than those who enlist in the DEP (Total shipments include both direct ships and shipments from the DEP).

The coefficient estimates also suggest that the elasticity of total shipments with respect to recruiters is .60; increasing the number of production recruiters by 10 percent increases the number of accessions by 6 percent.² The smaller magnitude of the recruiter elasticity for accessions versus additions to the DEP is not surprising. Moreover, recruiter elasticity for accessions is still quite large, indicating that additional recruiters are an effective resource for procuring additional recruits.

1. For these youth, college could be the most relevant alternative.

2. The elasticity is defined as follows:

$$\frac{\partial \text{TOTSHP}}{\partial \text{RECS}} \left(\frac{\text{RECS}}{\text{TOTSHP}} \right).$$

It is evaluated at the mean of the data, thus:

$$.07 \left(\frac{3,620.37}{422.03} \right) = .60.$$

TABLE 6

REGRESSION RESULTS WITH TOTAL SHIPMENTS (TOTSHP)
AS THE DEPENDENT VARIABLE

	Specifications		
	1	2	3
RECS	.064 (1.48)	.072 (1.61)	.073 (1.73)
BONUS	18.771 (3.00)	17.219 (2.62)	17.530 (2.73)
UNEMP	4.015 (1.89)	2.920 (1.15)	--
PAY	--	38.409 (.78)	--
EC INDEX	--	--	31.724 (1.95)
GOAL	.723 (10.77)	.744 (10.29)	.742 (10.70)
M1	36.848 (1.32)	33.810 (1.20)	34.036 (1.22)
M2	12.079 (.46)	11.360 (.43)	11.519 (.44)
M3	-7.843 (-.30)	-8.261 (-.32)	-8.275 (-.32)
M4	-31.126 (-1.21)	-30.881 (-1.20)	-30.963 (-1.20)
M5	.522 (.02)	2.016 (.08)	2.07 (.08)
M6	108.175 (3.02)	102.031 (2.78)	102.622 (2.84)
M7	110.088 (2.61)	99.621 (2.25)	100.736 (2.34)
M8	113.484 (2.89)	104.645 (2.56)	105.616 (2.64)

TABLE 6 (Continued)

	Specifications		
	1	2	3
M9	124.521 (3.24)	116.014 (2.90)	116.987 (2.99)
M10	39.177 (1.31)	34.352 (1.12)	34.943 (1.16)
M11	-5.704 (-.20)	-8.157 (-.29)	-7.709 (-.27)
DRECS	6.814 (.42)	-6.246 (-.27)	-6.427 (-.39)
Constant	-261.590 (-1.74)	-474.829 (-1.53)	-428.209 (-2.46)
R ²	.91	.91	.91

The enlistment bonus effects are still strong in this specification. The coefficient estimates suggest that a \$1,000 increase in the bonus will increase the number of total shipments by 17 or 18 recruits.

All of the specifications control for the total shipments goal (GOAL). The effect of GOAL is positive and significant; when the accession goal is higher, more recruits are shipped. This specification does not include GI, the dummy variable designed to capture the effect of the expiration of the GI Bill. Since this effect would involve only the direct ships, not those shipping from the DEP, this variable was excluded from the equation.

Table 7 reports the results for the equations that estimate the difference between the shipment goal and the shipments (SHORT). The Navy incentive variables, as well as those measuring the economic climate, all have the expected negative sign. The SHORT variable, when positive, indicates that the number of accessions is less than desired. Therefore, the regression coefficients are interpreted as follows: the higher the bonus (number of recruiters, military pay), the less likely the Navy is to be short of its nuclear-field accession goal. Enlistment bonuses, the number of production recruiters, and to a lesser extent, the current economic conditions are all significant factors in reducing the probability of accession shortfalls. As in the TOTSHIP regression

TABLE 7

REGRESSION RESULTS WITH THE DIFFERENCE BETWEEN
SHIPMENT GOAL AND SHIPMENTS (SHORT)
AS THE DEPENDENT VARIABLE

	Specifications		
	1	2	3
RECS	-.064 (-1.48)	-.072 (-1.61)	-.073 (-1.73)
BONUS	-18.771 (-3.00)	-17.219 (-2.62)	-17.530 (-2.73)
UNEMP	-4.015 (-1.89)	-2.920 (-1.15)	--
PAY	--	-38.409 (-.78)	--
EC INDEX	--	--	-31.724 (-1.95)
GOAL	.277 (4.12)	.256 (3.54)	.258 (3.72)
M1	-36.848 (-1.32)	-33.810 (-1.20)	-34.036 (-1.22)
M2	-12.079 (-.46)	-11.360 (-.43)	-11.519 (-.44)
M3	7.843 (.30)	8.261 (.32)	8.275 (.32)
M4	31.126 (1.21)	30.881 (1.20)	30.963 (1.20)
M5	-.522 (-.02)	-2.016 (-.08)	-2.070 (-.08)
M6	-108.175 (-3.02)	-102.031 (-2.78)	-102.622 (-2.84)
M7	-110.088 (-2.61)	-99.621 (-2.25)	-100.736 (-2.34)

TABLE 7 (Continued)

	Specifications		
	1	2	3
M8	-113.484 (2.89)	-104.645 (-2.56)	-105.616 (-2.64)
M9	-124.521 (-3.24)	-116.014 (-2.90)	-116.987 (-2.99)
M10	-39.177 (-1.31)	-34.352 (-1.12)	-34.943 (-1.16)
M11	5.704 (.20)	8.157 (.29)	7.709 (.27)
DRECS	-6.814 (-.42)	6.246 (.27)	6.427 (.39)
Constant	261.590 (1.74)	474.829 (1.53)	428.209 (2.46)
R ²	.24	.23	.24

equation, GOAL is positive and significant; the higher the accession goal, the more likely the Navy accessions will be short of goal.

Moreover, even when the observations are restricted to the months in which the Navy did not meet its accession goal for the nuclear field, the estimated equations exhibit the same statistically significant positive effects of the bonuses (see appendix A). The results for this restricted data set are relegated to the appendix because the number of observations is not large enough to permit a disentangling of the independent effects of the bonus, recruiters, pay, and unemployment. This problem is compounded because the numbers of production recruiters are unavailable for the majority of the observations in the restricted data set.

CONCLUSION

The efficacy of the enlistment bonus program is clearly established by its significance for three measures of recruit procurement and across the specifications of the economic climate. Increasing the bonus by \$1,000 adds about 30 new obligors to the DEP, increases total shipments by about 18 recruits, and reduces the number of nuclear-field recruits the Navy will be short by about 18.

This result suggests some optimism for the success of the new Targeted Bonuses for nuclear-field obligors. Whether the bonuses will provide sufficient incentive to change historical accession patterns and shift recruits into less popular shipment months is still unknown. CNA will, however, monitor the results of the new program in a study, the Targeted Enlistment Bonus Study (Study Director, Tim Cooke).

APPENDIX A

ESTIMATION OF THE MODEL ON RESTRICTED DATA SET

APPENDIX A

ESTIMATION OF THE MODEL ON RESTRICTED DATA SET

The following observations are those for which SHORT (the difference between the shipment GOAL and shipments) is positive:

o	1974	July, August
o	1975	April
o	1976	January-May, November
o	1977	February-December
o	1978	January-April, July-December
o	1979	January-October
o	1980	April
o	1981	March-April, June, August
o	1982	November
o	1983	No observations
o	1984	May, July, November
o	1985	February-March

Unfortunately, the majority of these 57 monthly observations, when the Navy did not make its nuclear-field accession goal, is in the period for which recruiter data are unavailable. Thus, estimated recruiter effects are probably not correct and should be interpreted cautiously.

TABLE A-1

VARIABLE MEANS AND STANDARD DEVIATIONS

	<u>Mean</u>	<u>Standard deviation</u>
TOTSHP	388.16	209.29
ADDEP	281.09	107.28
RECS	3,583.75	138.07
BONUS	.53	1.21
UNEMP	17.24	2.23
PAY	5.342	.18
EC INDEX	6.46	.32
DS	130.12	65.74
GOAL	448.19	213.21
DRECS	.58	.50

TABLE A-2

ADDITIONS TO DEP

	Specifications		
	1	2	3
RECS	.190 (2.07)	.192 (2.14)	.171 (1.87)
BONUS	41.551 (3.33)	43.610 (3.55)	48.738 (4.01)
UNEMP	3.239 (.59)	7.770 (1.31)	--
PAY	--	-131.960 (-1.75)	--
EC INDEX	--	--	-18.389 (-.51)
DS	-.512 (-2.40)	-.429 (-2.00)	-.607 (-3.12)
DRECS	-28.503 (-.86)	-1.240 (-.03)	-12.048 (-.33)
Constant	-394.617 (-1.09)	196.122 (.40)	-151.320 (-.35)
R ²	.57	.59	.57

TABLE A-3
TOTAL SHIPMENTS

	Specifications		
	1	2	3
RECS	-.069 (-1.23)	-.075 (-1.32)	-.055 (-.93)
BONUS	15.913 (2.15)	17.759 (2.33)	17.806 (2.25)
UNEMP	9.127 (2.69)	10.446 (2.86)	--
PAY	--	-51.390 (-.96)	--
EC INDEX	--	--	41.416 (1.61)
GOAL	.961 (29.53)	.960 (29.43)	.956 (28.17)
Constant	32.503 (.17)	297.535 (.88)	-120.966 (-.48)
R ²	.94	.94	.94

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