To: Robert Tinney; Army Research Institute
From: Stepher Sylwester; Systems, Research and Applications
            Corp. (SRA)
Re: Final Report for calculation of ACOL values

This memo serves as the final report for the "Calculation of the Annualized Cost of Leaving (ACOL) the Army and Analyses of the Effects of Selective Reenlistment Bonuses (SRB's)" study, also known as the ACOL project. All tasks outlined in the contract have been accomplished. They are described below.

Task 1: Calculation of ACOL Values

For CMFs 11, 63, 71, 19, 29, 51, and 76, SRA has created and delivered two tapes of ACOL values along with the appropriate documentation.

Task 2: Technical Consulting for Retention Modeling

Senior SRA members have provided consulting services to ARI over the project term.

Task 3: Delivering ACOL Software and Datasets

SRA has installed and tested the ACOL software and datasets on the NIH mainframe.

Other Tasks:

Three monthly reports and one final report have been delivered.

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To:        Bob Tinney, Other ACOL Dataset Users; Army Research
           Institute
From:      Steve Sylwester; Systems, Research and Applications
           Corp. (SRA)                        ⟨ SOS ⟩
Re:        ACOL Dataset User's Guide,
           February 23, 1990, xxx03ARI.ACL
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This memo describes the ACOL datasets that SRA has produced
for Bob Tinney at ARI. Please also refer to SRA's report on Army
Compensation Models[1] and documentation by Fu Associates
describing the Enlisted Panel Research Database[2].

The source data is the Enlisted Panel Research Database
(EPRDB), a longitudinal file of Army enlisted personnel
constructed by Fu Associates using data primarily from DMDC. SRA
drew extracts from the EPRDB for 10 Career Management Fields
(CMFs) and converted these extracts into event-based files, where
"events" are defined as extensions, reenlistments, or
separations. Next, SRA calculated ACOL values and wrote out a
new dataset containing accession data and a variable number of
reenlistment and separation (one maximum) snapshots.

The ACOL datasets provided to ARI are based on a number of
assumptions. This memo describes these assumptions, and also
lists what data screens were applied. This is important since,
to retain ultimate flexibility for ARI's analysts, the data files
produced contain a large number of variables, some of which may
have missing or out-of-range data.

Calculating ACOLs. The ACOL values are calculated as
described in <u>Army Reenlistment Models</u>, the baseline model, with
the following exceptions:

- **Dependents.** Individuals with no dependents have some
  chance of obtaining dependents in the future, which
  affects military pay. This is modeled here.

- **SRBs for MOS Changers.** The ACOL amounts do not
  include SRBs. For flexibility, the SRB multiplier and
  annualized SRB dollar amount are included as separate
  variables, along with a dummy variable indicating
  whether or not the individual changed to a new MOS.
  Note that the ACOL and annualized SRB amounts are
  additive.

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[1]Smith, Sylwester and Villa, <u>Army Reenlistment Models</u>, Army
Compensation Project, SRA, 1989.

[2]Noznisky, Ramsey and Younkman, <u>Development of the Enlisted
Panel Research Data Base Core Data Set</u>, Fu Associates, 1989.

Screens/Sample Selection Criteria. In calculating ACOLs for this project and for SRA's Army Compensation studies, the individual was censored under any one of several conditions. For maximum analysis flexibility, the censoring conditions applied here are less restrictive than hose used in SRA's reenlistment analyses.

Screens implemented in this effort:

* sex unknown (<1 or >2),
* race ethnic unknown (<1 or >6),
* AFQT not 1-99,
* entry age out of range (<17 or >50),
* fiscal year of entry unknown or out of range (<74 or >84),
* individual changes CMF before decision,
* ETS unknown or out of range (<FY74 or >FY87),
* >72 months of service at first decision point,
* unknown or <1 months of service,
* bad dependents or education code (<1), or
* unknown number of dependents.

The following screens were NOT applied in this effort, though they were applied in SRA's retention analyses:

> home unknown (<1 or >56),
> marital/dependents status at accession unknown (<1 or >29),
> education code at accession unknown (<1 or >13),
> prior service or unknown prior service code (<> 1),
> term of enlistment not 2-4 years,
> separation occurred early (>6 months before ETS),
> paygrade < 3 or unknown, or
> unknown time in grade or marital status.

File Layout. The ACOL files, one per CMF, consist of individual accession and event (reenlistment/separate) records. Each individual has one accession record and one or more event records. Because the number of events is not known prior to file creation, the record types are flagged by one-letter codes. Each accession record is preceded by the letter 'A' on the previous line, and is then followed by exactly one event record. Subsequent event records, if any exist, are always preceded by the letter 'E' on the previous line. The letter 'A' denotes the start of a new individual. 'Z' denotes the end of the file.

Data Codes. This section describes the variables on the ACOL dataset. Note that missing values are not written in any unique format, such as '.' in SAS, so range checking is suggested. ACOL values (using Time to Grade models) that could not be calculated due to missing data are coded as -99.9999.

In the 'Field Width' column, the first (or only) digit indicates the total number of columns for the value. A value, if any, after the decimal point indicates the number of digits trailing the decimal point. A lower case 'c' after the field

A-1

width indicates character data.

VARIABLE	FIELD WIDTH
<ACCESSION RECORD INDICATOR>	
'A'	1
<ACCESSION RECORD>	
Accession Record from EPRDB	190 (see EPRDB documentation)
Education Benefits Program Code	1
1 = standard VEAP	
2 = GI Bill eligible	
3 = Super VEAP	
4 = Non-contributory VEAP	
5 = Tuition assistance program	
6 = Ultra-VEAP/ACF	
7 = MORE, Phase I	
Fiscal Year of Entry	2
Educational Benefit Amount ($000s)	6.3
State Unemployment at Accession	5.2
<EVENT RECORD>	
FY Record from EPRDB	140 (see EPRDB documentation)
Reenlist (yes=1)	1
Changes MOS (yes=1)	1
Eligible - ISC Definition (yes=1)	1
Eligible - Army Definition (yes=1)	1
ETS - Fiscal Year	2
ETS - Calendar Year	2
ETS - Month	2
Extension Length, Months	2
Months Prior to ETS for Decision	3
Months of Service at ETS	3
Time in Grade	3
ISC	3
SRB Multiplier[3]	4.1
State Unemployment Rate	4.1
National Unemployment Rate	4.1
Youth Unemployment Rate[4]	4.1

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[3]Highest multiplier applicable to the MOS in a six-month period.

[4]Rate at first decision point is for 20-24 year olds; second decision point rate is for 25-30 year olds.

CMF Eligibility Rate[5]	5.3
Annualized SRB Amount ($000s), Mean TTG	5.3
Annualized SRB Amount ($000s), TTG Model	5.3
ACOL ($000s), Mean TTG	12.4
ACOL/Pay Elasticity[6], Mean TTG	12.4
ACOL ($000s), TTG Model	12.4
ACOL/Pay Elasticity[6], TTG Model	12.4
Primary MOS	3c
New Primary MOS	3c
Reenlistment Eligibility Code - Army	2c

1-character indicator for either:
'A': next accession record,
'E': additional (2nd or beyond) event record, or
'Z': end of data.

Files on Tape. The tape dated February 12, 1990 contains 3 ACOL data sets (version 3: xxx03ari.acl). The tape is written in EBCDIC at 6250 BPI in a fixed block format, with logical record length of 251, and blocksize of 2510. The data sets are placed on the tape in the following order:

CAREER MANAGEMENT FIELD	NUMBER OF INDIVIDUALS
11 Infantry	39,542
63 Mechanical Maintenance	30,341
76 Supply	17,060

The tape dated February 23, 1990 contains 7 ACOL data sets (version 3: xxx03ari.acl). The tape is written in EBCDIC at 6250 BPI in a fixed block format, with logical record length of 251, and blocksize of 2510. The data sets are placed on the tape in the following order:

CAREER MANAGEMENT FIELD	NUMBER OF INDIVIDUALS
71 Administration	17,567
19 Armor	14,113
29 Commun-Electronic Maintenance	4,235
51 General Engineering	5,977
96 Military Intelligence	2,095
98 Electronic Warfare Operations	4,021
33 Electronic Warfare Maintenance	423

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[5]Annual rate is based on Army definition of eligibility.

[6]Assumes 10% increase in pay.