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RESEARCH MEMORANDUM

PRETRAINED INDIVIDUAL MANPOWER RESOURCES AND REQUIREMENTS

Martha E. Shiells

A Division of CNA Hudson Institute

CENTER FOR NAVAL ANALYSES

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The Navy's pool of pretrained and obligated individuals (Individual Ready Reserve, Retirees, and Fleet Reserve) is an important component of the total manpower that would be available in wartime. This research memorandum reports the results of the Center for Naval Analyses' study of Pretrained Individual Manpower (PIM) personnel resources and the match between resources and official requirements. End-of-fiscal-year personnel inventories from 1982 to 1987 were tabulated by rating, paygrade, length of time since leaving active duty, and the Navy enlisted classifications (NECs). Data on the geographical location of PIM personnel were used to assess Personnel Mobilization Team plans. How well the supply of PIM personnel matches currently defined demands was examined at overall and individual paygrade levels.

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1. This research memorandum represents the final documentation of a CNA project requested by The Assistant Deputy Chief of Naval Operations for Plans, Policy and Operations (OP-06B) and the Assistant Deputy Chief of Naval Operations for Manpower, Personnel and Training (OP-01B). It documents analyses of pretrained individual manpower (PIM) personnel resources and the match between resources and requirements. End-of-fiscal-year personnel inventories from 1982 to 1987 were tabulated by rating, paygrade, length of time since leaving active duty, and Navy enlisted classifications (NECs). Data on the geographical location of PIM personnel were used to assess Personnel Mobilization Team plans. How well the supply of PIM personnel matches currently defined demands was examined at overall and individual paygrade levels.

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ABSTRACT

The Navy's pool of pretrained and obligated individuals (Individual Ready Reserve, Retirees, and Fleet Reserve) is an important component of the total manpower that would be available in wartime. This research memorandum reports the results of the Center for Naval Analyses' study of Pretrained Individual Manpower (PIM) personnel resources and the match between resources and official requirements. End-of-fiscal-year personnel inventories from 1982 to 1987 were tabulated by rating, paygrade, length of time since leaving active duty, and Navy enlisted classifications (NECs). Data on the geographical location of PIM personnel were used to assess Personnel Mobilization Team plans. How well the supply of PIM personnel matches currently defined demands was examined at overall and individual paygrade levels.

EXECUTIVE SUMMARY

The Navy's pool of pretrained and obligated individuals is an important component of the total manpower that would be available in wartime. Pretrained Individual Manpower (PIM) comprises nondrilling reservists in the the Individual Ready Reserve (IRR) and the Standby Reserve and retirees in the Fleet Reserve and the Retired Reserve. Since missions are multiplying and equipment is becoming more sophisticated but money is becoming scarcer, it is an appropriate time for the Navy to reexamine how this manpower pool can be used. Therefore, the Assistant Deputy Chief of Naval Operations (Plans, Policy, and Operations) (OP-06B) and the Assistant Deputy Chief of Naval Operations (Manpower, Personnel and Training) (OP-01B) requested that the Center for Naval Analyses (CNA) study IRR personnel resources, requirements, and mobilization plans. The tasks in the study request included:

- Assess the current and historical quantity and quality of enlisted IRR personnel resources, giving detail by rating, paygrade, time since leaving active duty, and specialized skill training.

- Find if there are enough Personnel Mobilization Teams (PMTs) to process the PIM inventory and if the geographical distribution of PMTs is correct.

- Compare existing inventories to requirements and investigate the process by which requirements are determined.

This paper reports the results of the CNA study of PIM personnel resources and the match between resources and requirements. The analysis focuses on the IRR because it will fill the majority of mobilization requirements and because of data limitations.

INVENTORY

To know what missions can be accomplished with Pretrained Individual Manpower, it is important to know what skills are available. Therefore, CNA undertook an appraisal of current and historical enlisted IRR personnel resources. IRR inventories from 1982 through 1987 were tabulated by rating, paygrade, Navy enlisted classifications (NECs), length of time since leaving active duty, and geographical location. The data were taken from CNA's holdings of Inactive Manpower and Personnel Management Information System (IMAPMIS) files. The study's findings and recommendations regarding personnel inventories include:

- Enlisted IRR endstrength has been growing since 1984 and will continue to grow, since in June 1984 the Military Service Obligation (MSO) was increased from six to eight years. It is estimated that the longer MSO will increase

enlisted IRR strength by 40,000. The growth will begin in June 1990, and by 1992 the enlisted IRR should have grown to 100,000--a 67-percent increase over its 1987 end-strength of almost 60,000.

- The typical enlisted IRR member served one active-duty term and is fulfilling his service obligation. More than 60 percent of the IRR inventory are in paygrades E4 and E5, and more than 70 percent have been off active duty for two years or less.

- Low-paygrade personnel in the IRR are questionable assets for mobilization. In 1987, 54 percent of paygrade E1 and E2 IRR personnel had left active duty without being eligible to reenlist. Paygrade E1 through E3 personnel who were ineligible to reenlist accounted for 7 percent of IRR endstrength. The proportion of IRR members in low paygrades has been falling, however.

- In 1987, administration, clerical, engineering, and hull ratings accounted for 38 percent of all enlisted IRR personnel and 45 percent of the rated personnel. Only 21 to 24 percent of the IRR inventory had NECs. The eight-year MSO will change the skill mix in the IRR as people in technical ratings with six-year active duty obligations begin to incur two-year reserve obligations.

MOBILIZATION PLANS

The geographical distribution of PIM personnel was used to evaluate the plans for Personnel Mobilization Teams (PMTs). PMTs are Selected Reserve (SELRES) units that perform the initial processing for PIM mobilization. Current plans call for 36 PMTs, which will each process 300 people over the first three days of mobilization and 200 people per day thereafter. Since the number of PIM personnel who might be expected to report for mobilization exceeds official requirements, upper and lower bounds on how many people will pass through PMTs were constructed. It was found that current plans for Personnel Mobilization Teams (PMTs) provide enough capacity for the initial mobilization processing of PIM personnel to be completed in between 18 and 26 days. This range depends on whether processing includes just the people needed to fill official requirements or all the people who might be expected to report.

REQUIREMENTS

To evaluate the usefulness of PIM inventories and plans for their mobilization one must know what jobs PIM personnel are expected to perform. Therefore, the process by which PIM requirements are generated was examined, and requirements were compared to personnel inventories. Manpower requirements for ships and squadrons are generally assigned to

either active-duty or SELRES personnel. Most requirements for PIM personnel, therefore, come from shore establishments and are derived through the Navy Manpower Mobilization System (NAMMOS), which covers shore activities.

The NAMMOS methodology first generates scenario-specific, time-phased mobilization requirements and then matches them to three categories: civilian, SELRES, or Other Military (OM). Other Military can be either PIM or inductees, although the first inductees will not be available until four months after mobilization. The type of personnel chosen is determined by such considerations as the timing of requirements, whether the job is in direct support of operations, whether practice as a unit is needed, and how rapidly job skills deteriorate. Under the NAMMOS methodology, OM (PIM and inductee) personnel are generally required for ratings with low rates of skill deterioration or for jobs that will occur more than two months into the mobilization.

PIM requirements generated by the NAMMOS system were then tabulated by paygrade and compared to FY 1987 PIM inventories. The findings and recommendations related to how requirements are generated and how they correspond to inventories include:

- The requirements determination process apparently translates all Other Military requirements into PIM requirements, with no attempt to separate requirements that could be met by inductees. As a result, 60 percent of PIM requirements are in paygrades E3 and below, but less than 30 percent of IRR personnel and virtually no nondisabled retirees fall in this category. Lower paygrade requirements should be examined to see whether they could be filled by inductees, more senior PIM personnel, or by stop-loss actions.

- Other than shortages of personnel for the lowest paygrades, which the PIM cannot be expected to fill, it appears that PIM strength is sufficient to satisfy official requirements. The increase in IRR endstrength caused by the longer MSO will give the Navy a greater surplus of PIM personnel.

- Only limited planning for PIM mobilization can be done until requirements are defined more specifically. One question that must be addressed is what military requirements arise between the time that PIM personnel can be mobilized and the time that inductees can begin to fill the demand for replacements. An equally important question is how many of these requirements can be met by either SELRES personnel or active-duty personnel who were in peacetime-only billets or who were retained through stop-loss actions.

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INTRODUCTION

The Navy's pool of pretrained and obligated individuals is an important component of the total manpower that would be available in wartime. Pretrained Individual Manpower (PIM) comprises nondrilling reservists in the the Individual Ready Reserve (IRR) and the Standby Reserve and retirees in the Fleet Reserve and the Retired Reserve. Since missions are multiplying and equipment is becoming more sophisticated but money is becoming scarcer, it is an appropriate time for the Navy to reexamine how this manpower pool can be used. Therefore, the Assistant Deputy Chief of Naval Operations (Plans, Policy, and Operations) (OP-06B) and the Assistant Deputy Chief of Naval Operations (Manpower, Personnel and Training) (OP-01B) requested that the Center for Naval Analyses (CNA) study IRR personnel resources, requirements, and mobilization plans. The tasks in the study request included:

- Assess the current and historical quantity and quality of enlisted IRR personnel resources, giving detail by rating, paygrade, time since leaving active duty, and specialized skill training.
- Find if there are enough Personnel Mobilization Teams (PMTs) to process the PIM inventory and if the geographical distribution of PMTs is correct.
- Compare existing inventories to requirements and investigate the process by which requirements are determined.

This research memorandum reports the results of the CNA study of PIM personnel resources and the match between resources and requirements. The analysis focuses on the IRR because it will fill the majority of mobilization requirements and because of data limitations.

To know what missions can be accomplished with Pretrained Individual Manpower, it is important to know what skills are available. Therefore, CNA undertook an appraisal of historical and current PIM enlisted personnel resources. IRR personnel inventories were obtained from CNA's holdings of the Inactive Enlisted Master Files (IEMF) of the Inactive Manpower and Personnel Management Information System (IMAPMIS). End-of-fiscal-year snapshots from 1982 to 1987 were examined. Personnel inventories were tabulated by rating, paygrade, geographical location, length of time since leaving active duty, and Navy enlisted classifications (NECs).

In June 1984, the military service obligation (MSO) was increased from six to eight years. People who serve a four-year term on active duty now have a four-year, rather than a two-year, IRR obligation. This change will cause a growth of the IRR that will begin in 1990 and level off in 1992. An estimate is given of extent of this growth.

The geographical distribution of PIM personnel was used to evaluate the plans for Personnel Mobilization Teams (PMTs). PMTs are Selected Reserve (SELRES) units that perform the initial processing for PIM mobilization. Current plans call for 36 PMTs, which will each process 300 people over the first three days of mobilization and 200 people per day thereafter. Since the number of PIM personnel who might be expected to report for mobilization exceeds official requirements, upper and lower bounds on how many people will pass through PMTs were constructed.

To evaluate the usefulness of PIM inventories and plans for their mobilization one must know what jobs the PIM is expected to perform. Therefore, the process by which PIM requirements are generated was examined, and requirements were compared to personnel inventories. In particular, the analysis focuses on the NAMMOS methodology, which first generates scenario-specific, time-phased mobilization requirements and then matches them to three categories: civilian, SELRES, or Other Military (OM). Other Military includes PIM and inductees. PIM requirements generated by the NAMMOS system were then tabulated by paygrade and compared to FY 1987 inventories.

ENLISTED IRR INVENTORIES

Pretrained Individual Manpower (PIM) comprises the Individual Ready Reserve (IRR), the Standby Reserve, and retirees in the Fleet Reserve and the Retired Reserve. Table 1 shows the number of enlisted personnel in these components as of March 1988. The IRR consists mostly of people who have recently been on active duty and who are fulfilling their service obligation. Most enlisted members of the Standby Reserve have been transferred there because of a temporary hardship. Although enlisted retirees number more than 300,000, not all are subject to mobilization. For example, disabled retirees will not be recalled, nor will those over age 60--technically subject to mobilization--except in unusual circumstances.

The analysis of personnel inventories focuses on the IRR for three reasons. First, the majority of mobilization requirements will be filled from the IRR. Second, better data are available on the IRR (appendix A discusses data problems with the retired components). Third, since military experience is more current, information about military careers is more likely to be relevant in determining mobilization positions for IRR members. The analysis examines end-of-fiscal-year snapshots from 1982 through 1987. The data used come from the Inactive Enlisted Master Files (IEMF) of the Inactive Manpower and Personnel Management Information System (IMAPMIS). Appendix A gives more detail on how the data sets were constructed. Appendix B evaluates the quality of the IEMF data by comparing IEMF and the Enlisted Master Record (EMR). Historical data are examined to see whether skill and experience mixes have remained stable over time and to identify areas that have improved or deteriorated.

Table 1. Enlisted PIM endstrength--March 1988

Individual Ready Reserve	64,062
Standby Reserve	841
Eligible retirees	160,476
Total	225,379

SOURCE: [1].

NOTE: Retirees eligible for recall are total enlisted retirees (302,751) less those who are disabled (37,002) or over age 60 (105,273).

Table 2 shows IRR enlisted endstrengths for fiscal years 1982 through 1987. Endstrength declined from 1982 until 1984 because of better active-duty retention and increased recruiting by the Selective Reserve. The growth that began in 1985 should continue, especially with the effect of the eight-year MSO that will begin to be seen in 1990.

Table 2. IRR enlisted endstrength

Fiscal year	Endstrength
1982	55,726
1983	50,724
1984	49,247
1985	54,422
1986	56,336
1987	59,920

IRR Growth under the Eight-Year MSO

Beginning with recruits who entered the Navy in June 1984, the Military Service Obligation (MSO) was increased from six to eight years. Since active-duty obligations range from four to six years, typical IRR obligations for people leaving at the end of their first term had been from zero to two years. (Active Mariners serve three years on active duty and two years in the Selected Reserve and thus had one remaining

obligated year.) The new IRR obligations will range from two to four years. The IRR will begin to grow in June 1990, when the first group of people serving under the new obligation passes the previous six-year MSO point.

As a first approximation, the study assumes that the only growth caused by the extended MSO is an additional two years for everyone who leaves at the end of the first term and is eligible to reenlist. It also assumes that flows into and out of SELRES and voluntary IRR extensions are unaffected, and ignores additional obligations for people who leave active duty before their contract is ended or who are ineligible to reenlist. (Although such people may nominally be in the IRR, they are less valuable mobilization assets.) For each of the years 1984 to 1986, approximately 20,000 people with reenlistment eligibility left at the end of the first term. If this historical experience continues, the steady-state addition to the IRR should be about 40,000.

The growth by 40,000 represents two additional years of obligation for each of the yearly 20,000 eligible first-term separations. The growth will begin in June 1990 when the first people serving under the new obligation pass the previous six-year obligation point. The increase will continue until June 1992, when two years of end-of-first-term losses will have passed the six-year point. By 1992, then, the enlisted IRR should have grown to 100,000--a 67-percent increase over its 1987 endstrength of almost 60,000.

The composition of the IRR will also change with the new MSO. First, the proportion of the IRR that consists of first-term personnel fulfilling their MSO will increase. Second, since Nuclear and Advanced Electronic and Technical Field recruits with six-year obligations will now have an IRR obligation, the skill mix will change.

Composition of the IRR

Tables 3 and 4 show how the IRR is distributed across paygrades and length of time since leaving active duty. In each year, over 60 percent of the people were in paygrades E4 and E5, with another 20 percent in paygrade E3. The proportion in the lowest two paygrades has been falling, which is good because these are questionable assets for mobilization. The low numbers of first-class and chief petty officers suggest that retired reservists will be needed to fulfill requirements.

Over 70 percent of IRR members have left active duty within two years, and over 80 percent within four years. This is because the IRR is dominated by people who serve one term on active duty then fulfill their service obligation in the IRR. In September 1987, 64 percent of the IRR fell into this category--having two to six years of active service and having been off active duty less than four years. At the other extreme, many of the 8 percent of the IRR who have been out for over ten years have probably served in the Selected Reserve (SELRES). Otherwise, one would expect significant skill degradation.

Table 3. Percentage distribution of IRR endstrength, by paygrade

	1982	1983	1984	1985	1986	1987
E1-E2	11.3	11.4	10.7	8.7	8.2	6.2
E3	18.8	20.9	21.9	22.7	22.7	22.5
E4	37.8	35.4	35.3	36.5	36.5	38.5
E5	26.7	26.0	25.6	25.6	25.8	26.4
E6	4.0	4.3	4.5	4.5	4.5	4.7
E7-E9	1.1	1.5	1.7	1.7	1.8	1.5

NOTE: Columns may not sum to 100 percent due to rounding.

Table 4. Percentage distribution of IRR endstrength, by length of time since leaving active duty

Time since leaving	1982	1983	1984	1985	1986	1987
0 to 2 years	77.4	71.6	69.6	71.0	73.8	72.0
Over 2 through 4 years	11.0	13.5	13.2	11.2	8.6	10.2
Over 4 through 10 years	6.1	8.1	9.2	9.4	9.2	9.4
Over 10 years	5.3	6.6	7.9	8.2	8.2	8.2

NOTE: Columns may not sum to 100 percent due to rounding.

The growth between 1984 and 1987 by 10,673 people occurred largely in areas that enhanced the IRR. The number of people who had left active duty within two years increased by 8,912, accounting for 84 percent of the growth. Also, the E4 and E5 PIM inventory grew by 8,893, so that 83 percent of the growth occurred in the most valuable paygrades. On the other hand, the E1s and E2s were 1,525 fewer in 1987 than in 1984.

Reenlistment Eligibility

The quality of the E1s and E2s in the IRR can be judged by examining how many were recommended for reenlistment upon release from active duty. The Reenlistment Indicator (REIND) on the IEMF was used, since it was found to be consistent with the Reenlistment Qualification Code

(RQC) on the EMR (see appendix B). The REIND code does have a high proportion of invalid codes (codes that either are blank or are not legitimate values), but a comparison with the RQC revealed that 85 percent of persons having invalid REIND codes were eligible to reenlist. Thus, the percentage of ineligibles on the IEMF should be fairly accurate.

Table 5 shows the reenlistment eligibility of IRR members in September 1987. For all paygrades, 8.3 percent were not recommended for reenlistment. For paygrades E1 and E2, however, 53.5 percent were not considered eligible. Personnel in paygrades E1 through E3 who were ineligible to reenlist accounted for 7 percent of endstrength. In addition, many lower-paygrade personnel who were recommended for reenlistment would need additional training before being assigned.

Table 5. Reenlistment eligibility of IRR members--September 1987

	Eligible		Ineligible		Invalid code		
Paygrade	Number	Percent	Number	Percent	Number	Percent	Total
E1-E2	1,413	37.6	2,012	53.5	334	8.9	3,759
E3	9,124	67.6	1,963	14.5	2,405	17.8	13,492
E4	20,361	88.1	797	3.4	1,949	8.4	23,107
E5	13,824	87.3	191	1.2	1,812	11.4	15,827
E6	2,413	85.3	15	.5	401	14.2	2,829
E7-E9	360	94.9	1	.1	45	5.0	906
Total	47,995	80.1	4,979	8.3	6,946	11.6	59,920

A significant component of the IRR, then, is made up of junior personnel, not highly trained, who would be sutitable to fill General Detail billets. Paygrades E1 to E3 accounted for 29 percent of all IRR members in 1987 and 24 percent of members who were eligible to reenlist. Although these people are a significant mobilization asset, they need not be considered when asking questions regarding mobilization requirements for specific skills.

Specialized Skill Inventories

A closer look can be taken at IRR members who have skills that are needed to fill specific mobilization billets. Skilled personnel will initially be defined to be people who attained petty officer rank, that is, those in paygrades E4 and above. Table 6 gives the numbers of upper-paygrade personnel. Paygrades E4 through E9 as a percentage of all IRR members increased from 67 percent in 1983 to 71 percent in 1987. Within the higher paygrades, the distribution across different paygrades stayed remarkably constant between 1982 and 1987, with about 90 percent E4s or E5s and 10 percent E6s and above.

Table 6. Petty officer inventories

	1982		1983		1984		1985		1986		1987	
	Number	Pct	Number	Pct	Number	Pct	Number	Pct	Number	Pct	Number	Pct
E4	21,208	54	18,007	53	17,419	52	19,868	53	20,618	53	23,107	54
E5	14,900	38	13,236	39	12,622	38	13,959	37	14,575	37	15,827	37
E6	2,250	6	2,188	6	2,234	7	2,484	7	2,583	7	2,829	7
E7-9	613	2	791	2	883	3	962	3	1,064	3	905	2
Total	38,971		34,222		33,158		37,273		38,840		42,668	
Petty officers as a percentage of total IRR inventory		70		67		67		68		69		71

A preliminary measure of skill degradation is the time since leaving active duty. This is only a rough measure, since some skills are kept current in either civilian or SELRES jobs. Table 7 gives the percentage of upper paygrade personnel who had been on active duty within the last four years. This percentage declines in higher paygrades; for example, in 1987 only 9 percent of chief petty officers (E7 to E9) had recent active-duty experience. Overall, around 50 percent of the IRR inventory is composed of petty officers who have left active duty within four years.

Table 7. Percentage of petty officers with four or fewer years since leaving active duty

	1982	1983	1984	1985	1986	1987
E4	90	86	84	84	84	84
E5	81	76	73	71	69	68
E6	32	30	24	20	19	19
E7-E9	14	12	10	10	6	9
E4-E9	82	77	74	73	72	72
Recently released petty officers as a percentage of total IRR inventory	57	52	50	50	50	51

Since the IRR petty officer inventory shrank until 1984, then grew until 1987, one might expect the number of people who had recently left active duty to first fall and then begin to grow in 1985. The growth after 1984 does not occur, however, which indicates a trend toward remaining in the IRR for longer periods after leaving active duty.

In order to see what skills are available in the IRR, tables 8, 9, and 10 give breakdowns of all IRR personnel by broad rating groups, individual ratings, and Navy Enlisted Classifications (NECs). Appendix C defines the rating groups used in table 8. In 1987, administration, clerical, engineering, and hull ratings included 38 percent of all enlisted IRR personnel and 45 percent of the rated personnel. Changes in the rating distributions were not dramatic from 1982 through 1987. Rating groups that experienced the largest increases were administration, clerical; medical; deck: technical; and aviation: highly technical. With the eight-year MSO the rating distribution should change as people in highly technical ratings with six-year active duty obligations begin to incur two-year reserve obligations.

Table 8. Percentage distribution of IRR endstrength, by rating group

	1982	1983	1984	1985	1986	1987
Deck: technical	3.5	3.4	3.7	4.4	4.8	5.0
Deck: other	6.7	5.7	5.8	5.9	6.1	5.8
Ordnance	4.3	3.7	3.9	3.9	3.9	3.9
Electronics	1.4	1.2	1.2	1.3	1.1	1.2
Precision equipment	.2	.2	.1	.1	.2	.3
Administrative, clerical	16.7	16.5	16.9	17.4	17.7	19.0
Engineering, hull	22.0	22.2	21.3	20.2	19.4	19.1
Construction	3.5	4.3	4.5	4.7	4.7	4.2
Aviation: highly technical	5.3	5.5	5.6	5.8	6.0	6.4
Aviation: technical	7.1	7.3	6.9	6.5	6.2	5.7
Aviation: other	9.2	9.0	8.4	8.2	7.7	7.7
Medical, dental	4.0	5.3	5.6	5.9	6.3	6.6
Unrated	14.5	14.9	15.5	15.1	15.3	14.5

Table 9 gives the number of people in the 25 largest ratings in 1987. The total of 37,049 was 62 percent of the total IRR inventory. The top ten include three administration and clerical ratings and four engineering and hull ratings. Five ratings (HM, OS, RM, IC, and SK) grew by 500 or more people between 1984 and 1987.

Table 9. Endstrength in top 25 ratings--September 1987

Rating	Endstrength	Rating	Endstrength
HM	3,603	BT	1,354
RM	2,581	IC	1,299
HT	2,453	AE	1,237
BM	2,255	AMS	1,097
MM	2,190	AO	966
OS	2,043	QM	805
YN	1,754	GMG	741
EN	1,685	PN	724
MS	1,603	MR	721
EM	1,553	SH	676
SK	1,526	ET	646
AT	1,469	AMH	619
AD	1,449		

Total endstrength: 37,049

A final measure of skills held by IRR members is the number of Navy Enlisted Classifications (NECs). NECs are typically earned by completing skill progression training or C-school. Attention is restricted here to NECs that indicate proficiency with a specific type of equipment; thus defense group, special series, rating conversion, and candidate NECs were excluded. Table 10 shows that in September 1987, 21 percent of enlisted IRR members had NECs. As appendix B reports, if an adustment is made for underreporting of NECs on the IEMF, the percentage of NEC holders will increase to 24. This reflects the preponderance of IRR members who served a single term of duty, since 25 percent of people on active duty with one to four years of service hold NECs.

Table 10. NECs held by IRR members--September 1987

	Number	Percentage of IRR
Primary NECs	12,520	21
E4-E9 and out $\leq$ 4 years	8,723	15
Secondary NECs	1,599	3

SOURCE: IEMF data, see appendix B.

NOTE: Defense group, special series, rating conversion, and candidate NECs are excluded.

Even though many upper-paygrade IRR members have been away from active duty for some time, there do not seem to be many obsolete NECs in the inventory. In 1987, only six NECs, held by 118 IRR members, no longer appeared in the NEC manual. Assuming that the NEC manual contains only currently useful NECs, the IRR NEC inventory does not suffer from equipment obsolesence.

GEOGRAPHICAL DISTRIBUTION

Upon mobilization, PIM members are to report to Personnel Mobilization Teams (PMTs or PERSMOBTEAMS). PMTs are SELRES units that perform the initial processing for PIM mobilization. There are currently 34 PMTs, with plans for 36. The PMTs are expected to process 50 people on the first day of mobilization, 100 the second, 150 the third, and 200 people per day thereafter. Since PIM members should receive orders to report to the closest PMT, both the total number of PMTs and their geographical distribution are important. This section uses the geographical distribution of PIM personnel to evaluate PMT plans.

Distribution of Enlisted PIM

Table 11 shows the geographical distribution of enlisted IRR personnel. The distribution is given by Readiness Command (REDCOM). Since the address information in the IEMF has some degree of error, a finer geographical division was not thought to be useful. (Appendix A discusses which IEMF data elements were used.) Table 12 gives the 1987 IRR distribution in percentage terms as well as a percentage distribution across REDCOMs for enlisted retirees. The distribution for retirees was constructed by considering only retirees who are eligible for recall and who would be expected to report (see appendix A). For retirees who are under age 60 and not disabled, expected show rates are 80 percent for the Fleet Reserve, 70 percent for Retired Reserves who have been retired ten years or less, and 10 percent for those retired for more than ten years [2].

Table 11. Geographical distribution of enlisted IRR personnel

REDCOM Number	Location	1982	1983	1984	1985	1986	1987
1	Newport, RI	2,851	2,580	2,595	2,760	3,014	3,401
2	Scotia, NY	3,647	3,336	3,047	3,254	3,380	3,560
4	Philadelphia, PA	3,403	3,235	3,143	3,378	3,659	4,037
5	Ravenna, OH	3,908	3,477	3,334	3,739	3,863	4,119
6	Washington, DC	2,865	2,994	3,059	3,357	3,892	4,414
7	Charleston, SC	1,976	1,943	1,980	2,228	2,471	2,729
8	Jacksonville, FL	4,070	3,838	3,622	3,921	4,320	4,800
9	Memphis, TN	2,654	2,554	2,567	2,847	2,902	3,024
10	New Orleans, LA	3,372	2,889	2,627	2,798	2,719	2,863
11	Dallas, TX	2,682	2,314	2,234	2,286	2,116	2,189
13	Great Lakes, IL	4,805	4,174	4,205	4,900	4,843	5,377
16	Minneapolis, MN	2,890	2,202	2,000	2,484	2,332	2,500
18	Olathe, KS	3,462	3,042	3,121	3,546	3,498	3,558
19	San Diego, CA	5,549	4,945	4,890	5,455	5,699	5,868
20	San Francisco, CA	3,395	3,254	2,947	3,314	3,331	3,354
22	Seattle, WA	3,067	2,631	2,492	2,731	2,721	2,752
	Other	1,130	1,316	1,384	1,424	1,576	1,375
Total		55,726	50,724	49,247	54,422	56,336	59,920

Table 12 reveals that relative to the IRR, retirees have moved away from the northeast and midwest (i.e., REDCOMs 2, 4, 5, 13, 16, and 18) and into the south and west (i.e., REDCOMs 6, 8, 10, 19, 20, 22). This implies that the correct geographical distribution of PMTs will depend on how many retirees are going to be processed.

Table 12. Percentage distribution of enlisted IRR and retired personnel, by REDCOM--September 1987

REDCOM	State	IRR	Retired
1	RI	5.7	4.5
2	NY	5.9	1.5
4	PA	6.7	2.8
5	OH	6.9	2.7
6	DC	7.4	12.8
7	SC	4.6	5.2
8	FL	8.0	10.8
9	TN	5.0	5.2
10	LA	4.8	7.5
11	TX	3.7	3.9
13	IL	9.0	3.6
16	MN	4.2	2.2
18	KS	5.9	3.7
19	CA	9.6	16.5
20	CA	5.6	7.8
22	WA	4.6	6.7
Other	--	2.2	2.6
Total		100.0	100.0

PMT Processing Requirements

To assess whether there are enough PMTs, it is necessary to make some assumptions about how many people will report to PMTs upon mobilization. A problem arises because the total number of PIM personnel that would be expected to report based on commonly used expected show rates exceeds the Navy's official PIM requirements. Should the PMT capacity be enough to process everyone who is expected to report, or only enough to satisfy requirements? This question is complicated by the qualifications regarding the official PIM requirements, which are discussed in the following section.

Since an exact answer is not possible, this paper constructs upper and lower bounds on how many people PMTs might be expected to process. The upper bound assumes that PMTs process all IRR, Standby Reserve, and Retired Reserve personnel who are expected to report. The lower bound assumes that PMTs process all the IRR and Standby Reserve members expected to report, but only process Retired Reservists as needed to fill requirements.

Table 13 shows the derivation of the upper- and lower-bound processing requirements for the 16 REDCOMs. The first column, enlisted IRR and Standby Reserve, is simply the 1987 IRR inventories from table 11 multiplied by an expected show rate of 70 percent. (Enlisted Standby Reserve 1987 endstrength was only 879 and is ignored here.) Reference [2] gives 1987 officer IRR and Standby Reserve endstrengths as 18,264 and 10,342. With show rates of 80 percent for IRR and 50 percent for Standby, there would be about 20,000 officers to process. The second column of table 13 shows these 20,000 officers distributed across REDCOMs using the enlisted IRR percentages from table 12. The total IRR and Standby Reserve processing requirement in column 3 is used in both the lower and upper bound estimates.

Table 13. Lower and upper bound PMT processing requirements, by REDCOM

	IRR and standby reserve			Retired reserve		Processing requirements	
REDCOM	Enlisted (1)	Officer (2)	Total[a] (3)	Required (4)	Reporting (5)	Lower[b] (6)	Upper[c] (7)
1	2,381	1,140	3,521	1,575	3,600	5,096	7,121
2	2,492	1,180	3,672	525	1,200	4,197	4,872
4	2,826	1,340	4,166	980	2,240	5,146	6,406
5	2,883	1,380	4,263	945	2,160	5,208	6,423
6	3,090	1,480	4,570	4,480	10,240	9,050	14,810
7	1,910	920	2,830	1,820	4,160	4,650	6,990
8	3,360	1,600	4,960	3,780	8,640	8,740	13,600
9	2,117	1,000	3,117	1,820	4,160	4,937	7,277
10	2,004	960	2,964	2,625	6,000	5,589	8,964
11	1,532	740	2,272	1,365	3,120	3,637	5,392
13	3,764	1,800	5,564	1,260	2,880	6,824	8,444
16	1,750	840	2,590	770	1,760	3,360	4,350
18	2,491	1,180	3,671	1,295	2,960	4,966	6,631
19	4,108	1,960	6,068	5,775	13,200	11,843	19,268
20	2,348	1,120	3,468	2,730	6,240	6,198	9,708
22	1,926	920	2,846	2,345	5,360	5,191	8,206
Other	963	440	1,423	910	2,080	2,333	3,503
Total	41,945	20,000	61,965	35,000	80,000	96,965	141,965

NOTE: When necessary, numbers have been rounded.

a. Total of columns (1) and (2).
b. Total of columns (3) and (4).
c. Total of columns (3) and (5).

The lower processing bound should include only people needed to fulfill the requirements. It is assumed that any requirements that can be filled by IRR and Standby Reserves will be. The remaining requirements fall into two categories: junior paygrade requirements that will remain unfilled and senior paygrade requirements that can be filled by retirees. Table 14 shows the calculation of PIM requirements remaining for retirees, first for enlisted personnel and then for officers.

Table 14. PIM requirements to be filled by retirees

Enlisted PIM requirements	124,000
- Filled by IRR	-42,000
- Low paygrade	-61,000
Requirements for retirees	21,000
Officer PIM requirements	34,000
- Filled by IRR and standby	-20,000
Requirements for retirees	14,000
Total requirements for retirees	35,000

The requirements for these calculations are taken from [3] and [4].[1] Of the 124,000 enlisted requirements, 42,000 are filled by the available IRR personnel shown in column 1 of table 13. Another 61,000 requirements will remain unfilled because they are for low-paygrade personnel who are not available in the IRR and retiree inventories. This leaves 21,000 PIM positions to be filled by enlisted retirees.

Out of the officer requirement of 34,000, 20,000 are filled by the available IRR and Standby Reservists shown in column 2 of table 13. Since the paygrade imbalance problem does not affect officers, this leaves 14,000 requirements for officer retirees. The total officer and enlisted requirement of 35,000 is shown in column 4 of table 13. This total is allocated across REDCOMs using the enlisted retiree distribution from table 12. Columns 3 and 4 are added to arrive at the lower-bound processing requirement in column 6.

1. The requirements are discussed further in a subsequent section, "Comparing Inventories to Requirements." In particular, the problem of low-paygrade requirements for PIM personnel is addressed. Such requirements could be filled by inductees, by more senior PIM personnel, or by active-duty personnel through stop-loss actions.

The upper processing bound includes the total number of Retired Reservists expected to report. This number was calculated using the March 1988 strength levels reported in [1]. The breakdowns by type of retirement given there and the expected show rates for various classes of retirees indicate that approximately 58,000 of the 160,476 eligible enlisted retirees and 22,000 of the 45,799 eligible officer retirees would be expected to report. In the fifth column of table 13, these 80,000 retirees are allocated across REDCOMs using the enlisted retiree distribution from table 12. Columns 3 and 5 are added to arrive at the upper-bound processing requirement given in column 7.

Evaluation of PMT Plans

Excluding people whose addresses do not fall within one of the 16 REDCOMs, between 95,000 and 138,000 PIM personnel would be processed upon mobilization. The processing requirements given in columns 6 and 7 of table 13 were used to decide how the 36 PMTs should be distributed across the REDCOMs. The distribution was done so as to minimize the total number of processing days. It was assumed that within a REDCOM, each PMT would process the same number of people. Total processing time was then computed by assuming that each PMT processes 300 people over the first three days and 200 people per day thereafter. Table 15 shows the number of PMTs in each REDCOM and the time that it takes for all the REDCOMs to complete their processing.

Table 15. Number of PMTs per REDCOM

Lower bound		Upper bound	
Number of PMTs	REDCOMs	Number of PMTs	REDCOMs
1	16	1	2, 16
2	1,2,4,5,7,9,10, 11,18,20,22	2	1,4,5,7,9,10, 11,13,18,22
3	6,8,13	3	8,20
4	19	4	19
Days to complete: 18		Days to complete: 26	

The processing would take from 18 to 26 days. Since the upper bound requires processing more retirees, PMTs move away from the Northeast and Midwest and toward the South and West. Specifically, the New York and Illinois REDCOMs would have one less PMT and the Washington, D.C. and northern California REDCOMs would have one more PMT.

The 67-percent growth in the IRR between 1990 and 1992 could add about 38,000 to the total number expected to report to PMTs (67 percent of the 42,000 enlisted and 15,000 officer IRR currently expected to report). How PMT plans would be affected will depend on whether PMTs process everyone who is expected to report, or only enough to fulfill requirements. If everyone who reports is processed, the 38,000 additional IRR would add about six days to the 26-day upper-limit processing time (36 PMTs can process 7,200 people per day). On the other hand, if processing is limited to total requirements and the additional IRR personnel are used to replace retirees, the lower-limit processing time will remain unchanged at 18 days. Furthermore, replacing retirees with IRR personnel might change the desired geographical placement of PMTs, with more capacity being needed in the Northeast and Midwest.

COMPARING INVENTORIES TO REQUIREMENTS

To evaluate the usefulness of PIM inventories and plans for their mobilization one must know what jobs PIM personnel are expected to perform. There are two sources for Navy wartime manpower requirements.[1] The first is Ship Manning Documents (SMDs) and Squadron Manning Documents (SQMDs). These documents give wartime manpower requirements for all ships and squadrons. Some of the wartime requirements become billets authorized (BA), or active-duty peacetime billet requirements; the remainder become SELRES requirements. Thus, ships and squadrons generate no PIM requirements, except possibly later in the mobilization as casualty replacements.

The second source, through which most PIM requirements are derived, is the Navy Manpower Mobilization System (NAMMOS) [6]. NAMMOS covers shore activities and other activities not covered by SMDs or SQMDs, such as Craft of Opportunity (COOP) units. NAMMOS generates scenario-specific, time-phased mobilization requirements in 72 functional categories. For each functional category, for example, supply support, NAMMOS uses regression analysis, workload algorithms, and other models to translate peacetime manning levels into wartime manning levels. These mobilization manpower requirements are then reviewed by the activities concerned.

Once mobilization manpower requirements are determined, it must be decided whether civilian, SELRES, or Other Military (OM) personnel will be used. Other Military can be either PIM or inductees, although the first inductees will not be available until four months after mobilization. By law, any position that can be filled by a civilian must be. Examples of where military personnel would have to be used are positions that involve combat, require skills or experience found only in the military, or are located outside of the continental United States.

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1. See [5] for a description of the manpower requirements system.

Allocating a billet to SELRES or OM involves several considerations. One consideration is timing: requirements arising during the surge stage--from M-day to M+10--are SELRES requirements, while those arising after M+60 are Other Military. From M+11 to M+60 days, billets may be either SELRES or Other Military depending on whether the activity is involved in direct operational support, whether the job depends on the coordinated activities of members of a unit, and how rapidly job skills deteriorate. For direct operational support activities, OM will be assigned only billets for jobs that do not require coordinated activity and have low skill deterioration. OM personnel will be assigned billets in activities that only indirectly support operations if skill deterioration is slow, whether or not the function is integrated.

The NAMMOS User's Manual [6] gives classifications of command groupings by direct or indirect support, of functional categories by integrated or nonintegrated method of operation, and of officer designators and enlisted ratings by how fast skills deteriorate. The ratings with high rates of skill deterioration, given in table 16, should have PIM requirements only for positions that arise more than two months after mobilization.

Table 16. NAMMOS high skill-deterioration ratings

EM	STS	AE	HM
GSE	DS	AT	IM
IC	LN	AQ	OM
ET	CTT	MN	ASE
FC	AW	GM	
EW	AX	DT	

For each NAMMOS activity (mostly shore activities), mobilization requirements are generated for each of the 72 functional categories of officers and enlisted personnel. These requirements are sent to the activities, which may request changes and then will assign specific designators, ranks, ratings, and paygrades to each requirement. Whereas each active-duty and SELRES billet requires that funding be identified for the billet, civilian and Other Military mobilization billets are not subject to this constraint. It probably follows that less attention is paid to these requirements.

The result of the NAMMOS and requirements review processes are OM mobilization requirements with detail by activity, rating, and paygrade. These requirements reside in the Navy Manpower Data Accounting System (NMDAS) and form the basis for the official PIM requirements published in [3] and [4]. Apparently, all Other Military requirements are translated into PIM requirements with no attempt to separate requirements

that could be filled by inductees. Table 17 shows approximate total enlisted and officer PIM requirements for FY 1988 as reported in [3] and [4].

Table 17. PIM requirements--FY 1988

NMDAS billet file	
Enlisted	125,000
Officer	35,000
Total	160,000

SOURCES: [3] and [4].

Table 18 illustrates one shortcoming of the NMDAS billet file requirements. Out of the total requirement for 123,782 enlisted PIM, 72,497 positions are for paygrades E3 and below--almost 60 percent of the requirements. On the other hand, less than 30 percent of IRR personnel and virtually no nondisabled retirees are paygrade E3 or lower. In particular, very few E1s and E2s who are eligible to reenlist are available in the PIM to fill the 17,342 E1 and E2 billets. These requirements should be examined to see whether they could be filled by inductees, more senior PIM personnel, or through stop-loss actions.

Table 18. Requirements and inventory, by paygrade

Paygrade	Requirements	Expected IRR Inventory	Shortage
E1-2	17,342	2,631	14,711
E3	55,155	9,444	45,711
E4	18,477	16,175	2,302
E5	15,611	11,079	4,582
E6	10,395	1,980	8,415
E7-9	6,752	634	6,118
Total	123,732	41,943	81,839

NOTES:
1. Requirements, from [3], are for FY 1988.
2. The expected IRR inventory is the September 1987 inventory times the expected show rate of 0.7.

Other than shortages in the lowest paygrades, which the PIM cannot be expected to fill, it appears that PIM strength is sufficient to satisfy the NMDAS requirements. The shortages that appear in table 18 fall into two categories: low-paygrade requirements that cannot be filled and senior-paygrade requirements that can be filled by retirees. The shortage of 59,000 in paygrades E1 through E3, as well as about 2,000 of the shortage in E4 and E5 paygrades probably cannot be covered by retirees. At paygrades E6 and above, however, the supply of retirees greatly exceeds the requirements.

The conclusion that PIM personnel are sufficient to satisfy the official requirements, however, does not take into account matching ratings to requirements. NAMMOS requirements are derived for broad functional categories rather than for specific ratings, with activities determining the ratings. For this reason, the rating detail in the NMDAS requirements probably should not be strictly interpreted. In addition, all PIM requirements either are for categories with low rates of skill deterioration or for these that occur after M+60. This also implies that an exact match to the required rating may not always be necessary.

Only limited planning for PIM mobilization can be done until requirements are defined more specifically. One central question that must be addressed is what military requirements arise between the time that PIM personnel can be mobilized and the time that inductees can begin to fill the demand for replacements. An equally important question is how many of these requirements can be met by either SELRES personnel or active-duty personnel who were in peacetime-only billets or who were retained through stop-loss actions.

CONCLUSIONS AND RECOMMENDATIONS

The major findings and recommendations of this study are as follows:

- Enlisted IRR endstrength has been growing since 1984 and will continue to grow because of the longer MSO. It is estimated that the longer MSO will increase enlisted IRR strength by 40,000 between June 1990 and June 1992--a 67-percent increase over the 1987 endstrength of almost 60,000.

- The typical enlisted IRR member served one active-duty term and is fulfilling his service obligation. More than 60 percent of the IRR inventory are in paygrades E4 and E5, and more than 70 percent have been off active duty for two years or less.

- Low-paygrade personnel in the IRR are questionable assets for mobilization. In 1987, 54 percent of E1 and E2 IRR personnel had left active duty without being eligible to

reenlist. Personnel from paygrades E1 through E3 who were ineligible to reenlist accounted for 7 percent of IRR endstrength. The proportion of IRR members in low paygrades has been falling, however.

- In 1987, administration, clerical, engineering, and hull ratings accounted for 38 percent of all enlisted IRR personnel and 45 percent of the rated personnel. Only 21 to 24 percent of the IRR inventory had NECs. The eight-year MSO will change the skill mix in the IRR as people in technical ratings with six-year active-duty obligations begin to incur two-year reserve obligations.

- Current plans for Personnel Mobilization Teams (PMTs) provide enough capacity for the initial mobilization processing of PIM personnel to be completed in between 18 and 26 days. This range of days depends on whether processing includes just the people needed to fill official requirements or all the people who might be expected to report.

- A shortcoming of the requirements determination process is that separate requirements for inductees are not generated. As a result, although 60 percent of PIM requirements are for PIM personnel in paygrades E3 and below, less than 30 percent of IRR personnel and virtually no nondisabled retirees fall in this category. Lower paygrade requirements should be examined to see whether they should be filled by inductees, more senior PIM personnel, or by stop-loss actions.

- Other than shortages in the lowest paygrades, which PIM cannot be expected to fill, it appears that PIM strength is sufficient to satisfy official requirements. The increase in IRR endstrength caused by the longer MSO will give the Navy a greater surplus of PIM personnel.

- Only limited planning for PIM mobilization can be done until requirements are defined more specifically.

REFERENCES

[1] Assistant Secretary of Defense (Reserve Affairs) Report No. RCS: DD-RA(M)1147/1148, *Official Guard and Reserve Manpower Strengths and Statistics*, Mar 1988

[2] Department of Defense Manpower Requirements Report (DMRR), FY 1989, Mar 1988

[3] Chief of Naval Operations ltr 1000 Ser 122E2/8U566047, *Enlisted Pretrained Individual Manpower (PIM) Programmed Authorizations Fiscal Years 1988-1993*, Jun 1988

[4] Chief of Naval Operations ltr 1000 Ser 122E2/8U566048, *Officer Pretrained Individual Manpower (PIM) Programmed Authorizations Fiscal Years 1988-1993*, Jun 1988

[5] CNA Research Memorandum 87-114, *The Navy Manpower-Requirements System*, by Peter F. Kostiuk, Aug 1987 (27870114)[1]

[6] OPNAV P-11-1, *Navy Manpower Mobilization System (NAMMOS) User's Manual*, Sep 1982

1. The number in parentheses is a CNA internal control number.

APPENDIX A

DATA SET CONSTRUCTION

APPENDIX A

DATA SET CONSTRUCTION

CNA has end-of-fiscal-year snapshots of the Inactive Enlisted Master File (IEMF) going back to September 1976. Before 1982, separate Selective Reserve and IRR files were received. Since 1982, a single file contains information on all Reserve components. Only data since 1982 were used in this paper, since the two sets of files do not seem to be consistent. For example, the IRR inventory appears to fall from 77,660 to 55,726 between September 1981 and September 1982. In addition, REDCOM and other distributions change with the new file format. The older holdings contain no information on Standby and Retired Reserves.

Reserve components were identified by several different codes: Branch/Class (BRCL), Training Category (TCAT), and Reserve Forces Code (RFC). Any records with strength codes of 0 or 9 were eliminated. The IRR was identified by BRCL 32, TCAT H, and RFC R. Standby Reserve--Active was defined as BRCL 41 and RFC A; Standby Reserve--Inactive as BRCL 51 and RFC I. Retirees were identified by BRCL: 63-65, 68, and 78 are Fleet Reserve; and 88, 90, and 92-98 are Retired Reserve.

The time since leaving active duty was calculated using Date Last Released from Active Duty (LRAD). This date changes if someone serves on temporary active duty.

Two fields describing the person's Readiness Command (REDCOM) were considered. The Address portion of the IEMF contains a Naval Reserve Activity (NRA) code, the first two positions of which give the REDCOM in which the home address is located. Also, the first two digits of the Activity Process Code (APC) give the REDCOM of the activity to which the person is attached. In the September 1987 IRR samples these two REDCOMs matched for 98 percent of the records. The APC REDCOM was used.

The data on retirees in the IEMF do not appear to match other sources. For example, the following numbers were drawn from the Official Guard and Reserve Manpower and Strength Statistics for March 1988 (referred to below as the Office of the Secretary of Defense (OSD) numbers). Total enlisted retirees were 302,751, of whom 37,002 were disabled and 105,273 were over age 60, leaving 160,476 eligible for recall. The September 1987 IEMF, on the other hand, gives the following numbers. A total of 308,028 retirees were identified by BRCL--5,277 more than the OSD number. Of these, 22,386 were identified as disabled based on their Type Retirement (TYRET)--14,616 below OSD. A further 107,867 were over age 60, although some assumptions had to be made about the approximately 20,000 for whom the date of birth was blank. This leaves 184,112 eligible for recall--23,636 more than OSD.

The geographical distribution for the 184,112 eligible retirees in 1987 was used to assign retirees to REDCOMs for the PMT computations. This requires assuming that the distribution of retirees who appear on the IEMF matches the distribution of all retirees. Also, the identification of retirees by disability status, age, and type of retirement must be assumed to be correct. The retirees were assigned to three classes with different expected show rates. Of the 184,112 eligible retirees, 52,682 were identified as Fleet Reservists based on their BRCL. An additional 27,430 were classified as having retired within ten years (LRAD was used unless it was blank, in which case Date Received at Activity was used). This left 104,000 who have been retired for more than ten years. To construct geographical distributions, the number of retirees in a certain class and REDCOM was multiplied by the expected show rate: 80 percent for Fleet Reserve, 70 percent for retired ten years or less, and 10 percent for retired over ten years.

APPENDIX B

COMPARING DATA FROM THE INACTIVE ENLISTED MASTER FILES (IEMF) AND ENLISTED MASTER RECORD (EMR)

APPENDIX B

COMPARING DATA FROM THE INACTIVE ENLISTED MASTER FILES (IEMF) AND ENLISTED MASTER RECORD (EMR)

Data from IEMF and EMR records were compared for the September 1987 IEMF. Of the 59,920 IEMF records, EMR matches were found for 49,698 (83 percent). The match rates were highest for the middle paygrades, with 86 percent of E4s and E5s found. The match rate was 77 percent for paygrades E1 to E3 and 39 percent for paygrades E6 to E9. Many of the high-paygrade personnel were probably on earlier EMRs.

Table B-1 shows the percentage of cases in which the data agreed between the 49,698 matched records. IEMF and EMR records showed the same rating 96 percent of the time and the same paygrade 88 percent of the time. The disagreement in paygrades could be caused by promotions during SELRES service or by demotions upon leaving the Navy (paygrades were compared using the last active EMR record rather than the loss record.)

Table B-1. Percentage of IEMF and EMR agreements

Same rating	96
Same paygrade	88
Same reenlistment eligibility	86
Valid codes only	97
IEMF NEC on EMR	95
Valid NECs only	97
EMR NEC on IEMF	86
Valid NECs only	86

Reenlistment eligibility was compared using the Reenlistment Indicator (REIND) on the IEMF and the Reenlistment Qualification Code (RQC) on the EMR loss record. RQCs of 1, 1R, R1, 3B, and 3R were defined as eligible to reenlist. The main reason for disagreement was the high proportion of invalid REIND codes on the IEMF. For the matched sample, 10 percent of the records had invalid REIND codes--of these people, the EMR indicated that 85 percent were eligible to reenlist. Comparing only those records having valid codes on both data sources, REIND and RQC are consistent 97 percent of the time.

Two possible sources of error in the IEMF's primary NEC codes are considered. First, the IEMF may report NECs that do not appear on the EMR. Second, NECs on the EMR may be dropped from the IEMF. The first problem does not seem to be significant. In the matched sample, 16,668

people had a primary NEC (PNEC) filled in on the IEMF, and 95 percent of these NECs appeared as primary or secondary NECs on the EMR. Of the 11,729 valid NECs (excluding Defense Group, Special Series, and rating conversion NECs), 97 percent appeared on the EMR. The second problem was more significant, with 14 percent of both all primary NECs and valid primary NECs appearing on EMR records not being on IEMF records.

The effect of this apparent under-reporting of NECs on the proportion of IRR members having NECs can be examined. Using the IEMF data, this paper reports that 12,520 (21 percent) of the 59,920 IRR members in September 1987 had valid NECs. In the sample of 49,698 with matching EMR records, the EMR showed 13,113 valid NECs--the percentage of valid NEC holders was 26 percent. The matched sample contained relatively more E4s and E5s and people who left the Navy recently, and this would have caused the NEC percentage to be higher. If the 12,520 PNECs on the IEMF represented a 14-percent undercounting, then the correct number of valid PNECs would have been 14,558, or 24 percent of IRR members would have held valid NECs.

APPENDIX C

RATING GROUP DEFINITIONS

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Table C-1 displays the ratings in each rating group. The 13 groups were derived from the Navy's standard 11 group categorization with the following changes. First, Medical and Dental groups were combined. Second, the Aviation and Deck groups were subdivided into more- and less-technical ratings.

Table C-1. Rating group definitions

Group	Ratings
Deck: technical	OS, EW, ST, STG, STS, OT, OTA, OTM
Deck: other	BM, MA, QM, SM
Ordnance	TM, TMS, TMT, GM, GMM, GMT, GMG, WT, FC, FT, FTG, FTM, FTB, MT, MN
Electronics	ET, ETN, ETR, DS
Precision equipment	PI, IM, OM
Administration, clerical	NC, RM, CTT, CTA, CTM, CTO, CTR, CTI, YN, LN, PN, DP, SK, DK, MS, IS, SH, RP, JO, PC, LI, DM, MU
Engineering, hull	MM, EN, ER, BT, BR, EM, IC, HT, GS, GSE, GSM, PM, ML
Construction	CU, EA, CE, EQ, EO, CM, BU, SW, UT, CA, CN, CR
Aviation: highly technical	AF, AV, AT, AX, AQ, AC, AE
Aviation: technical	AD, ADR, ADJ, AW, AO, AM, PR, TD, AS, ASE, ASH, ASM
Aviation: other	AB, ABE, ABF, ABH, AMS, AMH, AME, AG, AK, AZ, PH
Medical, dental	HA, HM, HN, HR, DA, DN, DR, DT
Unrated	SA, SN, SR, FA, FN, FR, AA, AN, AR