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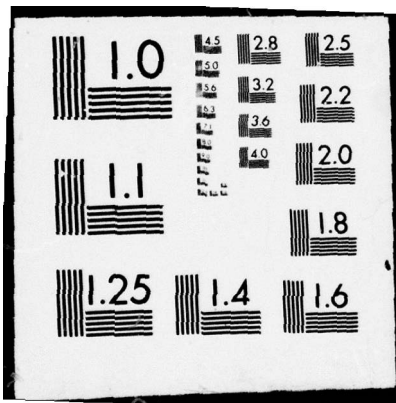
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TASK PERFORMANCE RATINGS

AIR FORCE HUMAN RESOURCES LABORATORY
BROOKS AIR FORCE BASE, TEXAS

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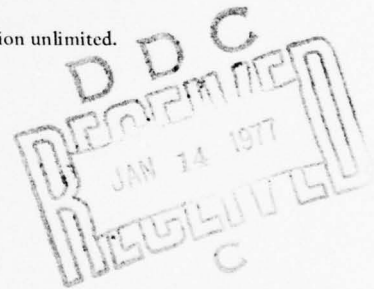
**AIRMAN JOB PERFORMANCE ESTIMATED
FROM TASK PERFORMANCE RATINGS**

By
Llewellyn N. Wiley

**OCCUPATION AND MANPOWER RESEARCH DIVISION
Lackland Air Force Base, Texas 78236**

**October 1976
Final Report for Period January 1968 - December 1972**

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This final report was submitted by Occupation and Manpower Research Division, Air Force Human Resources Laboratory, Lackland Air Force Base, Texas 78236, under project 7734, with HQ Air Force Human Resources Laboratory (AFSC), Brooks Air Force Base, Texas 78235.

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WILLIAM H. POPE, Lt Col, USAF
Chief, Occupation and Manpower Research Division

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An experiment was conducted to determine if a job performance criterion could be developed from averaging airman performance of separate tasks. Airmen who had completed job inventories in the supply field, AFSCs 645X0 and 647X0 from all commands and locations in 1967-1968 were rated by two supervisors in a confidential study. The immediate supervisor and an other supervisor were demanded, with complete rating data and an acceptable job inventory. Despite stringent stipulations, 244 airmen, representing all supply levels and locations, were rated by two supervisors, providing 488 independent sets of ratings. These included an overall rating, ratings on 65 work behavioral traits, performance ratings on all tasks the supervisor was certain the airman performed, and a time-to-train rating on each task in the inventory. The mean task performance rating and the mean task trainability		

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rating were computed. The three criteria of overall performance rating, mean task performance rating, and mean task trainability rating were compared through cross-correlations and cross-regressions, using both the 244 airmen data and the maximum set of 488 observations. The cross-validity of the overall criterion was .58, compared with .56 for the mean task performance rating and .43 for the mean task trainability rating. The regressions showed large contributions from the work behavior ratings, but from the data of record, including grade and job difficulty indices, the contributions were nonsignificant. The mean task performance rating was not cost effective for lower level airmen from the standpoint of rating time consumed. However, the possibility remained open that it might be cost effective for upper level airmen when combined with securing information about the requirements of unusual tasks.

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AIRMAN JOB PERFORMANCE ESTIMATED FROM TASK PERFORMANCE RATINGS

I. PURPOSE AND BACKGROUND

Over a number of years there have been attempts to improve the evaluation of the job performance of individual airmen. General dissatisfaction exists with the use of global performance ratings, with numerous efforts having been made to suppress the inflationary tendencies that operate when such judgments are used to reward and affect the individual. Even when a supervisor knows that his rating will not influence the future of his subordinate, the tendency to render the benefit of the doubt persists.

Nevertheless, some form of performance measure is badly needed for many purposes – to assess the depth of training required to handle complex tasks, to serve as a criterion for the selection of job qualified personnel, to establish cutoff points for the termination of on-the-job training, to set the length of courses, and so on and on. Although emphasis traditionally makes promotion the goal of performance measurement, it is not, from the standpoint of personnel management, necessarily the most important reason for job performance assessment. In fact, a technique which supplies data about the execution of job elements would have unique value. With these facts in mind, an experiment was made to determine if a criterion of job performance could be obtained in a way that did not require the rater to make a unitary overall assessment. The results of that experiment are outlined. While not by any means the first attempt to evaluate Air Force personnel at the task level, it is the first time the tasks of an operational job inventory were used to derive an overall job performance rating. The concept underlying this approach was that each task rating was a separate measure, and that all of an airman's task performance ratings ought to produce a more stable estimate than a single act or rating. Although the purpose of the study was simple enough, the necessary statistical controls were inherently complicated. Those dealing with job inventory data will be touched upon in this report.

The obvious way to obtain supervisor estimates of an airman's performance without making an overall rating is to have the supervisor rate an airman on the performance of each task in his job. With job inventories available, it would seem to be quite easy. The separate task performance ratings could be combined in a number of ways to compute an overall estimate, and the rater need not be asked to make a global rating. With proper task rating instructions he might not even consider the collective effect of his separate ratings. The experiment was done, but there were complications. If a supervisor is given an inventory and told to rate a subordinate on each task he does, one can be sure that the supervisor will render a set of ratings, and out of these ratings an overall estimate will emerge. It could be worthless. One needs to know whether another supervisor rating the same airman would agree; whether, in fact, supervisors agree on identifying the tasks an airman does. Thus, the experiment had to be conducted with job incumbents whose completed job inventories were immediately available, since it is the incumbents who report which tasks they do.

That is not all, though. The experiment was intended to learn whether or not a task performance rating method would yield an overall performance criterion as good as, or better than, a single global rating. As a matter of fact, it had to be better because it would require a great deal of supervisor time to make the task ratings. There was yet another complication. If one must show that the average task performance rating was as good as or better than a global rating, he must obtain both kinds of ratings on the same airman, by the same supervisor, at approximately the same time. In effect, the experimenter is faced with a contradiction in procedure, since he must obtain a global rating, even though the act of making it might affect the task performance ratings, or vice versa. The experiment was carried on anyway, with an overall rating and ratings on job behaviors made first. It was hoped that by having the raters seal these up before opening a packet containing the job inventory for task ratings the setting would change from general evaluation to specifics. The instructions required this order of procedure because the quick and easy rating job had to be done first to keep from losing raters.

There has been a much larger and more detailed Air Force effort directed toward evaluating job performance at the task level since this study was done. (Contract F41609-71-C-0010, Development of Task Level Job Performance Criteria, with the American Institutes for Research.) It is expected that a great deal of valuable information about tasks and task performance will be gained from it, information of a sort

that cannot possibly be obtained from the data reported here. The contract study is a massive research, and there are two characteristics of the present study which are in contrast to the contract effort: (a) the present study attempted a test of a rating situation which was close to operational conditions, with consideration given to the practical costs involved in an operational application; and (b) it made no attempt to select tasks, but it attempted to procure airman rates at all skill levels, disproportionately increasing the low and high level job incumbents' numbers.

II. DATA

The job inventory covered two ladders in the supply field, Inventory Management, Air Force specialty code (AFSC) 645X0, and Materiel Facilities, AFSC 647X0. There were 281 tasks. This inventory was used extensively from 1967 to 1970, with approximately 3,400 airmen being surveyed. Job types identified by means of the inventory were described by Phalen (1968). Phalen's sample included many of the airmen rated in the present study. They were scattered throughout all bases and command sources, and represented all grades.

Job Difficulty Indexes

Application of the Comprehensive Occupational Data Analysis Programs (CODAP) (see Christal, 1974), provides three measures of an incumbent's job difficulty: Job Difficulty Index (JDI) (also called Job Difficulty Composite (JDC)), Number of Tasks Performed (NTP), and Average Task Difficulty per Unit Time (ATDPUT). The basic measures ATDPUT and NTP are combined in a formula developed by Mead (Mead, 1970). Ratings by noncommissioned officers (NCO) on the relative time to learn each task are stored as means in CODAP and applied to each incumbent's estimate of the percent of time he spends doing the task, to provide an individual's ATDPUT. The three difficulty measures used in these analyses were collected on the inventory of this study, using difficulty ratings made by NCOs in the same AFSCs as the incumbents independently of this study.

The Samples

After records with incomplete data were removed, there remained 244 airmen with two raters and all desired information. These airmen represented most major commands and were drawn from the continental United States, Alaska, and three foreign bases, Ramstein, Clark, and Lajes. There numbers were as stated in Table 1:

Table 1. Data Samples

Career Ladder	AFSC	N
Inventory Management, lower level	64530+64550	99
Inventory Management, upper level	64570+64590	63
Materiel Facilities, lower level	64730+64750	52
Materiel Facilities, upper level	64770+64790	30

Performance Ratings

Names of airmen who had completed job inventories were selected, and their bases were requested to have them rated by two supervisors in a confidential study. The immediate supervisor was specifically requested as one rater, and as a second rater another supervisor who was well acquainted with the airman and his job. Owing to the heavy requirement levied against the supervisor's time, no supervisor was asked to rate more than one subordinate. A few rated two, however. Supervisors were asked not to discuss the study with anyone and to return the materials sealed.

Military and civilian supervisors first provided data about themselves. They then completed a check list which indicated the amount of their contact with the subordinate (Appendix A). Then followed the overall performance rating and ratings on 65 job behavioral traits. These materials constituted Packet I (see Appendix A). After sealing this packet, supervisors completed Packet II materials (see Appendix B). The job inventory listed all tasks in the occupational specialty, but the rater had no report as to which tasks the incumbent had identified as part of his job. A supervisor was to rate a subordinate's performance on each task that he was sure his subordinate was doing, using for comparison the performance of other known airmen. Then he was to estimate his subordinate's ability to learn satisfactorily every task in the inventory, including those the incumbent was currently doing. The scale was time-to-learn, shown in Appendix B (Job Inventory, training required column). Upon completion of these ratings, the supervisor was to append a job description if the airman held an additional assignment that was not covered by the listed tasks. (This added information caused the dropping of several cases whose jobs were outside the supply field.) The rater then estimated the time consumed for each packet. Self-data, contact check list, overall performance rating, and ratings on 65 traits appear to have required about 30 to 40 minutes. However, the second packet of task ratings required a minimum of two hours for most supervisors, and some raters reported up to six hours. It is probable that only an hour would have been required to rate performance alone, without ratings on task trainability. This would make a considerable difference for the longer job inventories.

III. ANALYSIS METHODS

Limiting Conditions

Several analytic approaches were employed to overcome problems raised by the small number of acceptable cases. These approaches are briefly outlined. Acceptable cases had complete information.

Earlier studies had shown that skill levels differed in respect to the importance of traits (trait patterns) that accounted for job success (Wiley, 1969; Wiley & Cagwin, 1968). It was therefore important to break down the population into subsamples by skill level. The previous work had been done on the criterion of overall performance for which cross-validations had been computed. The present study introduced two new criteria, the mean of task performance ratings and the mean of task trainability ratings. The paramount goal of this study was to determine if the cross-validity of either of these two criteria equalled or exceeded that of the overall performance rating. Lower cross-validities would demand that task performance ratings provide new and otherwise unobtainable data if they were to replace overall ratings. To establish the cross-validities of the new criteria on an equal footing with the overall performance rating it was necessary that every incumbent be evaluated on all three criteria, each airman being rated on the same variables by two supervisors. In order to test the equivalence of "immediate" and other supervisors, records were rejected if both the raters reported that they were immediate or other than immediate supervisors. Finally, the study introduced job inventory data as predictors of the criteria. This meant that each rater must have provided a job inventory that passed quality control screening. Despite these restrictions, the resulting sample of 244 incumbents appears to have been representative of the entire population for whom any ratings were returned, based upon analyses not reported here. (The larger sample, including data from one rater or two of the same kind of rater was analyzed by the same methods.)

Total Sample Analyses

Some questions could be answered by analyses of the undivided sample. This was done by multiple linear regression, using all the predictor data (Bottenberg & Ward, 1963). Regression analyses were used throughout this study.

Throughout these descriptions, a predictor rated by supervisor A correlated with a criterion rated by supervisor B, produces the coefficient called a cross-validity. When a trait (predictor) rated by A is correlated with the same trait rated by B, the coefficient is called a reliability. Traits have one reliability coefficient but two cross-validities. The latter arise when a trait rated by A predicts a performance rated by B, and when the same trait rated by B predicts the performance rated by A.

The first question was: Would the three criteria show equal cross-correlations? That is, if one correlated the criterion ratings assigned by immediate supervisors with those assigned the same incumbents

by the other supervisors, would the three different criteria have equivalent coefficients? The emphasis throughout this report is upon criterion correlations between raters and cross-validating regression predictions. The reason for this is that performance evaluations must be confirmable from another source to be generally applicable to Air Force problems.

The second question was: Would the regression predictions of the three criteria differ systematically? There are two kinds of regression predictions that can be considered, the one in which the trait rating predictors were produced by the same supervisors who made the criterion ratings, and the one in which the predictor raters did not make the criterion ratings, the cross-validation regressions. Since this study is aimed at understanding the composition of overall ratings, the analyses include the question of the importance of a specific behavioral trait in both situations, predictor and criterion sources the same, and predictor and criterion sources not the same.

The third question was: Is it necessary to retain the distinction between immediate and other supervisors throughout the data analyses? Comparison of the means and standard deviations of the ratings assigned by the two types of raters gave some justification for doubling the number of observations per correlation by combining the two sets of data since they were not markedly different. Justification in the sense that the two kinds of raters were equivalent arose from separate analyses which have been published elsewhere (Wiley, 1975). Statistical tests of the significance of differences when the data were separated into AFSCs and skill levels required that the N s of the samples be larger than afforded by the 244 available cases. It was also desired to include other kinds of data as predictors, data that are here called "demographic" to identify them as a matter of record rather than judgment. This increased the number of predictors, again demanding larger samples for statistical tests. Subsequent analyses used each airman twice, as though his two rating records represented different airmen. This duplicated the demographic data, and for that reason such analyses were used only for internal analyses of the relative influence of predictors. Complex questions arise in making significance tests where half of a set of predictors is repeated. However, where the purpose is to obtain internal comparisons, the procedure can be justified. In this case, only those tests involving demographic data used repeated observations.

Analyses of the Separated AFSC and Skill Level Samples

As a result of analyses in which it was attempted to collapse the 65 behavioral trait ratings into 10 dimensions, it was found that there was too much overlap among the dimensions to make such a substitution. Ten traits, each descriptive of the intended dimension, were selected to replace the 65 predictors. These choices were based upon the findings of other studies (Wiley & Cagwin, 1968). Analyses from this point forward involve just 10 trait rating predictors and 7 demographic rating predictors. The trainability rating was dropped from the statistical tests as a result of its lower predictability found in the first of these analyses. The following questions were asked:

Do systematic differences appear when the prediction R^2 s are compared for the different kinds of criteria? That is, can one see by inspection that one kind of criterion is consistently better predicted than another among the AFSC and skill level groups?

Did the demographic data make large contributions in accounting for any of the criteria? If so, which variables contributed?

Did the individual trait predictors make significant contributions in the presence of 9 other trait ratings? If so, could such contributions be interpreted by reference to AFSC or skill level?

In summary, the analyses were first concerned with the cross-correlations of the three types of criteria. Next, the analyses looked into the comparative regression predictions of the three criteria. Then the question of increasing the number of cases by treating airman as two ratees was decided in favor of doing so, but for internal comparison purposes only where demographic data were involved.

IV. RESULTS

Would the three criteria show equal cross-correlations? Table 2 provides the answer. (Table 2 carries the intercorrelations through the 10 traits that were later selected for regression analyses. All 65 behavioral traits are given in Appendix A with correlations, validities against the two performance criteria for both

Table 2. Intercorrelations of Data U

Variable Description	1	2	3	4	5	6	7	8	9	10	11	12	13
1 Overall Perf., other	1.000	577	246	241	078	707	547	295	213	176	646	271	747
2 Overall Perf., Immed.	577	1.000	301	236	070	556	711	288	262	204	109	273	507
3 Grade	246	301	1.000	832	053	314	341	437	411	603	402	667	305
4 Skill Level	241	236	832	1.000	018	266	322	439	408	529	334	610	263
5 Incumbent in 645X0	078	070	053	018	1.000	026	020	-025	-017	062	-032	184	100
6 Average Task Perf., other	707	556	314	266	026	1.000	564	497	313	167	095	235	534
7 Average Task Perf., Immed.	547	711	341	322	020	564	1.000	331	424	293	190	307	489
8 Average Train., other	295	288	437	439	-025	497	331	1.000	429	322	255	300	250
9 Average Train., Immed.	213	262	411	408	-017	313	424	429	1.000	322	217	365	225
10 Job Difficulty Index	176	204	603	529	062	167	293	322	322	1.000	874	477	170
11 Number of Tasks	046	109	402	334	-032	095	190	255	217	874	1.000	161	023
12 Average Task Difficulty	271	273	667	610	184	235	307	300	365	477	161	1.000	311
13 Even temper, other	747	507	305	263	100	534	489	250	225	170	023	311	1.000
14 Sense of humor other	749	471	358	334	068	588	459	284	260	194	059	333	701
15 Enthusiasm other	724	435	116	123	049	541	424	269	214	074	-035	184	709
16 Likes to talk other	795	485	234	201	086	603	457	247	181	164	074	229	728
17 Informs other	840	520	304	282	174	664	513	374	241	216	105	266	688
18 Perfectionist other	820	529	308	273	125	656	481	342	254	243	133	272	688
19 Military bearing other	794	498	289	267	067	675	525	325	244	217	127	244	688
20 Safety other	782	464	277	256	113	656	467	335	199	237	157	231	684
21 Can read T.O.s other	817	508	369	330	149	666	491	394	293	292	166	334	716
22 Sees good men other	799	511	379	324	130	693	517	378	315	295	183	326	695
23 Even temper, Immed.	486	759	284	246	076	415	618	207	249	214	136	233	549
24 Sense of humor Immed.	524	789	355	303	043	438	665	225	284	282	177	274	485
25 Enthusiasm Immed.	536	764	229	170	056	428	610	176	234	183	096	253	533
26 Likes to talk Immed.	512	769	316	252	126	454	628	213	281	237	140	266	478
27 Informs others Immed.	552	820	387	291	127	484	637	283	294	264	159	311	510
28 Perfectionist Immed.	534	791	338	262	109	520	674	273	321	246	155	302	447
29 Military bearing Immed.	500	796	325	240	061	459	641	198	289	213	124	304	484
30 Safety Immed.	571	821	335	250	074	524	656	284	318	249	145	303	553
31 Can read T.O.s Immed.	491	828	344	281	123	447	702	228	312	257	149	329	472
32 Sees good men Immed.	503	841	410	349	169	501	718	290	376	296	179	371	469

^aCriterion - items 1, 2, 6 thru 9.
 Demographic - 3 thru 5, 10 thru 12
 Trait - 13 thru 32.

Table 2. Intercorrelations of Data Used Once; Criterion, Demographic, and 10 Trait Predictors^a

8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
295	213	176	046	271	747	749	724	795	840	820	794	782	817	799	486	524	536	512	552	534
288	262	204	109	273	507	471	435	485	520	529	498	464	508	511	759	789	764	769	820	791
137	411	603	402	667	305	358	116	234	304	308	289	277	369	379	284	355	229	316	387	338
139	408	529	334	610	263	334	123	201	282	273	267	256	330	324	246	303	170	252	291	262
025	-017	062	-032	184	100	068	049	086	174	125	067	113	149	130	076	043	056	126	127	109
197	313	167	095	235	534	588	541	603	664	656	675	656	666	693	415	438	428	454	484	520
331	424	293	190	307	489	459	424	457	513	481	525	467	491	517	618	665	610	628	637	674
000	429	322	255	300	250	284	269	247	374	342	325	335	394	378	207	225	176	213	283	273
429	1.000	322	217	365	225	260	214	181	241	254	244	199	293	315	249	284	234	281	294	321
322	322	1.000	874	477	170	194	074	164	216	243	217	237	292	295	214	282	183	237	264	246
255	217	874	1.000	161	023	059	-035	074	105	133	127	157	166	183	136	177	096	140	159	155
300	365	477	161	1.000	311	333	184	229	266	272	244	231	334	326	233	274	253	266	311	302
250	225	170	023	311	1.000	701	709	728	688	688	688	684	716	695	549	485	533	478	510	447
284	260	194	059	333	701	1.000	666	679	732	727	749	712	788	748	438	488	433	425	475	422
269	214	074	-035	184	709	666	1.000	702	698	705	727	660	717	666	453	424	472	382	420	442
247	181	164	074	229	728	679	702	1.000	773	813	773	739	740	753	519	501	476	509	469	498
374	241	216	105	266	688	732	698	773	1.000	823	793	806	814	838	442	479	454	457	548	504
442	254	243	133	272	688	727	705	813	823	1.000	811	805	802	822	475	500	473	478	519	524
325	244	217	127	244	688	749	727	773	793	811	1.000	791	768	786	538	539	524	483	516	496
335	199	237	157	231	684	712	660	739	806	805	791	1.000	793	779	430	442	451	454	487	444
394	293	292	166	334	716	788	717	740	814	802	768	793	1.000	810	427	508	480	453	498	476
378	315	295	183	326	695	748	666	753	838	822	786	779	810	1.000	471	486	461	483	536	493
207	249	214	136	233	549	438	453	519	442	475	538	430	427	471	1.000	820	776	747	715	709
225	284	282	177	274	485	488	424	501	479	500	539	442	508	486	820	1.000	773	763	776	764
176	234	183	096	253	533	433	472	476	454	473	524	451	480	461	776	773	1.000	749	751	710
213	281	237	140	266	478	425	382	509	457	478	483	454	453	483	747	763	749	1.000	703	719
283	294	264	159	311	510	475	420	469	548	519	516	487	498	536	715	776	751	703	1.000	796
273	321	246	155	302	447	422	442	498	504	524	496	444	476	493	709	764	710	719	796	1.000
198	289	213	124	304	484	474	439	438	476	483	568	425	452	484	781	797	787	718	807	812
284	318	249	145	303	553	512	502	543	537	551	569	518	538	539	806	825	779	763	812	758
228	312	257	149	329	472	452	396	470	450	471	482	410	507	495	785	840	754	755	769	780
290	376	296	179	371	469	438	389	474	483	501	471	436	492	517	736	763	725	749	828	809

Demographic, and 10 Trait Predictors*

	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
840	820	794	782	817	799	486	524	536	512	552	534	500	571	491	503	
820	829	498	464	508	511	759	789	764	769	820	791	796	821	828	841	
806	808	289	277	369	379	284	355	229	316	387	338	325	335	344	410	
282	273	267	256	330	324	246	303	170	252	291	262	240	250	281	349	
176	125	067	113	149	130	076	043	056	126	127	109	061	074	123	167	
666	656	675	656	666	693	415	438	428	454	484	520	459	524	447	501	
513	481	525	467	491	517	618	665	610	628	637	674	641	656	702	718	
374	342	325	335	394	378	207	225	176	213	283	273	198	284	228	290	
241	256	266	199	293	315	249	284	234	281	294	321	289	318	312	376	
216	243	217	237	292	295	214	282	183	237	264	246	213	249	257	296	
105	133	127	157	166	183	136	177	096	140	159	155	124	145	149	179	
266	272	244	231	334	326	233	274	253	266	311	302	304	303	329	371	
688	688	688	684	716	695	549	485	533	478	510	447	484	553	472	469	
732	727	749	712	788	748	438	488	433	425	475	422	474	512	452	438	
698	705	727	660	717	666	453	424	472	382	420	442	439	502	396	389	
773	813	773	739	740	753	519	501	476	509	469	498	438	543	470	474	
1,000	823	793	806	814	838	442	479	454	457	548	504	476	537	450	483	
823	1,000	811	805	802	822	475	500	473	478	519	524	483	551	471	501	
793	811	1,000	791	768	786	538	539	524	483	516	496	568	569	482	471	
406	805	791	1,000	793	779	430	442	451	454	487	444	425	518	410	436	
814	802	768	793	1,000	810	427	508	480	453	498	476	452	538	507	492	
838	822	786	779	810	1,000	471	486	461	483	536	493	484	539	495	517	
442	475	538	430	427	471	1,000	820	776	747	715	709	781	806	785	736	
479	500	539	442	508	486	820	1,000	773	763	776	764	797	825	840	763	
454	473	524	451	480	461	776	773	1,000	749	751	710	787	779	754	725	
457	478	483	454	453	483	747	763	749	1,000	703	719	718	763	755	749	
848	519	516	497	498	536	715	776	751	703	1,000	796	807	812	769	828	
506	526	496	444	476	493	709	764	710	719	796	1,000	812	758	780	809	
476	483	508	425	452	484	781	797	787	718	807	812	1,000	832	803	815	
527	551	569	518	538	539	806	825	779	763	812	758	832	1,000	826	826	
450	471	482	410	507	495	785	840	754	755	769	780	803	826	1,000	849	
483	501	471	436	492	517	736	763	725	749	828	809	815	826	849	1,000	

kinds of raters.) The relevant statistics are: .577, the correlation between raters for the overall performance rating; .564, the corresponding correlation for the mean task performance rating criterion; and .429, for the mean task trainability rating. For 244 observations, the value .577 is significantly different from .564 at the .01 confidence level, and the value .429 is very significantly lower than either. Squaring .577 and .564, shows substantial predictions of 33 and 32 percent, respectively, of the criterion variance from the corresponding rating by a different rater.

Would regression predictions of the three criteria differ systematically? Table 3 provides the R^2 s obtained when 65 trait ratings were used as predictors against the three criteria. The lower half of Table 3 gives the cross-validation regression predictions. The prediction of the trainability ratings is distinctly lower than that of the other two criteria. The overall performance rating was slightly more predictable than the mean of task ratings. The greatest difference is 5 percent in favor of the overall rating. However, it should be remarked that the task performance scale was 7 point and the overall rating scale was 9 point. There is some evidence that 9-point scales yield slightly higher predictions than 7-point scales. Its relevance to these findings is a matter of speculation.

Table 3. R^2 s for Three Criteria, Using Trait Ratings as Predictors^a
N = 244 airmen

	Criterion		
	Overall Performance Rating	Mean Task Performance Rating	Mean Trainability Rating
Criterion Raters Also Rated the Traits			
Rater was other supervisor, 20th iteration ^b	.867	.628	.307
final iteration	.881	.672	.417
Rater was immediate supervisor, 20th iteration ^b	.872	.631	.307
final iteration	.889	.673	.405
Criterion Raters Were Not the Trait Raters			
Criterion rater was immediate supervisor,			
20th iteration ^b	.461	.453	.265
final iteration	.510	.506	.351
Criterion rater was other supervisor,			
20th Iteration ^b	.462	.413	.222
final iteration	.527	.483	.338

^aAll 65 trait ratings were used as predictors in the regression equations.

^bThe regression routines continue to iterate until the contribution to R^2 falls below a set stop criterion (here .0001 was used). For practical purposes it is often desirable to identify an earlier cut off point, particularly if many variable predictors are used with relatively small total samples.

The goal, up to this point, has been to compare the reliability and cross-validity of two job performance criteria. This, however, is not the whole problem of the study. Previous research (employing the same job behavior trait ratings) had revealed that the composition of elements best predicting overall performance ratings differed among the skill levels, and to some extent between career ladders. If the mean of task ratings were to be used as a substitute performance criterion, would its prediction depend upon factors which differentiate overall performance between skill levels? If so, would the important ingredients be the same? To accomplish these tests it was necessary to employ the experimental observations fully, taking advantage of the largest permissible number of observations per correlation coefficient. By treating

an airman as though he were two airmen, the full 488 sets of observations could be used to compute a correlation coefficient, and this was done in the analyses which follow. This permitted breakdown into subsamples, whose characteristics are given in Table 4, comparing them to the total samples separated by kinds of raters (in the top rows of Table 4). Table 4 shows expected differences between the performance ratings of low and high level airmen, and also that there was very little difference between the mean ratings assigned by the immediate and other supervisors. Airmen in the Inventory Management ladder, AFSC 645X0, appear to have received slightly higher ratings than AFSC 647X0 airmen.

Table 4. Criterion Means and Standard Deviations by Samples

Sample	Number of Ratings	Overall Performance Rating		Mean of Task Performance Ratings		Mean of Task Trainability Ratings	
		Mean	SD	Mean	SD	Mean	SD
Other	244	6.984	1.180	5.406	0.832	5.327	1.084
Immediate supervisors	244	7.086	1.375	5.438	0.925	5.347	0.983
Supervisors combined to produce 2 observations per ratee	488	7.035	1.282	5.422	0.880	5.337	1.035
Ladders combined, skill levels separated							
64X30+64X50	302	6.815	1.312	5.249	0.948	5.031	1.008
64X70+64X90	186	7.393	1.146	5.704	0.665	5.833	0.874
Ladders separated, skill levels combined							
645X0 ^a	324	7.102	1.271	5.436	0.917	5.321	1.048
647X0 ^b	164	6.092	1.295	5.394	0.802	5.368	1.008
Ladders and skill levels separated							
64530+64550	198	6.884	1.311	5.255	0.995	4.999	1.005
64570+64590	126	7.444	1.124	5.721	0.688	5.828	0.905
64730+64750	104	6.683	1.303	5.237	0.854	5.094	1.011
64770+64790	60	7.283	1.185	5.667	0.613	5.844	0.805

^a645X0 = Inventory Management ladder.
^b647X0 = Materiel Facilities ladder.

Do systematic differences appear when the prediction R^2 's are compared for the different kinds of criteria? Table 5 provides the across-rater coefficients and Table 6 provides the regression comparisons in the form of R^2 's. The R^2 's of chief interest are in the lower half of Table 6. In accordance with the philosophy of this report, R^2 's are discounted where the criterion rater also rated the airman's traits. However, in both halves of Table 6 it is evident that the trainability criterion was consistently less predictable than the other two.

Comparing the upper and lower halves of Table 6, it is seen that on cross-validation the R^2 's for overall ratings shrank to almost the same level as the shrunken values for the mean task performance criterion. The numeric losses were necessarily larger, but the important point is the amount of prediction afforded after shrinkage, 32 percent minimum in all cases, with one exception. That exception was the higher level inventory management personnel, whose overall performance predictability dropped to 24 percent, and whose mean task performance predictability stayed above the 32 percent level of 36. Since this was a respectable sample of 126 observations per correlation, the direction of the difference in predictabilities for the two criteria could have meaning.

Table 5. Correlations with and among Criteria Using the Maximum 488 Observations

Variable	645X0, Inventory Management Ladder						647X0, Materiel Facilities Ladder								
	Combined Sample N = 488			Lower Level N = 198			Upper Level N = 125			Lower Level N = 104			Upper Level N = 60		
	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
Criterion Variables															
Overall Performance (column A)	568 ^a	546	254	550	540	292	409	409	127	666	631	088	513	401	150
Mean Task Performance (column B)	546	560	322	540	465	319	409	557	262	631	469	126	401	365	221
Mean Task Trainability (column C)	254	322	427	292	319	420	127	262	181	088	126	379	150	221	150
Demographic Variables															
Grade	275	328	424	075	153	180	182	304	343	248	270	151	336	282	236
Skill level	237	295	424	061	162	142	182	326	292	-063	-065	302	403	286	112
Incumbent in 645X0	074	023	-021	-	-	-	-	-	-	-	-	-	-	-	-
Rater was immediate supervisor	040	018	009	027	-004	069	071	065	-084	-022	-025	-033	155	142	079
Job difficulty index	190	233	321	110	114	053	056	114	141	-034	039	230	214	274	331
Number tasks performed	080	144	237	054	064	009	-040	103	107	-115	-075	172	139	212	295
Average task difficulty	271	272	330	164	155	067	166	142	260	188	191	282	179	140	094
Behavioral Trait Ratings															
Even temper	491	448	215	553	449	177	263	279	116	514	481	105	334	339	077
Sense of humor	492	446	241	536	418	189	296	332	088	470	455	084	467	392	229
Enthusiasm	479	422	192	524	399	205	321	351	102	547	537	101	297	200	095
Garrulous	495	454	198	496	422	208	374	385	169	510	514	025	431	299	023
Informs others	531	497	263	502	473	294	436	423	110	550	536	114	522	376	119
Perfectionist	525	496	263	535	475	283	382	388	187	517	522	057	486	448	112
Military bearing	496	492	219	495	441	188	392	487	258	498	516	-010	389	322	-049
Safety alertness	511	493	246	523	447	254	360	472	151	558	538	055	376	323	131
Can read Tech. Orders	496	467	257	506	455	240	361	320	112	432	467	085	485	392	089
Recognizes good men	502	506	301	489	475	271	363	447	157	529	514	132	381	312	181

^aDecimal points have been omitted. The values in the diagonals could have been extracted from Table 2, and appear as slightly larger in Table 2. The algorithm computed these values from two vectors multiplied as follows: a₁b₁, a₂b₂, . . . , a₂₄₄b₂₄₄, b₁a₁, b₂a₂, . . . , b₂₄₄a₂₄₄.

Table 6. R² Comparing 3 Criteria in Various Combinations

Sample	N	10 Traits + 7 Demographic Predictors ^a			7 Demographic Predictors Alone ^a		
		Overall Rating	Task Rating Mean	Trainability Rating Mean	Overall Rating	Task Rating Mean	Trainability Rating Mean
Criterion Raters Also Rated the Traits							
Undivided sample	488	.813	.556	.275	.097	.115	.207
Ladders combined, levels separated							
64X30 + 64X50	302	.790	.513	.157	.058	.071	.067
64X70 + 64X90	186	.846	.682	.208	.088	.139	.123
Ladders separated, levels combined							
645X0	324	.809	.581	.294	.086	.117	.210
647X0	164	.837	.607	.318	.140	.187	.227
Ladders and levels separated							
64530 + 64550	198	.787	.533	.193	.041	.082	.061
64570 + 64590	126	.850	.745	.271	.053	.136	.157
64730 + 64750	104	.841	.610	.252	.125	.169	.160
64770 + 64790	60	.889	.649	.439	.235	.171	.141
Criterion Raters Were Not the Trait Raters							
Undivided sample	488	.345	.321	.236	.097	.115	.207
Ladders combined, levels separated							
64X30 + 64X50	302	.375	.307	.131	.058	.071	.067
64X70 + 64X90	186	.289	.300	.149	.088	.139	.123
Ladders separated, levels combined							
645X0	324	.332	.321	.256	.086	.117	.210
647X0	164	.382	.393	.288	.140	.187	.227
Ladders and levels separated							
64530 + 64550	198	.380	.298	.157	.041	.062	.061
64570 + 64590	126	.242	.360	.249	.053	.136	.157
64730 + 64750	104	.447	.445	.217	.125	.169	.160
64770 + 64790	60	.504	.346	.353	.235	.171	.141

Note. — 645X0 = Inventory Management
647X0 = Materiel Facilities

^aTables 5 and 7 list the demographic variables.

Did the demographic data make significant contributions in accounting for the variance of any of the criteria? If so, which variables contributed? Table 7 supplies the results of a series of regression problems in which the 488 observation sample was used and each of the demographic variables was removed and replaced to obtain the restricted models in the presence of the trait ratings. The only significantly contributing variable appears to have been membership in one of the two AFSCs, and this predictor contributed only for the ratings in which the criterion rater was also the trait rater. The findings of Table 7 apply to comparisons within this study and are not offered as a basis for generalizations.

Additional analyses were made which are not tabulated here. The cross-validation portion of the analyses is discussed as follows. A single trait rating was added to the prediction (restricted model) of the overall criterion and the mean task rating criterion to make a series of 8-predictor full models using the 7 demographic predictors as the base. The demographic predictors accounted for 9.70 percent of the overall performance rating and 11.53 percent of the mean task performance rating. The addition of any one of the

Table 7. Unique Contributions of Demographic Predictors
Sample of 488 Observations

Predictor System	Criterion, Overall Performance Rating			Criterion, Mean Task Performance Rating		
	R ² Full Model	R ² Restricted Model	Probability ^a	R ² Full Model	R ² Restricted Model	Probability ^a
Criterion Raters Also Rated the Traits						
10 traits + 7 demographic predictors	.8130			.5563		
Grade removed		.8116	.062	.5563	.840	
Skill level removed		.8130	.906	.5553	.305	
Ladder identification removed (in 645X0)		.8102	.008 ^b	.5512	.020 ^b	
Rater was immediate supervisor removed		.8127	.412	.5562	.802	
Job difficulty index removed		.8128	.450	.5563	.816	
Number of tasks performed removed		.8122	.150	.5563	.882	
Average task difficulty removed		.8129	.666	.5563	1.000	
Criterion Raters Were Not the Trait Raters						
10 traits + 7 demographic predictors	.3450			.3212		
Grade removed		.3447	.650	.3200	.351	
Skill level removed		.3450	.886	.3200	.349	
Ladder identification removed (in 645X0)		.3449	.771	.3189	.200	
Rater was immediate supervisor removed		.3422	.155	.3199	.333	
Job difficulty index removed		.3439	.368	.3212	.886	
Number of tasks performed removed		.3435	.303	.3213	1.000	
Average task difficulty removed		.3438	.363	.3208	.567	

^adf₁ = 1; df₂ = 470 These degrees of freedom do not take account of the double use of demographic data and the significances are interpretable only for internal comparison purposes.

^bThis value is significant at or beyond the .05 confidence level when compared with the other values in the prediction system. The value .8102 was subtracted from .8130, and .5512 from .5563, and the F-test applied to the difference to establish probabilities of 8 and 20 chances in a thousand that the difference would occur as the result of chance.

10 trait ratings raised the R², or accountability, drastically. The lowest R² was .2347, the highest .3031, or 23.47 percent to 30.31 percent variance prediction of the two criteria. If one accepts the computation of significances without concern for the repeated use of the demographic variables in the 488 observation sample, all of these contributions would be significant beyond the .001 level of confidence. It is clear that within the relationships of these performance criteria the behavioral trait ratings made significant contributions to accounting for either criterion.

Did the individual trait predictors make significant contributions to predicting job performance ratings when used in the presence of 9 other trait ratings? If so, could such contributions be interpreted by reference to AFSC or skill level? The regression problems reported in Table 8 reveal that when the rater was both the trait and criterion rater, some of the traits made very significant contributions, but that when cross-validation data were used, the separate trait contributions were nonsignificant for the mean task performance criterion. Two trait ratings showed some significance for the overall criterion. These results are for the undivided sample. Additional analyses were run for the samples divided as in Table 6. The results were similar to those for the undivided sample.

In Table 8, the fact that two ratings were made on the same airman is irrelevant because the instructions of the study preserved the independence of the two ratings. One can generalize to the extent of saying that in the supply ladder the overall judgment of a rater reflects differences he rates on behavioral traits. There is some sharing between raters on cross-validation. When the criterion is the mean of task performance ratings, the specificity of trait judgments is lost.

Table 8. Unique Contributions of Trait Rating Predictors with Maximum Observations
Observation = 488

Trait Number and Description	Criterion Overall Performance Rating		Criterion Mean Task Performance Rating	
	R ²	Probability ^a	R ²	Probability ^a
Criterion Raters Also Rated the Traits				
Full model, 10 trait rating predictors	.8130		.5563	
1 Even temper rating removed	.8107	.018 ^b	.5560	.579
4 Sense of humor rating removed	.8128	.513	.5562	.731
8 Enthusiasm rating removed	.8127	.391	.5562	.727
12 Garrulous rating removed	.8081	.001 ^b	.5553	.308
17 Informs others rating removed	.8015	.000 ^b	.5563	.928
20 Perfectionist rating removed	.8109	.024 ^b	.5533	.076
21 Military bearing rating removed	.8129	.574	.5554	.340
33 Safety alertness rating removed	.8121	.127	.5552	.272
49 Can read tech orders rating removed	.8067	.000 ^b	.5497	.008 ^b
63 Recognizes good men rating removed	.8084	.001 ^b	.5410	.000 ^b
Criterion Raters Were Not the Trait Raters				
Full model, 10 trait rating predictors	.3450		.3213	
1 Even temper rating removed	.3422	.159	.3196	.297
4 Sense of humor rating removed	.3449	.780	.3202	.382
8 Enthusiasm rating removed	.3434	.289	.3212	.806
12 Garrulous rating removed	.3435	.304	.3208	.589
17 Informs others rating removed	.3387	.034 ^b	.3192	.231
20 Perfectionist rating removed	.3382	.027 ^b	.3176	.111
21 Military bearing rating removed	.3448	.741	.3197	.300
49 Can read tech orders rating removed	.3447	.629	.3208	.553
63 Recognizes good men rating removed	.3449	.764	.3192	.234

^adf₁ = 1; df₂ = 479.

^bSignificant value: probability less than 5 chances in 100 that the difference (Full model-Restricted model) would occur as the result of chance.

V. DISCUSSION

The study was made to determine if it is feasible to assess a job incumbent's overall performance by summing separate task performance ratings. A question is raised by the necessity to have the task performance raters also act as global performance raters. This was a rigid experimental requirement because global ratings by the same raters were necessary to compare the cross-validities of the two criteria without question as to the equivalence of the rating sources. That is, it was necessary for the global ratings used for comparison to be made by the same raters at about the same time. Statistically, the results of the experiment should show that the mean task performance ratings yield as high cross-correlations as the overall ratings. The two obtained *r*'s were .577 for the overall cross-correlation and .564 for the mean task performance cross-correlation. For practical use, the task rating cross-correlation should be higher because of the time spent in task performance rating. It is a matter of conjecture as to whether the raters became "locked in" to their original overall estimates, and then simply made trait ratings and subsequent task ratings with variations on the original judgment. Such a condition should be recognized as a possibility. To answer the question, one would need a study in which a set of raters provide only global ratings, and another set of raters provide only task ratings on the same job incumbents. Without the present study

having been made, such a study would raise more questions than it could answer. In effect, there was no substitute for the procedures of this study in the light of existing time, personnel, and information about the way task performance raters would behave.

Some bits of evidence from these data suggest that the raters were not repeating their original estimates. One form of evidence is found in the regression predictions on cross-validation. Using 65 trait ratings as predictors, the prediction of overall performance ratings shrank to about the same cross-validation level as that of the task performance prediction, but both shrinkages stopped far above chance prediction. The R^2 comparison was a drop from .813 to .345 for the overall rating and a drop from .556 to .321 for the mean task performance rating. These values are directly interpretable in percents, with the lower values representing 34.5 and 32.1 percent accountability of the criterion variance. That is, after shrinkage there remained substantial prediction of the criterion variance which could not be attributed to rater set because the raters were different.

Continuing with the bits of evidence that ratings were not repetition, it should be mentioned that the data were reviewed by individual rating booklet to determine if there was considerable variance within a given rater's task and trait ratings. Variance was pronounced and it was present at all skill levels. Had there been little or no variance within evaluations of an airman, particularly on trait ratings, the cross-validation process would probably have reduced prediction to trivial values below the 32 percent level observed.

A final increment of evidence for concluding the independence of task performance ratings was to be found by examining the trainability ratings. A number of tasks performed by upper level personnel involved protection of high value and war critical supplies. These, along with tasks involving the accountability for classified materiel, were commonly assigned lower trainability ratings than the average for the incumbent in question, regardless of his level. It is presumed that this rating tendency reflected conservatism regarding critical tasks. Thus it seems possible that the rater's task of evaluating the trainability of an incumbent may have influenced him against making blanket judgments. (The performance and trainability scales, shown in Appendix B, appeared together and would probably have been read with the first task.)

A question arose in the analyses as to how to test the two criteria for samples broken down by ladder and skill level, when only 244 airmen comprised the ratees. The availability of two complete sets of data on each individual permitted cross-validations with a total sample of 488, if one accepted the ratings by different supervisors as independent measures. Since this was part of the instructions of the study, that the raters were not to communicate with others about the study, the ratings were treated as independent variables. Of course the ratees were correlated highly with themselves, but this is not a deterrent in the regression analysis methods used. However, a more serious question arose when demographic variables were included in the analyses because each airman's grade or other measure was repeated. The results can be used for comparison of relationships within the study, but cannot be applied outside of it. The issue proved to be moot because demographic variables made no significant contributions to cross-validated predictions obtainable from trait ratings, and probably would not have on correction of the significances for repeated data.

The foregoing considerations suggest that an average of task performance ratings would be a feasible and valid measure of job performance. But it would not be cost effective for lower level airmen, since it would not add much information to an overall rating and would require considerable rater time. Specifically, when the data for lower level Inventory Management airmen were broken out for cross-validation, the prediction of the overall criterion was 38 percent and that of the mean task performance criterion was 30 percent, with the corresponding breakout for Material Facilities airmen giving 45 percent prediction for either criterion. The same conclusion should not be drawn for upper level airmen, whose jobs contained many tasks, some of which were critical. The small sample of high level Materiel Facilities airmen showed 50 percent prediction of the overall criterion and 35 percent of the mean task criterion on cross-validation, but the larger sample of high level Inventory Management airmen showed only 24 percent prediction of the overall criterion and 36 percent prediction of the mean task performance criterion, a reversal falling below the 32 percent prediction level for the overall criterion. The analyses leave uncertain the difference between the mean task rating criterion prediction and that of the overall performance rating for higher level airmen under cross-validation. The mean task rating procedure may have advantages for certain purposes.

VI. CONCLUSIONS

A study was performed in which airman job incumbents in the supply field were rated on their performance of tasks listed in an operational job inventory. They were also rated on the length of time it would take to train them to perform every task in the inventory, including the ones that they were doing. Before making the task ratings, two supervisors independently rated each airman on overall performance and 65 job behavioral traits. The rated incumbents had completed job inventories, they were selected to represent all enlisted skill levels, and they provided a wide coverage of Air Force jobs. The purpose of the study was to determine if a substitute for a single global performance rating could be made by averaging performance ratings assigned to the same airmen on separate tasks. The statistical controls required stringent adherence to complete data on all incumbents, and the experimental requirements demanded considerable supervisor time to rate task performance and trainability. The result was a select sample of only 244 job incumbents with two sets of complete data. Each incumbent provided job inventory data, from which were obtained job difficulty indexes that were included in the analyses. Also, the supervisor data included estimates of rating time consumed.

The critical test was that of cross-correlations, from which it was found that 33 percent of the overall performance variance was accountable from the opposite rater and that 32 percent of the mean task performance variance was similarly accountable. Higher cross-validations were found from trait rating regression problems. In terms of rater time consumed the mean task performance rating effort would not be cost effective. However, when the number of ratings was maximized by treating the two sets of ratings on an airman as though they were for different ratees, it became possible to analyze the data by skill level. The results altered the general conclusions by revealing that the mean task performance ratings of upper skill level airmen behaved differently on cross-validation than did those of lower skill level airmen. Combining both supply ladders and skill levels, 32 percent prediction was found for either criterion, but upon separating the samples by ladder it was found that the mean task performance criterion was better predicted for higher level Inventory Management personnel. There may be circumstances, when acquiring data about unusual tasks or unusual jobs, in which the mean task performance rating approach would be significantly better than an overall performance rating approach.

REFERENCES

- Bottenberg, R.A., & Ward, J.H., Jr.** *Applied linear regression*. PRL-TDR-63-6, AD-413 128. Lackland AFB, TX: 6570th Personnel Research Laboratory, Aerospace Medical Division, Air Force Systems Command, March 1963.
- Christal, R.E.** *The United States Air Force occupational research project*. AFHRL-TR-73-75, AD-774 574. Lackland AFB, TX: Occupational Research Division, Air Force Human Resources Laboratory, January 1974.
- Mead, D.F.** *Development of an equation for evaluating job difficulty*. AFHRL-TR-70-43, AD-720 253. Lackland AFB, TX: Personnel Division, Air Force Human Resources Laboratory, November 1970.
- Phalen, W.J.** *Occupational survey of the inventory management and materiel facilities career ladders 645X0/647X0*. AFHRL-TR-68-120, AD-705 173. Lackland AFB, TX: Personnel Research Division, Air Force Human Resources Laboratory, December 1968.
- Wiley, L.N.** *Analyzing supervisor ratings of performance of job type members*. Paper presented at the meeting of the American Psychological Association, Washington, DC, August - September 1969.
- Wiley, L.N.** *Familiarity with subordinates' jobs: immediate vs secondary supervisors*. AFHRL-TR-75-56, AD-A019 560. Lackland AFB, TX: Occupational and Manpower Research Division, Air Force Human Resources Laboratory, October 1975.
- Wiley, L.N., & Cagwin, L.P.** *Comparing prediction of job performance ratings for aircraft mechanics and administrative airmen*. AFHRL-TR-68-108, AD-691 003. Lackland AFB, TX: Personnel Research Division, Air Force Human Resources Laboratory, October 1968.

APPENDIX A: LIST OF TRAITS AND TRAIT STATISTICS
INSTRUCTIONS AND CONTENTS OF PACKET 1

Name of Ratee

Card 01: Case Control Number _____
1-4

Last Name	5-22	First Name	Initial
Grade	23		
PREFIX 24-25	AFSN NUMBER 26-33		
PREFIX 34	DAFSC NUMBER 35-39 SUFFIX 40		
Air Command	41		
Organization	42-68	Base	69-72
Assignment		Card 02: (CASE NUMBER 1-4)	5-73

Name of Rater

Card 03: (CASE NUMBER 1-4)

Name of Rater	Last	5-22	First	Initial	Grade	23
AFSN	PREFIX 24-25 NUMBER 26-33			Duty AFSC	PREFIX 34 NUMBER 35-39 SUFFIX 40	
Job Title	NO PUNCH					
Base	41-44					
Address where personal communication can be sent	NO PUNCH					

Time Scale (Encircle)

25 min or less1	1 hr 16 min to 1 hr 45 min6
26 to 35 min2	1 hr 46 min to 2 hrs 30 min7
36 to 45 min3	2 hrs 31 min to 4 hrs8
46 min to 1 hr4	Over 4 hrs9
61 min to 1 hr 15 min5	

Study: AFPT 80-032E

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APPENDIX A

Trait Statements, Means, SDs, and Cross-Validities for Total Sample
N = 244

Trait Statement	Immediate Supervisor		Other Supervisor		Immediate Supervisor		Other Supervisor	
	M	SD	r	r	M	SD	r	r
1* Shows even temper.	6.84	1.38	.507	.489	6.92	1.55	.486	.415
2 Is courteous, has good manners.	6.92	1.36	.544	.536	6.97	1.46	.494	.387
3 Can shift attention to unscheduled tasks then back to scheduled tasks without getting confused.	6.81	1.38	.459	.451	6.87	1.49	.505	.460
4* Shows good sense of humor and uses it only at the right time.	6.65	1.46	.471	.459	6.65	1.63	.524	.438
5 Has assured manner; shows self-confidence.	7.02	1.39	.513	.458	7.03	1.53	.531	.438
6 Holds attention of people he is advising or instructing.	6.56	1.44	.449	.396	6.73	1.52	.501	.420
7 Organizes his ideas and tells them clearly when explaining facts or processes.	6.74	1.53	.469	.408	6.86	1.61	.524	.451
8* Shows enthusiasm about the work of his speciality.	6.88	1.39	.435	.424	6.90	1.64	.536	.428
9 Shows that he wants to cooperate with his co-workers or the people under him.	6.76	1.42	.461	.459	6.78	1.71	.537	.467
10 Works under uncomfortable, disagreeable, or annoying conditions without losing self-control.	6.83	1.45	.468	.432	6.88	1.57	.568	.488
11 Spends considerable off-duty time keeping up on matters relating to his work.	6.76	1.54	.485	.430	6.73	1.68	.526	.459

(Criteria are overall performance and average task performance.)
Predictor Rater: Immediate Supervisor
Criterion Rater: Other Supervisor

Appendix A cont.

12*	Likes to discuss anything at length (Examples: Girls, sports, politics).	6.96	1.51	.485	.457	6.94	1.59	.512	.454
13	Can work alone without the help of others.	7.09	1.55	.511	.489	7.00	1.65	.495	.451
14	Puts others at ease and removes tensions and pressures on those working around him.	6.76	1.38	.493	.455	6.78	1.51	.475	.419
15	Corrects or criticizes without scolding or nagging.	6.74	1.47	.476	.477	6.80	1.60	.542	.473
16	Breaks in new personnel skillfully, so that they are quickly able to work alone.	6.93	1.52	.523	.505	6.99	1.62	.551	.484
17*	Keeps his co-workers and subordinates informed regarding decisions which affect them.	6.75	1.44	.520	.513	6.80	1.52	.552	.484
18	Listens to complaints and suggestions of the men for whom he is responsible and supports them when justified.	6.66	1.40	.538	.547	6.64	1.56	.520	.457
19	Accomplishes large amounts of work in a short time (Think only about how much, not about how well it is done).	6.13	1.74	.380	.424	6.20	1.74	.499	.434
20*	Shows a perfectionist attitude toward work, wants each detail exactly right.	6.79	1.49	.529	.481	6.98	1.54	.534	.520
21*	Has good military bearing, neatness, cleanliness, attractiveness.	6.88	1.54	.498	.525	6.96	1.55	.500	.459
22	Makes up his mind quickly.	6.03	1.47	.390	.368	6.07	1.45	.486	.426
23	Works hard to get the job done quickly.	7.14	1.30	.462	.443	7.14	1.55	.543	.487
24	Tries out new methods of doing things.	6.14	1.57	.404	.385	6.14	1.64	.459	.397
25	Enjoys keeping busy and looks for little jobs in order not to be idle.	6.60	1.52	.491	.503	6.73	1.59	.542	.463
26	Is resourceful in meeting emergencies; finds ways to overcome unexpected situations.	7.34	1.40	.460	.417	7.35	1.59	.510	.449
27	Is able to apply theory and principles in order to get tasks done (Examples: Uses formulas in chemical analyses, encodes crypto messages, writes computer programs, predicts weather from data).	7.11	1.40	.538	.470	7.24	1.60	.508	.435

Appendix A cont.

28	Works on monotonous tasks without complaining.	6.63	1.45	.513	.463	6.79	1.50	.561	.479
29	Does a particular task in the specialty outstandingly well (not necessarily exceptional at other tasks).	7.11	1.44	.460	.374	7.20	1.51	.537	.504
30	Applies short-cut methods and labor saving schemes.	7.01	1.36	.465	.436	6.99	1.45	.504	.512
31	Sticks to a decision once it's made.	6.73	1.39	.465	.466	6.75	1.53	.503	.489
32	Is prompt in beginning and completing work assignments.	6.68	1.42	.455	.454	6.75	1.55	.508	.456
33*	Watches for safety hazards and reports or corrects them immediately.	6.92	1.37	.464	.467	6.83	1.55	.571	.524
34	Shows that he knows SOPs or terms and technical words.	6.66	1.62	.494	.472	6.76	1.73	.548	.460
35	Is competent at several different jobs within the specialty.	6.74	1.46	.474	.495	6.82	1.60	.519	.498
36	Is good at organizing the work assignments and work flow within a group.	6.77	1.48	.520	.535	6.84	1.57	.529	.522
37	Shows eagerness to cooperate with superiors.	7.47	1.40	.437	.364	7.43	1.45	.473	.428
38	Works in an orderly and methodical way.	6.75	1.39	.490	.471	6.87	1.50	.563	.492
39	Uses technical know-how to help work groups understand what to do.	6.94	1.39	.418	.418	6.97	1.70	.515	.444
40	Checks up regularly on the progress and quality of his men's work, not relying on secondhand information.	7.09	1.39	.512	.490	7.10	1.54	.553	.484
41	Concentrates completely on what he is doing, not letting anything interrupt his work.	6.68	1.39	.469	.480	6.73	1.56	.547	.489
42	Follows directives and printed authority carefully.	6.89	1.49	.388	.372	7.00	1.58	.498	.468

Appendix A cont.

43	Makes wise choices of techniques of work when there are several ways of doing a job (can be rated only for men who have tasks that allow for choices).	6.52	1.43	.432	.424	6.55	1.62	.443	.444
44	Invents or finds improved ways of doing work.	6.84	1.37	.386	.359	6.99	1.56	.524	.442
45	Computes quickly and easily (can be rated only for men whose tasks require arithmetic).	6.74	1.47	.501	.498	6.80	1.65	.515	.494
46	Understands complicated instructions, whether written or oral.	7.19	1.42	.475	.406	7.17	1.56	.545	.518
47	Uses ordinary tools with skill, not clumsy (Examples: Drives nails cleanly, doesn't drop things, doesn't smudge papers, etc.).	6.91	1.27	.484	.402	6.87	1.56	.519	.483
48	Shows that he knows much about science, math, or engineering, whether it's useful on the job or not.	7.16	1.43	.471	.434	7.13	1.64	.538	.484
49*	Can read and apply new technical directives and policy statements relating to the specialty.	6.70	1.43	.508	.491	6.75	1.54	.491	.447
50	Sees objects quickly and accurately (Examples: Reads gauges correctly; judges sizes well, spots loose connections, faults, damage, typing errors, arithmetic mistakes, etc.).	6.77	1.47	.462	.448	6.87	1.64	.480	.448
51	Accepts suggested changes in his way of working.	6.71	1.37	.502	.507	6.80	1.54	.555	.468
52	Stays healthy and free from lost time due to illness.	6.52	1.44	.460	.461	6.58	1.51	.448	.390
53	Works more than one shift or extended overtime without bad effects, such as illness, fatigue, extreme grouchiness, etc.	6.75	1.39	.505	.516	6.75	1.49	.520	.471
54	Remembers details about things seen, read, heard, or done (Examples: Remembers how many parts were ordered, remembers the day he was given an order, how a regulation was worded, etc.).	7.34	1.42	.544	.471	7.39	1.51	.519	.492

Appendix A cont.

55	Does correctly a long job with many connected steps leading to a special result (Examples: Balances books over six months sales, runs a manystaged test of materials, rebores and reassembles an auto engine).	6.67	1.36	.518	.496	6.80	1.53	.499	.482
56	<u>Plans</u> a series of actions with several steps that must be carried out in detail to reach a result (Example: Arranges a TDY mission with several stops).	6.61	1.45	.512	.481	6.56	1.65	.502	.462
57	Assists others willingly when working as a member of a group.	7.18	1.35	.531	.489	7.16	1.55	.527	.490
58	Shows mature behavior, attitudes, judgment.	6.91	1.47	.464	.488	6.98	1.61	.516	.486
59	Plans his own work to use his time efficiently.	6.79	1.40	.479	.466	6.86	1.57	.557	.482
60	Spots problems before they happen, finding ways to prevent them (Examples: Foresees that unit will be short-handed, that supplies will run out, or that there will be a safety hazard, etc.).	6.60	1.50	.512	.482	6.58	1.62	.529	.510
61	Can be trusted to do his best to get a job done, even though there is no way to check up on him (consider only how hard he tries, <u>not</u> how good he is at the job).	6.81	1.42	.277	.252	6.91	1.52	.336	.338
62	Goes <u>directly</u> to the exact location of anything related to the <u>work</u> , whether it is parts, equipment, materials, or facts (Examples: Knows where a part is located in a plane, or where an authority letter has been filed).	6.66	1.46	.486	.449	6.84	1.52	.493	.477
63*	Can tell which men are doing good work and uses the information fairly (must meet <u>both</u> conditions).	6.75	1.48	.511	.517	6.90	1.56	.503	.501
64	Finds ways to save materials.	6.77	1.37	.471	.452	6.82	1.60	.519	.458
65	Understands easily graphs, charts, <u>diag</u> rams, or pictures (Examples: Traces electronic circuits, assembles units from diagram, reads weather charts).	6.75	1.40	.471	.444	6.82	1.58	.501	.466

GENERAL INSTRUCTIONS

You are being asked to rate the man whose name appears on the packets in front of you. This is part of a study conducted by the Personnel Research Laboratory to improve job assignments. Your ratings are absolutely confidential, and will not be used to the advantage or disadvantage of any unit or individual.

1. Set Packet 2 aside until Packet 1 is completed and sealed.
2. Start Packet 1 by carefully reading the instructions inside the Packet 1 envelope.

INSTRUCTIONS FOR PACKET 1 (White Booklet)

1. Note the time you start. Fill in the cover with the requested information.
2. CHECK LIST. use checks to complete the CHECK LIST on page 2.
Check all items using either the YES or NO column.
3. PERFORMANCE RATING. Compare this man with all other men in the same position. Use the scale and select a rating level. Put the rating (between 1 and 9) in the space marked RATING. The confidence rating is optional, but the performance rating is required.
4. QUESTIONS AND DATE. Check YES or NO for the two questions on page 3, and fill in the date.
5. FEATURES or QUALIFICATIONS. From the scale on page 3 select a level rating and place it under RATING or GUESSED RATING for each of the 65 traits listed. Disregard the terms above the bar such as "good performer" or "average performer". Use RATING if you observe the trait in the man, and GUESSED RATING if you do not observe the trait or do not think it is applicable to the man's job.
6. TIME. On the cover, circle the closest estimate of the time you spent in filling out Packet 1, less interruptions.
7. Seal the booklet in the Packet 1 envelope.
8. Begin Packet 2 (Green Inventory) by carefully reading the instructions inside the Packet 2 envelope.

Name of Ratee

Card 01: Case Control Number _____
1-4

Last Name 5-22 First Name Initial

Grade 23

PREFIX 24-25 AFSN NUMBER 26-33

PREFIX 34 DAFSC NUMBER 35-39 SUFFIX 40

Air Command 41

Organization 42-68 Base 69-72

Assignment Card 02: (CASE NUMBER 1-4) 5-73

Name of Rater

Card 03: (CASE NUMBER 1-4)

Name of Rater _____ Grade _____
Last 5-22 First Initial 23

AFSN _____ Duty AFSC _____
PREFIX 24-25 NUMBER 26-33 PREFIX 34 NUMBER 35-39 SUFFIX 40

Job Title _____
NO PUNCH

Base _____
41-44

Address where personal communication can be sent _____
NO PUNCH

Time Scale (Encircle)

- | | |
|----------------------------------|--|
| 25 min or less1 | 1 hr 16 min to 1 hr 45 min6 |
| 26 to 35 min2 | 1 hr 46 min to 2 hrs 30 min7 |
| 36 to 45 min3 | 2 hrs 31 min to 4 hrs8 |
| 46 min to 1 hr4 | Over 4 hrs.9 |
| 61 min to 1 hr 15 min5 | |

Study: AFPT 80-032E

Check List

1. I see (or saw) this man daily while he performs(ed) his duties. Yes ___ No ___ 45
2. I see (or saw) the products of this man's work. Yes ___ No ___ 46
3. Personnel who supervise(d) this man reported to me on his performance. Yes ___ No ___ 47
4. I have (or had) reports of this man's performance from his co-workers. Yes ___ No ___ 48
5. I see (or saw) this man at work occasionally (three or four times a month). Yes ___ No ___ 49
6. I see (or saw) various kinds of statistical records of this man's output. Yes ___ No ___ 50
7. I always see (or saw) this man working as part of a team or crew, and never alone. Yes ___ No ___ 51
8. I frequently see (or saw) this man working as part of a team and also saw him working alone or on an individual project. Yes ___ No ___ 52
9. My information about this man is chiefly based on the products of a team or crew of which he is (or was) a member. Yes ___ No ___ 53
10. My information about this man is chiefly based on the products of more than one team or crew which work successively on the tasks to which he is (or was) assigned. Yes ___ No ___ 54
11. Information about this man which deals with teams or crews is based upon his performance as leader or supervisor of such groups. Yes ___ No ___ 55

Rating

Confidence

Overall job performance rating

_____ 56 _____ 57

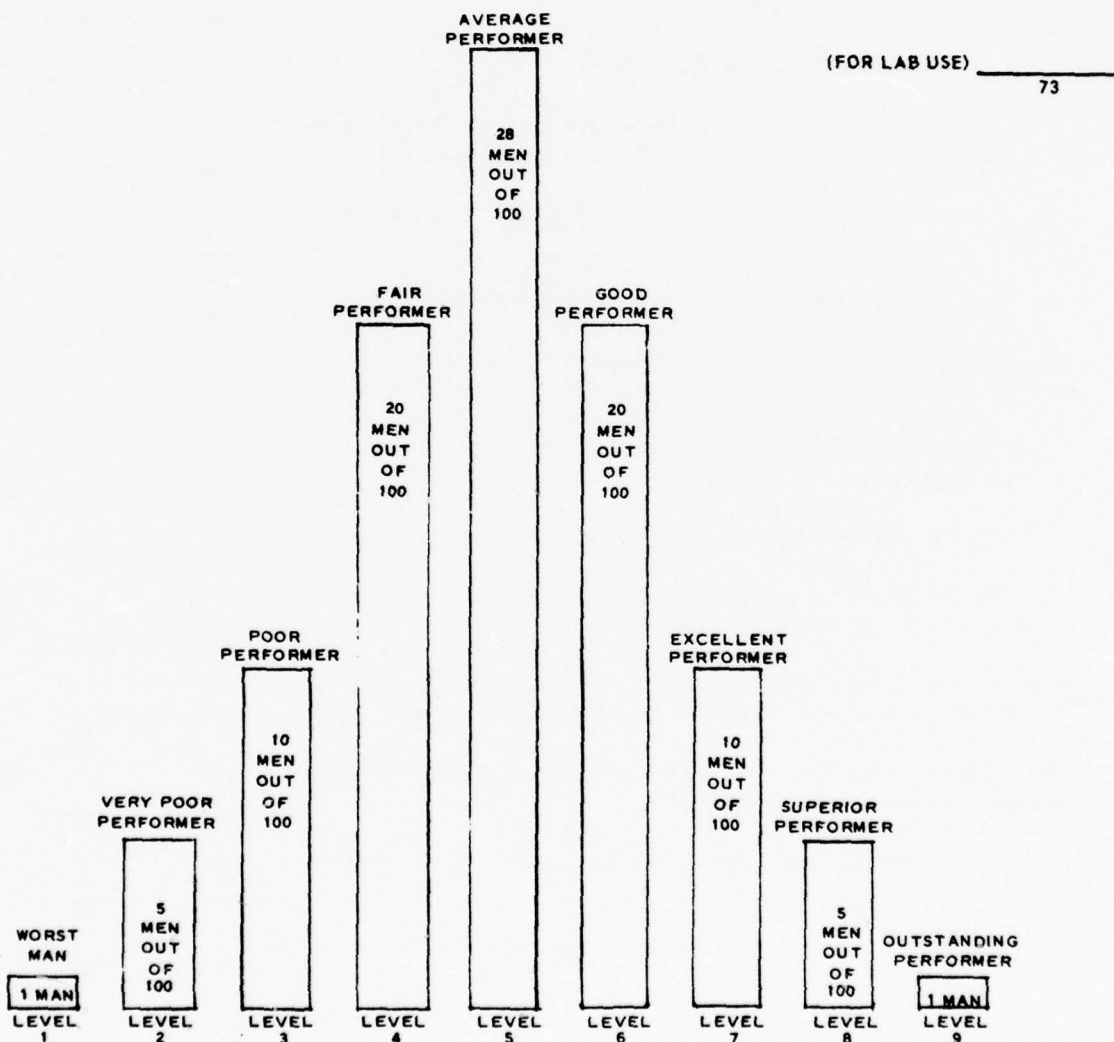
Date _____

Rating is current and ratee is available.

Yes _____ No _____ 58

Rating is after ratee was reassigned.

Yes _____ No _____ 59



RATING SCALE

(SHOWING HOW 100 MEN SELECTED AT RANDOM WOULD BE RATED)

Features or Qualifications

	Guessed Rating (Either Not Observed or Not Applicable)	Rating
1. Shows even temper.	5	6
2. Is courteous, has good manners.	7	8
3. Can shift attention to unscheduled tasks then back to scheduled tasks without getting confused.	9	10
4. Shows good sense of humor and uses it only at the right time.	11	12
5. Has assured manner; shows self-confidence.	13	14
6. Holds the attention of people he is advising or instructing.	15	16
7. Organizes his ideas and tells them clearly when explaining facts or processes.	17	18
8. Shows enthusiasm about the work of his specialty.	19	20
9. Shows that he wants to cooperate with his co-workers or the people under him.	21	22
10. Works under uncomfortable, disagreeable, or annoying conditions without losing self-control.	23	24
11. Spends considerable off-duty time keeping up on matters relating to his work.	25	26
12. Likes to discuss anything at length (Examples: girls, sports, politics).	27	28
13. Can work alone without the help of others.	29	30

	Gussed Rating (Either Not Observed or Not Applicable)	Rating
14. Puts others at ease and removes tensions and pressures on those working around him.	31	32
15. Corrects or criticizes without scolding or nagging.	33	34
16. Breaks in new personnel skillfully, so that they are quickly able to work alone.	35	36
17. Keeps his co-workers and subordinates informed regarding decisions which affect them.	37	38
18. Listens to complaints and suggestions of the men for whom he is responsible and supports them when justified.	39	40
19. Accomplishes large amounts of work in a short time (Think only about how much, not about how well it is done).	41	42
20. Shows a perfectionist attitude toward work, wants each detail exactly right.	43	44
21. Has good military bearing, neatness, cleanliness, attractiveness.	45	46
22. Makes up his mind quickly.	47	48
23. Works hard to get the job done quickly.	49	50
24. Tries out new methods of doing things.	51	52
25. Enjoys keeping busy and looks for little jobs in order not to be idle.	53	54
26. Is resourceful in meeting emergencies; finds ways to overcome unexpected situations.	55	56

	Gussed Rating (Either Not Observed or Not. Applicable)	Rating
27. Is able to apply theory and principles in order to get tasks done (Examples: Uses formulas in chemical analyses, encodes crypto messages, writes computer programs, predicts weather from data).	57	58
28. Works on monotonous tasks without complaining.	59	60
29. Does a particular task in the specialty outstandingly well (not necessarily exceptional at other tasks).	61	62
30. Applies short-cut methods and labor saving schemes.	63	64
31. Sticks to a decision once it's made.	65	66
32. Is prompt in beginning and completing work assignments.	67	68
33. Watches for safety hazards and reports or corrects them immediately.	69	70
34. Shows that he knows SOPs or terms and technical words.	71	72
35. Is competent at several different jobs within the specialty.	5	6
36. Is good at organizing the work assignments and work flow within a group.	7	8
37. Shows eagerness to cooperate with superiors.	9	10
38. Works in an orderly and methodical way.	11	12
39. Uses technical know-how to help work groups understand what to do.	13	14

CARD 05

	Guessed Rating (Either Not Observed or Not Applicable)	Rating
40. Checks up regularly on the progress and quality of his men's work, not relying on secondhand information.	15	16
41. Concentrates completely on what he is doing, not letting anything interrupt his work.	17	18
42. Follows directives and printed authority carefully.	19	20
43. Makes wise choices of techniques of work when there are several ways of doing a job (can be rated only for men who have tasks that allow for choices).	21	22
44. Invents or finds improved ways of doing work.	23	24
45. Computes quickly and easily (can be rated only for men whose tasks require arithmetic).	25	26
46. Understands complicated instructions, whether written or oral.	27	28
47. Uses ordinary tools with skill, not clumsily (Examples: Drives nails cleanly, doesn't drop things, doesn't smudge papers, etc.).	29	30
48. Shows that he knows much about science, math, or engineering, whether it's useful on the job or not.	31	32
49. Can read and apply new technical directives and policy statements relating to the specialty.	33	34
50. Sees objects quickly and accurately (Examples: Reads gauges correctly; judges sizes well; spots loose connections, faults, damage, typing errors, arithmetic mistakes, etc.).	35	36

	Gussed Rating (Either Not Observed or Not Applicable)	Rating
51. Accepts suggested changes in his way of working.	37	38
52. Stays healthy and free from lost time due to illness.	39	40
53. Works more than one shift or extended overtime without bad effects, such as illness, fatigue, extreme grouchiness, etc.	41	42
54. Remembers details about things seen, read, heard, or done (Examples: Remembers how many parts were ordered, remembers the day he was given an order, how a regulation was worded, etc.).	43	44
55. Does correctly a long job with many connected steps leading to a special result (Examples: Balances books over six months sales, runs a many-staged test of materials, rebores and reassembles an auto engine).	45	46
56. <u>Plans</u> a series of actions with several steps that must be carried out in detail to reach a result (Example: Arranges a TDY mission with several stops).	47	48
57. Assists others willingly when working as a member of a group.	49	50
58. Shows mature behavior, attitudes, or judgment.	51	52
59. Plans his own work to use his time efficiently.	53	54
60. Spots problems before they happen, finding ways to prevent them (Examples: Foresees that unit will be shorthanded, that supplies will run out, or that there will be a safety hazard, etc.).	55	56

	Gussed Rating (Either Not Observed or Not Applicable)	Rating
61. Can be trusted to do his best to get a job done, even though there is no way to check up on him (consider only how hard he tries, <u>not</u> how good he is at the job).	57	58
62. Goes <u>directly</u> to the exact location of anything related to the work, whether it is parts, equipment, materials, or facts (Examples: Knows where a part is located in a plane, or where an authority letter has been filed).	59	60
63. Can tell which men are doing good work and uses the information fairly (must meet <u>both</u> conditions).	61	62
64. Finds ways to save materials.	63	64
65. Understands easily graphs, charts, diagrams, or pictures (Examples: Traces electronic circuits, assembles units from diagram, reads weather charts).	65	66

APPENDIX B: INSTRUCTIONS AND EXTRACTS OF PACKET 2

Name of Ratee

Card 01: Case Control Number _____
1-4

Last Name 5-22 First Name Initial

Grade 23

PREFIX 24-25 AFSN NUMBER 26-33

PREFIX 34 DAFSC NUMBER 35-39 SUFFIX 40

Air Command 41

Organization 42-68 Base 69-72

Assignment Card 02: (CASE NUMBER 1-4) 5-73

Name of Rater

Card 03: (CASE NUMBER 1-4)

Name of Rater _____ Grade _____
Last 5-22 First Initial 23

AFSN _____ Duty AFSC _____
PREFIX 24-25 NUMBER 26-33 PREFIX 34 NUMBER 35-39 SUFFIX 40

Job Title _____
NO PUNCH

Base _____
41-48

Address where personal communication can be sent _____
NO PUNCH

Time Scale (Encircle)

25 min or less1	1 hr 16 min to 1 hr 45 min.6
26 to 35 min2	1 hr 46 min to 2 hrs 30 min7
36 to 45 min3	2 hrs 31 min to 4 hrs8
46 min to 1 hr4	Over 4 hrs.9
61 min to 1 hr 15 min5	

Study: AFPT 80-032E

INSTRUCTIONS FOR PACKET 2 (Green Inventory)

1. Note the time you start. Place your name, grade, and service number (or civilian level) on the cover.
2. Look at the EXAMPLE SHEET to see how the completed inventory page should appear.
3. DOES TASK SCALE. Use the scale at the top of the first column to rate the man on the tasks you are certain that he performs. Place the appropriate number (between 1 and 7) in the first column across from the task statement. Leave blanks for tasks he does not perform.
 - A. Add and rate any tasks the ratee performs which have been left out.
 - B. Omit tasks you do not understand by placing an X in the first column.
4. TRAINING REQUIRED SCALE. Using the scale at the top of column two, estimate the training the ratee would need to reach average performance.
 - A. Rate all the tasks listed except those you do not understand.
 - B. This rating includes those tasks you have already given a DOES TASK rating.
5. Answer the YES-NO question on page 23.
6. On the cover, circle the time (less interruptions) required for you to complete the inventory.
7. Insert the Packet 2 inventory and Packet 1 inside the Packet 2 envelope, seal, and return to the Test Control Officer you received the materials from.

UNITED STATES AIR FORCE

JOB INVENTORY

SPECIAL RESEARCH STUDY OF CAPABILITY TO PERFORM TASKS

INVENTORY MANAGEMENT CAREER LADDER
AFSC 645X0

Time Scale (Encircle)

45 min or less 1
46 min to 1 hr 2
61 min to 1 hr 30 min 3
1 hr 31 min to 2 hrs 4
2 hrs 1 min to 2 hrs 31 min 5
2 hrs 31 min to 3 hrs 6
Over 3 hrs 7

CASE CONTROL

NO. _____

RATEE _____

RATER _____

MATERIEL FACILITIES CAREER LADDER
AFSC 647X0

6570TH PERSONNEL RESEARCH LABORATORY
AEROSPACE MEDICAL DIVISION (AFSC)
BOX 1557, LACKLAND AFB, TEXAS 78236

AFPT 80-032E

AUGUST 1966

JOB INVENTORY (Duty-Task List)		AFSC 645X0 647X0	PAGE 5 OF 23 PAGES	
<p>For the tasks listed below, make a <u>performance</u> rating for any task that is performed by your rates. Add and rate any tasks he performs that are missing. Then, make a <u>training req.</u> rating for every task listed.</p>			PERFORMANCE DOES TASK	TRAINING REQ. TO DO TASK
			1. UNSATISFACTORYLY 2. FAIRLY WELL 3. SLIGHTLY BELOW AVERAGE 4. ABOUT AVERAGE 5. SLIGHTLY ABOVE AVERAGE 6. EXCEPTIONALLY WELL 7. BETTER THAN ANYONE	1. MORE THAN 2 YEARS TRAINING 2. VERY LONG TRAINING 3. MUCH TRAINING 4. MODERATE TRAINING 5. LITTLE TRAINING 6. VERY LITTLE TRAINING 7. COULD DO IT NOW
DUTY				
C. Evaluating				
TASKS INCLUDED IN ABOVE DUTY				
1. Compile management data for use in evaluation of supply program				
2. Draft recommended changes in technical orders, manuals, handbooks, or operating procedures				
3. Evaluate adequacy of inspection				
4. Evaluate adherence to the Hi-Valu program				
5. Evaluate controls and procedures used in the support of special projects				
6. Evaluate measures employed to safeguard classified materials and equipment				
7. Evaluate measures employed to secure property against theft or damage				
8. Evaluate the maintenance of tools, equipment, and supplies				
9. Evaluate unit activities for issuing, shipping, and transferring property				
10. Evaluate unit activities for receiving property				
11. Evaluate unit activities for storing property				
12. Evaluate unit equipment authorization and support activities				
13. Evaluate unit inventorying activities				
14. Evaluate unit maintenance of publications and files				
15. Evaluate unit maintenance support activities				
16. Evaluate unit performance through review of Not Operationally Ready, Supply (NORS) and other reports				
17. Evaluate unit pick-up and delivery activities				
18. Evaluate unit safety practices				
19. Evaluate unit stock control activities				

JOB INVENTORY (Duty-Task List)		AFSC 645X0 647X0	PAGE 8 OF 23 PAGES	
<p>For the tasks listed below, make a <u>performance rating</u> for any task that is performed by your rates. Add and rate any tasks he performs that are missing. Then, make a <u>training req. rating</u> for every task listed.</p>			PERFORMANCE DOES TASK	TRAINING REQ. TO DO TASK
			1. UNSATISFACTORYLY 2. FAIRLY WELL 3. SLIGHTLY BELOW AVERAGE 4. ABOUT AVERAGE 5. SLIGHTLY ABOVE AVERAGE 6. EXCEPTIONALLY WELL 7. BETTER THAN ANYONE	1. MORE THAN 2 YEARS TRAINING 2. VERY LONG TRAINING 3. MUCH TRAINING 4. MODERATE TRAINING 5. LITTLE TRAINING 6. VERY LITTLE TRAINING 7. COULD DO IT NOW
DUTY E. Inspecting Property and Determining Its Condition				
TASKS INCLUDED IN ABOVE DUTY				
1.	Accept or reject property on the basis of procurement specifications			
2.	Compare identity, condition, and quantity of property with information in receiving documents			
3.	Conduct follow-up inspections			
4.	Conduct special-subject inspections			
5.	Designate items for disposal			
6.	Designate items requiring refrigerated storage			
7.	Determine cause of unserviceable condition of property			
8.	Determine interchangeability of items			
9.	Enter re-inspection and cure dates on supplies or equipment			
10.	Identify items to be transferred			
11.	Identify parts of complete assemblies			
12.	Identify War Readiness Materiel to prevent unauthorized movement or issue			
13.	Initiate issue requests for items needed to complete assemblies			
14.	Initiate stock change documents for misidentified items			
15.	Inspect containers and labels of corrosive, volatile, combustible, or poisonous materials			
16.	Inspect historical or configuration control records for property in storage			
17.	Inspect items in storage for signs of corrosion, decay, or deterioration			
18.	Inspect property for repairs or replacements			
19.	Inspect stored property to see that load limits and security conditions are met			
20.	Inspect turn-in items			
21.	Prepare discrepancy reports or initiate adjustment action for items in shipments			
22.	Prepare information for EAM cards for condition or identify changes			
23.	Prepare inspection reports			

Does this man have an additional assignment not covered by the
inventory which takes up as much as 1/4 of his time?

Yes ____ No ____

If answered "yes," describe this assignment briefly:

RATEE _____

RATER _____

NOTICE

When ratings have been made, the information contained in this packet becomes privileged. The packet is not to be opened until it reaches the Personnel Research Laboratory. Base agencies are relieved of responsibility for corrections, and subsequent communications will be between the laboratory and the individual rater, if such are required.

*APPENDIX C: JOB INVENTORY (AUGUST 1966) FOR AFSC 645 X0
INVENTORY MANAGEMENT AND AFSC 647X0 MATERIEL FACILITIES*

INSTRUCTIONS

1. To qualify for this survey you must have a Duty AFSC of 64530, 64550, 64570, 64590, 64730, 64750, 64770, or 64790 and you must have been in the same duty assignment for at least six weeks.
2. First, fill in the BACKGROUND INFORMATION pages. Then turn to DUTY A on page 1 of your booklet and read the entire inventory to see how well your job is covered. Be sure to read all the tasks under every duty. As you read, place a check mark in the Check column beside each task you do. Do not confuse work you do yourself with work you supervise. The first duties in the inventory are supervising duties. These are followed by work performance duties. If you supervise some tasks and also perform tasks yourself, you will check both kinds of tasks.
3. In the blank spaces at the end of the list of tasks under each duty, write in all the tasks you do in that duty that are not listed. If some tasks you perform do not fit under any of the duties in the booklet, write them on the blank pages at the end of the booklet.
4. Turn back to DUTY A on page 1 again. You are now to make TIME SPENT ratings for all the tasks you have checked or added. Time Spent means the time you spend doing the task you are rating, compared with the time you spend on each of the other tasks you do. Use the 7-point TIME SPENT scale at the top of each page. Use the rating 1 if you spend very much below average time on a task; use 2 for below average time; and so on up to a rating of 7 if you spend very much above average time on the task.
5. When you have finished the TIME SPENT ratings turn back to DUTY A on page 1 again. You are now to indicate the training emphasis that should be given the tasks you checked or added. Using the TRAINING EMPHASIS scale at the top of each page, rate a task 1 if it should be given almost no training emphasis; rate a task 2 if it should be given very little training emphasis; and so on up to a rating of 7 if the task should be given extreme emphasis in training.

BACKGROUND INFORMATION (Continued)

PLEASE PRINT INFORMATION REQUESTED AND CHECK APPLICABLE BLANKS

DID YOU COMPLETE:		(CARD 03)	
	YES NO		YES NO
BASIC INVENTORY MANAGEMENT COURSE?	<input type="checkbox"/> 12 <input type="checkbox"/>	CDC 64000, BASIC SUPPLY?	<input type="checkbox"/> 18 <input type="checkbox"/>
INVENTORY MANAGEMENT SUPERVISOR COURSE?	<input type="checkbox"/> 13 <input type="checkbox"/>	CDC 64100, STANDARDIZED BASE LEVEL SUPPLY SYSTEM?	<input type="checkbox"/> 19 <input type="checkbox"/>
BASIC MATERIEL FACILITIES COURSE?	<input type="checkbox"/> 14 <input type="checkbox"/>	CDC 64550, INVENTORY MANAGEMENT SPECIALIST?	<input type="checkbox"/> 20 <input type="checkbox"/>
SUPPLY EDPE COURSE?	<input type="checkbox"/> 15 <input type="checkbox"/>	CDC 64650, ORGANIZATIONAL SUPPLY SPECIALIST?	<input type="checkbox"/> 21 <input type="checkbox"/>
BASE LEVEL MANAGEMENT COURSE?	<input type="checkbox"/> 16 <input type="checkbox"/>	CDC 64750, MATERIEL FACILITIES SPECIALIST?	<input type="checkbox"/> 22 <input type="checkbox"/>
NCO ACADEMY?	<input type="checkbox"/> 17 <input type="checkbox"/>	OTHER SPECIAL SUPPLY COURSES?	<input type="checkbox"/> 23 <input type="checkbox"/>
		SPECIFY	

NAME OF IMMEDIATE SUPERVISOR LAST NAME	FIRST NAME	MIDDLE INITIAL	GRADE
---	------------	----------------	-------

NAME OF NEXT MOST IMMEDIATE SUPERVISOR LAST NAME	FIRST NAME	MIDDLE INITIAL	GRADE
---	------------	----------------	-------

NAME OF ADDITIONAL INDIVIDUAL WHO OBSERVES YOUR WORK REGULARLY LAST NAME	FIRST NAME	MIDDLE INITIAL	GRADE
---	------------	----------------	-------

EQUIPMENT USED: USING THE RATING SCALE BELOW, SHOW HOW MUCH YOU USE EACH ITEM OF EQUIPMENT BY WRITING IN EACH BLOCK A NUMBER FROM 0 TO 6 (CARD 03)

RATING SCALE

- 6 - CONSTANTLY USED
- 5 - VERY FREQUENTLY USED
- 4 - FREQUENTLY USED
- 3 - FAIRLY FREQUENTLY USED
- 2 - OCCASIONALLY USED
- 1 - SELDOM USED
- 0 - NOT USED

BALER <input type="checkbox"/> 24	FORKLIFT <input type="checkbox"/> 32	REMOTE OUTPUT-INPUT DEVICE (TELETYPE) <input type="checkbox"/> 40
BINDER <input type="checkbox"/> 25	INTERPRETER <input type="checkbox"/> 33	THREAD GAUGE <input type="checkbox"/> 41
CALCULATOR <input type="checkbox"/> 26	KEY PUNCH <input type="checkbox"/> 34	TUG <input type="checkbox"/> 42
CALIPER <input type="checkbox"/> 27	MICROMETER <input type="checkbox"/> 35	TYPEWRITER <input type="checkbox"/> 43
CONVEYOR BELT <input type="checkbox"/> 28	PAINT SPRAYER <input type="checkbox"/> 36	WAREHOUSE TRACTOR <input type="checkbox"/> 44
CRANE <input type="checkbox"/> 29	PALLET JACK <input type="checkbox"/> 37	WIRE AND DRILL GAUGE <input type="checkbox"/> 45
DECOLLATOR <input type="checkbox"/> 30	POWER SAW <input type="checkbox"/> 38	
ELECTRIC DRILL <input type="checkbox"/> 31	PUNCH CARD SORTER <input type="checkbox"/> 39	

BACKGROUND INFORMATION (Continued)

PLEASE PRINT INFORMATION REQUESTED AND CHECK APPLICABLE BLANKS

PUBLICATIONS USED: USING THE RATING SCALE BELOW SHOW HOW MUCH YOU USE EACH PUBLICATION BY WRITING IN EACH BLOCK A NUMBER FROM 0 to 6.

RATING SCALE

- 6 - CONSTANTLY USED
- 5 - VERY FREQUENTLY USED
- 4 - FREQUENTLY USED
- 3 - FAIRLY FREQUENTLY USED
- 2 - OCCASIONALLY USED
- 1 - SELDOM USED
- 0 - NOT USED

AIR FORCE MANUALS (CARD 04)

- | | | | | | |
|----------------------------|-----------------------------|----------------------------|-----------------------------|--------------------|-----------------------------|
| AFM 50-23 | <input type="checkbox"/> 5 | PART TWO, VOL II, AFM 67-1 | <input type="checkbox"/> 12 | AFM 172-1 | <input type="checkbox"/> 20 |
| AFM 65-110 | <input type="checkbox"/> 6 | PART ONE, VOL IV, AFM 67-1 | <input type="checkbox"/> 13 | AFM 177-11 | <input type="checkbox"/> 21 |
| AFM 66-1 | <input type="checkbox"/> 7 | PART TWO, VOL IV, AFM 67-1 | <input type="checkbox"/> 14 | AFM 177-206 | <input type="checkbox"/> 22 |
| AFM 66-17 | <input type="checkbox"/> 8 | VOL VI, AFM 67-1 | <input type="checkbox"/> 15 | AFM 181-5 | <input type="checkbox"/> 23 |
| PART ONE, VOL I, AFM 67-1 | <input type="checkbox"/> 9 | AFM 67-3 | <input type="checkbox"/> 16 | AFM 300-4, VOL I | <input type="checkbox"/> 24 |
| PART TWO, VOL I, AFM 67-1 | <input type="checkbox"/> 10 | AFM 67-6 | <input type="checkbox"/> 17 | AFM 300-4, VOL III | <input type="checkbox"/> 25 |
| PART ONE, VOL II, AFM 67-1 | <input type="checkbox"/> 11 | AFM 67-10 | <input type="checkbox"/> 18 | AFM 400-1 | <input type="checkbox"/> 26 |
| | | AFM 67-11 | <input type="checkbox"/> 19 | AFM 400-24 | <input type="checkbox"/> 27 |

AIR FORCE REGULATIONS

- | | | | | | |
|----------|-----------------------------|-----------|-----------------------------|------------|-----------------------------|
| AFR 0-10 | <input type="checkbox"/> 28 | AFR 67-3 | <input type="checkbox"/> 31 | AFR 67-44 | <input type="checkbox"/> 34 |
| AFR 11-4 | <input type="checkbox"/> 29 | AFR 67-6 | <input type="checkbox"/> 32 | AFR 400-24 | <input type="checkbox"/> 35 |
| AFR 66-7 | <input type="checkbox"/> 30 | AFR 67-10 | <input type="checkbox"/> 33 | | |

TECHNICAL ORDERS

- | | | | | | |
|---------|-----------------------------|---------------|-----------------------------|---------------|-----------------------------|
| 0 -1-01 | <input type="checkbox"/> 36 | 00-20-3 | <input type="checkbox"/> 41 | 00-35F SERIES | <input type="checkbox"/> 46 |
| 0 -1-02 | <input type="checkbox"/> 37 | 00-20-2-1 | <input type="checkbox"/> 42 | 00-85 SERIES | <input type="checkbox"/> 47 |
| 0 -2-1 | <input type="checkbox"/> 38 | 00-20A-1 | <input type="checkbox"/> 43 | 00-110-N3 | <input type="checkbox"/> 48 |
| 00-5-1 | <input type="checkbox"/> 39 | 00-20E-1 | <input type="checkbox"/> 44 | -4 SERIES | <input type="checkbox"/> 49 |
| 00-5-2 | <input type="checkbox"/> 40 | 00-20K SERIES | <input type="checkbox"/> 45 | | |

USAF STOCK LISTS, DOD FEDERAL SUPPLY CATALOGS AND RELATED CATALOGING PUBLICATIONS

- | | | | |
|-------------------------|-----------------------------|----------|-----------------------------|
| USAF STOCK LISTS | <input type="checkbox"/> 50 | C-0-1 | <input type="checkbox"/> 56 |
| ISG STOCK LISTS | <input type="checkbox"/> 51 | S-00-1-1 | <input type="checkbox"/> 57 |
| FEDERAL SUPPLY CATALOGS | <input type="checkbox"/> 52 | S-00-1-2 | <input type="checkbox"/> 58 |
| H2-1 | <input type="checkbox"/> 53 | S-00-9 | <input type="checkbox"/> 59 |
| H2-3 | <input type="checkbox"/> 54 | S-1 | <input type="checkbox"/> 60 |
| H4-1 | <input type="checkbox"/> 55 | S-1-1 | <input type="checkbox"/> 61 |
| | | S-2A-1 | <input type="checkbox"/> 62 |

TABLES OF ALLOWANCES

- | | |
|---------|-----------------------------|
| T/A 001 | <input type="checkbox"/> 63 |
| T/A 006 | <input type="checkbox"/> 64 |
| T/A 016 | <input type="checkbox"/> 65 |

OTHERS (SPECIFY)

JOB INVENTORY <i>(Duty-Task List)</i>	AFSC 645X0 647X0	Page 6 of 19 Pages	
LISTED BELOW ARE TASKS INCLUDED IN THIS CAREER LADDER. RATE EACH TASK FOR DIFFICULTY BASED ON TIME NEEDED TO LEARN TO DO THE TASK SATISFACTORILY. THEN GO THROUGH A SECOND TIME AND CHECK THOSE TASKS A LOW ABILITY AIRMAN COULD DO ACCEPTABLY.		DIFFICULTY	CHECK
E. Inspecting Property and Determining Its Condition		1 - VERY MUCH BELOW 2 - BELOW AVERAGE 3 - SLIGHTLY BELOW 4 - ABOUT AVERAGE 5 - SLIGHTLY ABOVE 6 - ABOVE AVERAGE 7 - VERY MUCH ABOVE	✓ IF THIS TASK COULD BE DONE ACCEPTABLY BY LOW MENTAL ABILITY AIRMEN
1. Accept or reject property on the basis of procurement specifications			
2. Compare identity, condition, and quantity of property with information in receiving documents			
3. Conduct follow-up inspections			
4. Conduct special-subject inspections			
5. Designate items for disposal			
6. Designate items requiring refrigerated storage			
7. Determine cause of unserviceable condition of property			
8. Determine interchangeability of items			
9. Enter re-inspection and cure dates on supplies or equipment			
10. Identify items to be transferred			
11. Identify parts of complete assemblies			
12. Identify War Readiness Materiel to prevent unauthorized movement or issue			
13. Initiate issue requests for items needed to complete assemblies			
14. Initiate stock change documents for misidentified items			
15. Inspect containers and labels of corrosive, volatile, combustible, or poisonous materials			
16. Inspect historical or configuration control records for property in storage			
17. Inspect items in storage for signs of corrosion, decay, or deterioration			
18. Inspect property for repairs or replacements			
19. Inspect stored property to see that load limits and security conditions are met			
20. Inspect turn-in items			
21. Prepare discrepancy reports or initiate adjustment action for items in shipments			
22. Prepare information for EAM cards for condition or identify changes			
23. Prepare inspection reports			

JOB INVENTORY <i>(Duty-Task List)</i>	AFSC 645X0 647X0	Page 8 of 19 Pages	
LISTED BELOW ARE TASKS INCLUDED IN THIS CAREER LADDER. RATE EACH TASK FOR DIFFICULTY BASED ON TIME NEEDED TO LEARN TO DO THE TASK SATISFACTORILY. THEN GO THROUGH A SECOND TIME AND CHECK THOSE TASKS A LOW ABILITY AIRMAN COULD DO ACCEPTABLY.		DIFFICULTY	CHECK
F. Searching and Maintaining Publications and Files		1 - VERY MUCH BELOW 2 - BELOW AVERAGE 3 - SLIGHTLY BELOW 4 - ABOUT AVERAGE 5 - SLIGHTLY ABOVE 6 - ABOVE AVERAGE 7 - VERY MUCH ABOVE	✓ IF THIS TASK COULD BE DONE ACCEPTABLY BY LOW MENTAL ABILITY AIRMEN
1. Maintain card files on non-listed stock numbers			
2. Maintain case files on special authorizations			
3. Maintain classified files of plans and programs			
4. Maintain correspondence files			
5. Maintain custody receipt files and registers			
6. Maintain document control files and registers for equipment accounts			
7. Maintain document control files and registers for supply accounts			
8. Maintain file of allowance source documents			
9. Maintain files on Technical Order Compliance property			
10. Maintain requisition files			
11. Maintain stock number directory			
12. Maintain supply reference files of directives, technical orders, manuals, stock lists, or catalogs			
13. Maintain suspense files			
14. Maintain warehouse file for Hi-Valu, classified, or easily stolen items			
15. Maintain warehouse file of cure dates for property			
16. Maintain warehouse file of locator cards for stored property			
17. Make input to file of data concerning basic, detail, and support records			
18. Requisition publications			
19. Search catalogs or technical publications for item identification and classification			
20. Search catalogs or technical publications to determine supply sources			
21. Search equipment allowance publications for basis of issue and allowance			
22. Search standard publications for supply policies and procedures			