



**DoD Manual
for
Foreign National Compensation**

January 1990

**Assistant Secretary of Defense
(Force Management and Personnel)**

DoD 1416.8-M



FORCE MANAGEMENT
AND PERSONNEL

ASSISTANT SECRETARY OF DEFENSE

WASHINGTON, D.C. 20301-4000

JAN 12 1990

FOREWORD

This Manual is reissued under the authority of DoD Instruction 1416.8, "Compensation Program for Foreign Nationals," December 5, 1980. It prescribes procedures and instructions on DoD compensation administration for foreign national employees in foreign areas.

DoD 1416.8-M, "Department of Defense Manual for Foreign National Compensation," December 1980, is hereby superseded.

This Manual applies to the Office of the Secretary of Defense (OSD), the Military Departments, the Unified and Specified Commands, and the Defense Agencies.

It does not apply to certain designated units of the Department of Defense authorized to use the Department of State Joint Compensation Plan for Local Employees. Instead, the interagency Memorandum of Agreement (MOA) applies. (See Chapter 6 and Appendix A.)

The pay fixing provisions of this Manual do not apply to indirect hire systems where the U.S. Forces, by agreement, use host government compensation systems, and the U.S. Forces do not retain pay fixing authority; however, the total compensation comparability provisions apply in all cases.

This Manual shall be used to establish the bargaining parameters for agents negotiating for the U.S. Forces in indirect hire situations where country-to-country or other agreements provide for the negotiation of wages and benefits.

This Manual is effective immediately and is mandatory for use by all DoD Components. Heads of DoD Components may issue supplementary instructions only when necessary to provide for unique requirements within their respective DoD Components.

Send recommended changes to the Manual through channels to:

Deputy Assistant Secretary of Defense
(Civilian Personnel Policy)
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DoD Components may obtain copies of this Manual through their own publications channels. Other Federal Agencies and the public may obtain copies from the U.S. Department of Commerce, National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161.


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REFERENCES

- (a) Public Law 96-465, "Foreign Service Act of 1980," October 17, 1980
- (b) DoD Instruction 1400.10, "Employment of Foreign Nationals in Foreign Areas,"
December 5, 1980
- (c) Decision of the Comptroller General, Volume 40, Page 650
- (d) Section 5344 of title 5, United States Code
- (e) DoD Directive 5000.11, "Data Elements and Data Codes Standardization Program,"
December 7, 1964

DL1. DEFINITIONS

DL1.1.1. Base Pay. That part of U.S. Forces total pay used to compute premium pay and certain other allowances. Depending on the in-country situation, base pay may be:

DL1.1.1.1. The scheduled rate for the position.

DL1.1.1.2. The scheduled rate less a value representing pay components found in the non-U.S. Forces sector that were used in developing the scheduled rate, but that are not used by the non-U.S. Forces sector to compute premium pay and certain other allowances.

DL1.1.1.3. The scheduled rate plus other allowances or pays granted by both U.S. Forces and non-U.S. Forces sectors that, in the non-U.S. Forces sector, are used to compute premium pay and certain other allowances. In this case, the scheduled rate plus the other pay and allowances are used by the U.S. Forces sector to compute premium pay and certain other allowances.

DL1.1.2. Benefit Component. The fringe benefits granted by U.S. Forces to foreign national employees and by non-U.S. Forces employers to their employees. Fringe benefits normally include time-off benefits, financial assistance benefits, and social security-type benefits. The most commonly used benefit components are listed in Appendix 2.

DL1.1.3. Consolidated Allowance. An allowance paid by the U.S. Forces to represent a wide variety of non-U.S. Forces pay that is considered in arriving at total pay for positions comparable to U.S. Forces positions.

DL1.1.4. Foreign National Employee. A non-U.S. citizen employed by the U.S. Forces outside the United States, its territories and possessions.

DL1.1.5. Median. The middle rate of a series of rates arranged in order of magnitude. If the series contains an even number of rates, the median is the simple average of the two middle rates.

DL1.1.6. Pay Component. Remuneration in cash or in kind for services rendered. The most commonly used pay components are listed in Appendix 2.

DL1.1.7. Payment-in-Kind. That part of the pay component that is remuneration received other than in cash and that can be expressed in monetary terms.

DL1.1.8. Segmented Line. Wage line drawn through segments of survey data to reflect pay patterns in the country concerned.

DL1.1.9. Total Pay. The combined value of all separately paid pay components.

DL1.1.10. Trend Line. The result of regression analysis performed on the survey data. For a more detailed discussion, see Chapter 3 and Appendix 6. The following types of trend lines may be run on survey data:

DL1.1.10.1. Linear Unit Company Job Average. Equal weight to each company survey job weighted average.

DL1.1.10.2. Linear Unit Survey Job Average. Equal weight to each survey job weighted average.

DL1.1.10.3. Linear Unit Grade Average. Equal weight to each grade weighted average.

DL1.1.10.4. Linear Frequency. Each observation is weighted by the number of employees at that observation.

DL1.1.10.5. Linear Unit Survey Job Median. Equal weight to each survey job median.

DL1.1.10.6. Curvilinear. Curved line that may be of two types: parabolic or logarithmic. Each type may be a "Unit Company Job Average," "Unit Survey Job Average," "Unit Grade Average," "Frequency," or "Unit Survey Job Median."

DL1.1.11. Weighted Average. The arithmetic mean that represents the aggregate of individual pay rates divided by the number of employees receiving such pay rates.

C1. CHAPTER 1

GENERAL

C1.1. COVERAGE

This Manual contains the procedures and instructions for the development of compensation programs for foreign nationals employed by the U.S. Forces in foreign areas.

C1.2. AUTHORITY

C1.2.1. The legal basis for setting pay for foreign national employees is the "Foreign Service Act of 1980" (Pub L. 96-465, reference (a)). This act in part provides:

"Sec. 408. Local Compensation Plans.--

"(a)(1) The Secretary shall establish compensation (including position classification) plans for foreign national employees of the Service, and for United States Citizens employed in the Service abroad who are family members of Government employees. To the extent consistent with the public interest, each compensation plan shall be based upon prevailing wage rates and compensation practices (including participation in local social security plans) for corresponding types of positions in the locality of employment, except that such compensation plans shall provide for payment of wages to those family members of Government employees who are paid in accordance with such plans at a rate which is no less than the then applicable minimum wage rate specified in section 6(a)(i) of the Fair Labor Standards Act of 1938 (29 U.S.C. 206(a)(i)). Any compensation plan established under this section may include provision for leaves of absence with pay for foreign national employees in accordance with prevailing laws and employment practices without regard to any limitation contained in section 6310 of Title 5, United States Code.

"(2) The Secretary may make supplemental payments to any civil service annuitant who is a former foreign national employee of the Service (or who is receiving an annuity as a survivor of a former foreign national employee of the Service) in order to offset exchange rate losses, if the annuity being paid such annuitant is based on--

"(A) A salary that was fixed in foreign currency that has appreciated in value in terms of the United States Dollar; and

"(B) Service in a country in which (as determined by the Secretary) the average retirement benefits being received by individuals who retired from competitive local organizations are superior to the local currency value of civil service annuities plus any other retirement benefits payable to foreign national employees who retired during similar time periods and after comparable careers with the Government.

"(b) For the purpose of performing functions abroad, any agency or other Government establishment (including any establishment in the legislative or judicial branch) may administer employment programs for its employees who are foreign nationals or are family members of Government employees assigned abroad, in accordance with the applicable provisions of this Act.

"(c) The Secretary of State may prescribe regulations governing the establishment and administration of local compensation plans under this section by all agencies and other Government establishments."

C1.2.2. Delegation of Authority. DoD Instruction 1400.10 (reference (b)) contains the delegations of authority to the Secretaries of the Military Departments, the Chairman of the Joint Chiefs of Staff (CJCS), and the Directors of the Defense Agencies for redelegation to Service commands to establish salaries, fringe benefits and related compensation matters for non-U.S. citizen employees.

C1.2.3. Limits on Authority

C1.2.3.1. Policy. The two basic policies regarding pay fixing specified in reference (b) apply:

C1.2.3.1.1. The average pay of employees of the U.S. Forces shall equal the average pay of the non-U.S. Forces sector in the country concerned; and

C1.2.3.1.2. The total compensation of employees of the U.S. Forces shall equal the total compensation of the non-U.S. Forces sector in the country concerned.

C1.2.3.1.1.1. Procedures in this Manual represent the preferred methodology for wage determination to satisfy the overall policy objectives of the Department of Defense. If departure from these procedures is necessary because of the peculiarities of local situations, DoD Components with delegated authorities may employ whatever methodologies best achieve these policy objectives. DoD Components must demonstrate that the methodology employed achieves the desired result and the alternative methodology must receive prior approval of the Assistant Secretary of Defense (Force Management and Personnel) (ASD(FM&P)).

C1.2.3.1.1.2. Once the decision is made on whether the provisions of the Manual or other provisions developed by the DoD Component and approved by the ASD(FM&P) for the country concerned apply, prior approval for deviations must be obtained from the ASD(FM&P). Such requests should be processed through channels and should include a complete analysis of all factors bearing on the request.

C1.2.3.2. Other Limits

C1.2.3.2.1. Unresolved differences relating to salaries, wages, fringe benefits and related compensation matters shall be referred by the cognizant commander in chief to the ASD(FM&P).

C1.2.3.2.2. Situations which, in the view of Service component commands, warrant deviation from prevailing practice, sometimes referred to as public interest determinations, shall be referred by the cognizant commander in chief to the ASD(FM&P).

C1.2.3.2.3. The total annual pay for an employee established under the delegated authorities may not be more than the maximum payable rate for General Schedule (GS)-18.

C1.3. MONITORSHIP

The DoD Wage Fixing Authority Technical Staff, as the designated agent for the DoD Wage Fixing Authority, monitors the foreign national compensation program. In carrying out this function, the technical staff reviews survey reports submitted and conducts periodic evaluations of country compensation plans. (See Chapter 7.)

C2. CHAPTER 2

GRADING STRUCTURES AND CLASSIFICATION

C2.1. UNIFORMITY

All components of the U.S. Forces must adopt and uniformly apply the same grade and step-rate structure within a given country.

C2.2. USE OF THE U.S. GS AND FEDERAL WAGE SYSTEM (FWS) GRADE STRUCTURES

The U.S. GS and FWS grade structures may be used if such structures are compatible with prevailing in-country alignment practices. When the U.S. grade structures are compatible, but exceptions to the structures are needed for specific occupations or job families due to differences between U.S. and in-country practice, the structure may be modified to reflect in-country practice, as follows:

C2.2.1. Establish special schedules or rates for occupations when prevailing rates for those occupations are significantly higher or lower than rates provided under the U.S. grading structure.

C2.2.2. Establish special schedules or rates for occupations when prevailing rates for those occupations are determined in a manner inconsistent with rate determination within the U.S. Forces structure.

C2.2.3. When survey data indicate that the U.S. grade alignment deviates from prevailing practice over a period of time, consider changing occupational grade levels to better reflect prevailing practice. This should not be done after the fact to achieve a preferred survey result.

C2.3. ALTERNATIVES TO THE USE OF U.S. GRADING STRUCTURES

C2.3.1. When the U.S. grading structures are not used, develop the country grading structure (including the number of grades and steps, progression between steps, and the value of step increments), considering:

C2.3.1.1. Prevailing practices in the private non-U.S. Forces sector, and/or

C2.3.1.2. The practices of the in-country government (public) sector.

C2.3.2. When U.S. grading structures are not used, establish key ranking or benchmark jobs to provide the framework of the grading structures and to determine relative values within occupational groupings and among levels of work. These values control the alignment of grade levels in job grading or classification standards and are vital for cross-occupation comparisons when evaluating positions not covered in the standards. Key ranking jobs need not be the same as survey jobs.

C2.3.3. Key ranking jobs must be representative of heavily populated occupations within the U.S. Forces sector in a given country. Align them as closely as possible with non-U.S. Forces practices. Change alignment and definitions of key ranking jobs only when significant changes in alignment occur in the non-U.S. Forces sector or when skill requirements change as a result of major technological changes in the U.S. Forces organizational structure.

C2.4. CLASSIFICATION AND JOB GRADING STANDARDS AND GUIDES

C2.4.1. When U.S. grading structures are used, classify or grade jobs with applicable classification and job grading standards published by the Office of Personnel Management (OPM) and supplemental standards and guides issued by Service components or developed locally.

C2.4.2. When U.S. grading structures are not used, develop classification and job grading standards and guides to ensure that positions or jobs are properly aligned in relation to the key ranking jobs.

C2.4.3. All U.S. Forces components shall use identical classification and job standards for foreign national employees hired under the same hiring arrangement within a country (either indirect or direct hire).

C2.4.4. Cover each job by a position or job description containing information sufficient to classify or grade it. Keep descriptions current and accurate.

C3. CHAPTER 3

FULL-SCALE SURVEYS

A full-scale survey includes developing a current sample of establishments and collecting salary, wage, and benefit data by visits to these establishments. It involves matching survey jobs, collecting data on numbers of employees and rates of pay as well as other data, and analyzing the data to measure the compensation level in the selected non-U.S. Forces sector. Conduct full-scale surveys at least every 3 years, or more frequently if economic conditions are unstable. Conduct update surveys in intervening years. See Chapter 5 for more details on update surveys.

C3.1. GENERAL

C3.1.1. This chapter provides guidance for surveying pay components. Guidance regarding benefit component surveys and total compensation determination is found in Chapters 4 and 8.

C3.1.2. The pay component is remuneration provided in cash or in kind for services rendered. It includes the basic rate paid for the performance of the duties of a job, bonuses, allowances, the monetary value of payments-in-kind, seniority pay, merit pay, and other cash payments. An expanded listing of commonly found pay components is at Appendix 2. Most pay components are expressed in local currency as hourly, daily, weekly, monthly, or annual amounts. Some pay components may be expressed as a percent of salary.

C3.2. PLANNING THE SURVEY

C3.2.1. Hold a survey planning meeting. Include the following items on the agenda, as well as any others that may be particular to a given country:

C3.2.1.1. Survey timetable.

C3.2.1.2. Employee inventory.

C3.2.1.3. Resources needed.

C3.2.1.4. Survey questionnaire.

C3.2.1.5. Survey area and application area definitions.

C3.2.1.6. Industry coverage and selection of survey establishments.

C3.2.1.7. Survey job list.

C3.2.1.8. Survey summary.

C3.2.2. Survey timetable: When developing the survey timetable, take the following into account: timing of survey companies wage adjustments, local holidays, desired effective date of the new wage rates, estimated time required for each survey phase, and other scheduled commitments of U.S. Forces survey participants.

C3.2.3. Employee inventory: Count the number of employees by schedule, grade, step, and occupational series. If required for modeling or analysis purposes, collect additional data on the work force such as length of service. Use the employee inventory data to review survey job coverage, calculate average-to-average adjustments, analyze survey data, and to cost out the survey results.

C3.2.4. Resources needed: Determine the number of data collectors and analysts needed and which organizations agree to provide support. Check availability of computer support. Check availability of office space, telephones, and other logistic requirements. Determine whether data collector training is needed, and if so, set up the training requirements. If there is any doubt as to the adequacy of computer support or space, conduct a site survey.

C3.2.5. Survey questionnaire: Develop data collection forms in sufficient detail to elicit all information needed to price non-U.S. Forces pay components. Data must permit the separate measurement of non-U.S. Forces base pay, total pay, and the value of any pay components that may be paid separately by the U.S. Forces. Anticipate and account for management or labor requests regarding the questionnaire. Include only necessary benefit or other survey items -- keep the questionnaire as short as possible. Delete questionnaire items that have proven unproductive in prior surveys. Finally, automate as much of the survey questionnaire as possible.

C3.2.6. Survey area and application area definitions:

C3.2.6.1. The survey area is the geographic area in which the surveyed establishments are located. The survey area normally encompasses the area surrounding U.S. Forces work sites within which the predominant number of employees reside, and within which workers may change employers without changing residences. However, if the local survey area has an insufficient industrial base for pay setting purposes or if there is significant recruitment from elsewhere, the survey area may be expanded. The

types and distribution of firms (including government facilities), geographic features, availability of public transportation, and commuting habits of workers may influence the establishment of survey area boundaries.

C3.2.6.2. The application area is that geographic area, including the survey area and additional areas within which U.S. Forces employ foreign nationals, where pay schedules derived from pay surveys are uniformly applied to all U.S. Forces foreign national employees.

C3.2.6.3. Two or more application areas may be combined to form a single area in those countries where pay rates differ only slightly between local areas or the numbers of firms and matched jobs in an area are too few to develop valid pay lines. Country-wide application areas are preferred when there may be significant problems in the administration of separate local pay schedules.

C3.2.7. Industry coverage and selection of survey establishments: Select survey industries from the broadest feasible universe of non-U.S. Forces industries, including civilian and military branches of the host government. If inclusion of the host government (national, state, and local levels) is not feasible, document the reasons for its exclusion and include the documentation in the country plan or in survey reports to the ASD(FM&P). Information used for selecting survey industries and survey establishments must be as complete and reliable as possible. Sources include host government agencies, the U.S. Embassy, employer associations, and economic planning boards.

C3.2.7.1. The number of establishments that need to be surveyed to obtain representative pay and benefits data varies with the types and sizes of companies surveyed and the number and occupational variety of foreign national employees in the U.S. Forces work force. It is important that the industries and individual survey establishments provide a representative sample of the sizes and kinds of industries that are the counterparts to the U.S. components' missions. However, consider eliminating industries that provide few survey job matches. The selected establishments should be in competition with the U.S. Forces for workers. If selected establishments prove to be small family-type operations, bankrupt, and/or clearly and significantly in violation of host government labor laws, they may be excluded from further data analysis. Document such exclusions in regular survey reports.

C3.2.7.2. Review industrial coverage with each full-scale survey to ensure changes in both U.S. Forces requirements and in-country industrial makeup are reflected in the selected sample. If one or a few establishments dominate the sample because of the large number of job matches obtained from the establishments, reduce the

dominance by adding firms to the survey establishment list. The list of survey establishments should be stabilized to the extent possible to obtain consistent measures of pay trends in the economy, thereby lending a visible measure of credibility to U.S. Forces pay concepts and policies.

C3.2.8. Survey job list: Select survey jobs that are representative of the U.S. Forces work force, both as to occupation and grade level, and that can be matched in the non-U.S. Forces sector. Include the most populated jobs at their most populated grade levels. To the extent possible, include survey jobs at each grade level in proportion to the U.S. Forces population at each grade level. If an uneven distribution of survey job grades results, supplement the survey job list with other survey jobs likely to produce reliable data from the designated industry coverage.

C3.2.8.1. Review survey jobs when planning for each full-scale survey. If successive full-scale surveys fail to produce adequate matches for a survey job, document the facts and drop the job from future surveys.

C3.2.8.2. U.S. Forces standard job descriptions and definitions may require modifications to make them suitable for use as survey job descriptions. Ensure that the survey description can be matched to industrial work situations, that levels of work are clearly differentiated, that peculiar U.S. Forces terminology is converted to common industrial terminology, and that critical elements of the job description are highlighted in either the job description or in supplemental material available to the data collector. Make the descriptions broad enough to facilitate collection of adequate wage and salary data. After each survey, review and modify each description to eliminate or minimize problems encountered in job matching.

C3.2.9. Survey summary: Design a summary of the survey results to be distributed to participating firms. The summaries should protect the confidentiality of the data.

C3.2.10. Minutes: Prepare minutes of the planning meeting.

C3.3. DATA COLLECTION

C3.3.1. When selecting employees to be used as data collectors, give primary consideration to their overall ability to perform the duties assigned to them. Data collectors must be:

C3.3.1.1. Well-versed in the occupational content of a wide range of occupations;

C3.3.1.2. Able to approach the collection of data objectively, open-mindedly, fairly, and without any semblance of prejudice;

C3.3.1.3. Able to maintain pleasant relationships in communicating with people; and

C3.3.1.4. Able to talk intelligently and maturely to non-U.S. Forces management.

C3.3.2. Normally, a team of data collectors will collect data. When consistent with in-country needs, one member of the data collection team may be a local national who meets the qualification requirements in subparagraphs C3.3.1.1. through C3.3.1.4., above. Whenever practical and to avoid any appearance of bias, the other member of the team should be a U. S. citizen.

C3.3.3. Each data collector having access to collected data must retain this information in confidence. The data collector is subject to disciplinary action by his or her employer upon proof of violation of this confidence.

C3.3.4. Conduct periodic training sessions for the data collectors.

C3.3.5. Appendix 3 contains general instructions for data collection. Supplement these instructions to meet in-country needs.

C3.3.6. Collect the data by personal visits to the survey companies. Conduct an initial review of the data as soon as possible after the data are collected to identify and correct errors before data input. Guidelines for this initial review are in Appendix 4.

C3.3.7. If the data will be analyzed without the use of a computer, recap the data by survey job and proceed to the analysis phase of the survey. If a computer will be used, enter the data, conduct an audit to detect errors, correct the errors, and go on to the analysis phase of the survey.

C3.4. ANALYSIS

C3.4.1. A computer with appropriate software will greatly assist in the analysis of survey data. Compute the following for each survey job in each company:

C3.4.1.1. The weighted average basic rate of pay.

C3.4.1.2. The weighted average of payments-in-kind.

C3.4.1.3. The weighted average of miscellaneous pay components that, when consolidated, will be used to set a single, separate pay component for U.S. Forces employees.

C3.4.1.4. The weighted average of any other pay component to be paid separately by the U.S. Forces, unless all establishments within the non-U.S. Forces sector pay such component in a manner that is identical to the U.S. Forces practice. In that case, the component may be eliminated from the survey data.

C3.4.1.5. The weighted average of subparagraphs C3.4.1.1. through C3.4.1.4., above (total pay).

C3.4.2. Summarize data by survey job, and calculate subparagraphs C3.4.1.1. through C3.4.1.5., above, for each survey job.

C3.4.3. Calculate the weighted average total pay for each grade level.

C3.4.4. Calculate median values, if desired. Remember that medians, unlike means, may not be averaged. For example, the median for a given grade is found by ordering all the rates at that grade level and then finding the middle rate, rather than averaging the medians of the survey jobs at that grade level.

C3.4.5. Compare the survey job data collected on this survey against the previous survey to identify observations that were included in a survey job on the last survey, but are missing this survey, and vice versa.

C3.4.6. Identify company job weighted averages that are significantly outside the cluster of rates for each survey job and respective grade level.

C3.4.6.1. Use standard deviation analysis techniques to identify company weighted averages more than two standard deviations from the survey job mean and/or the respective grade level mean.

C3.4.6.2. Check the impact of outlying company job averages by comparing survey job weighted averages with and without the outlying data.

C3.4.7. Graph the survey job weighted averages and grade level weighted averages to see the trend of the data and to visually spot those that may be out of alignment. (See Appendix 5.) The overall trend of the data may be linear, non-linear, or segmented. If a logarithmic trend (characterized by a constant percentage between grades) is suspected, plot the logs of the averages on half-log paper.

C3.4.8. The trend of the survey data may be mathematically described through regression analysis, a method for predicting a value based on other known values. In the case of wage surveys, we conduct a regression analysis of pay on grade level. Certain assumptions are made in regression analysis, a fundamental one being that pay is based on skill level. Therefore, trend lines should be run only on pay data that are survey job and/or grade related. For example, annual leave, supplemental retirement plans, and medical plans are not grade related and should not be part of the pay regression analysis. For guidance in analyzing these types of benefit data, see Chapter 4. Compute trend lines reflecting the visual trend of the data identified in paragraph C3.4.7., above, in accordance with the procedures set forth in Appendix 6. Due to the significant time required to aggregate data and to calculate trend lines manually, use computer support as much as possible. Trend lines may be run at the following levels of data aggregation:

C3.4.8.1. "Frequency" (each observation is weighted by the number of employees at that observation).

C3.4.8.2. "Company Job Unit" (equal weight to each company observation).

C3.4.8.3. "Job Unit" (equal weight to each survey job average or survey job median).

C3.4.8.4. "Grade Unit" (equal weight to each grade average or grade median).

Each level of aggregation may be run as a linear (constant intergrade differential), parabolic (constant difference in the intergrade differentials), or logarithmic (constant percentage intergrade differential) line. It is neither required nor expected that all possible trend lines be run each time the data are edited. It is important, therefore, to decide from visual inspection of the data (see paragraph C3.4.7., above) and the shape of the existing trend lines whether a linear, parabolic, or logarithmic line is indicated. Once the overall shape of the trend line is evident, run only the regressions that fit the trend of the data.

C3.4.9. Analyze company data points and survey job averages with respect to computed trend lines. Use standard deviation analysis to identify company job averages that lie outside a band of plus or minus 2 standard deviations from the trend lines. Note that extreme company job averages may be identified with respect to the company unit or frequency lines and extreme survey job averages may be identified with respect to the survey job unit line. Analyze these outliers and potentially disruptive data on a case-by-case basis. Additional information on specific data points may reveal reasons

to exclude the data -- red circle or part-time rates, for example. However, even if these data are otherwise acceptable, exclude them if their inclusion distorts the survey results. Recompute trend lines as necessary.

C3.4.10. Select an appropriate trend line, considering the conditions specific to the country concerned and factors such as the following:

C3.4.10.1. The relationship of the proposed trend line to the average wage rates for specific occupations represented in the survey jobs that have substantial U.S. Forces population.

C3.4.10.2. Current local labor market conditions in relation to principal occupations used in the U.S. Forces.

C3.4.10.3. The pattern of change in the major industries included in the survey, such as across-the-board percentages or cents-per-hour increases or varying increases based on level of responsibility.

C3.4.10.4. The grade distribution of the U.S. Forces work force.

C3.4.10.5. The type of line selected on the previous survey -- it is generally not desirable to change the shape of the trend line from year to year.

C3.4.10.6. Variability is reduced when data are aggregated into survey job averages and grade averages. Remember that it appears the trend lines fit aggregated data better than non-aggregated data, but because of the smaller number of data points we are less confident of the results.

C3.4.10.7. The distribution of data points about the lines.

C3.4.10.8. The influence of extreme data -- these data may not be available for the next survey.

C3.4.11. Translate non-U.S. Forces data to a U.S. Forces pay component package. Develop the pay component package for U.S. Forces employees to meet in-country needs, in accordance with the following policies and guidance:

C3.4.11.1. It is DoD policy that survey results shall be equated to the U.S. Forces pay schedules on an average-to-average basis. The following apply to the placement of the pay line within the step rate structure:

C3.4.11.1.1. If a pay system measures comparability with the non-U.S. Forces sector through surveys that collect wage data by kind and level of work performed, regardless of seniority or other conditions that affect the placement of the workers in the rate range and if such data are used in regression analyses to formulate a new pay comparability line for, the U.S. Forces pay structure, that system must relate the pay line to the average pay of the U.S. Forces employees through acceptable methods. (See Appendix 7.)

C3.4.11.1.2. If a foreign national system measures the variable of longevity in its wage survey procedure and establishes minimums, or minimum-maximum ranges in accordance with the practice of the non-U.S. Forces sector, the system is considered to have achieved the total pay comparability posture that the average-to-average procedure seeks to achieve.

C3.4.11.2. Payments-in-kind, bonuses, and allowances normally shall be paid as separate components (either individually or consolidated). Only base pay shall be used to compute premium pay (such as overtime and holiday pay), cost-of-living allowances, bonuses, or separation entitlements, unless host government law or prevailing compensation practices support a different computation procedure.

C3.5. PREVAILING PRACTICE DETERMINATION

C3.5.1. Decision of the Comptroller General, Volume 40, page 650 (reference (c)) provides the following guidelines for determining whether a pay or benefit component is a prevailing practice and can be paid separately:

C3.5.1.1. The practice should be substantially followed by local employers in the area;

C3.5.1.2. Adoption of the practice should be consistent with the public interest; and

C3.5.1.3. The manner of adopting the practice should be coordinated with other U.S. Government Agencies so that the same or a substantially similar practice will be followed by each Agency operating in that area.

C3.5.2. Consistent with this decision, the following additional guidance is provided:

C3.5.2.1. An employment practice shall be considered to be a prevailing practice when a majority of the survey firms employing a majority of the survey population follows such a practice.

C3.5.2.2. The amount or level of benefits associated with the employment practice shall be determined in the following manner:

C3.5.2.1.1. Any rate or level paid by a simple majority of the survey firms shall be considered to be prevailing practice, providing the number of employees at that rate or level exceeds the number receiving any other rate or level reported (including zero or none) in the survey.

C3.5.2.1.2. When no one rate or level can be established as prevailing practice under subparagraph C3.5.2.1.1., above, the weighted average rate or level of a benefit paid by survey firms (i.e., the sum of each company's rate multiplied by the number of employees at that rate, divided by the total employee population) shall be considered the prevailing practice.

C3.5.2.2.3. The application of subparagraphs C3.5.2.1.1. and C3.5.2.1.2., above, must be consistent with operational requirements and compatible with the basic management needs of the U.S. Forces.

C3.6. EFFECTIVE DATES

The general policy for selecting the effective date for changes in compensation and conditions of employment is that such changes shall be effective no earlier than the date competent administrative authority (in this case the component to whom wage fixing authority has been delegated) takes final action to approve the changes. Exceptions to this general policy may be justified in certain instances under such authority as the specific provisions of controlling treaties and agreements, or the "Foreign Service Act of 1980" (Pub L. 96-465, reference (a)), if supported by local custom and practice. 5 U.S.C. 5344 (reference (d)) applies only to U.S. citizens and cannot be used as the authority for retroactive adjustments for foreign national employees. Unless unquestionable legal authority for retroactive changes exists, all changes in compensation and conditions of employment shall be effective no earlier than the date the wage fixing authority takes final action to approve the changes.

C4. CHAPTER 4

BENEFIT ANALYSIS

C4.1. GENERAL

There are many ways to approach the analysis of benefit data. The purpose of this chapter is to give some examples and suggestions; it is not meant to be all inclusive. As with much of compensation analysis in general, the important points are these:

C4.1.1. Analysis methods should be rational and repeatable.

C4.1.2. To the extent possible, similar benefit items should be analyzed in a similar manner.

C4.1.3. All else being equal, analysis methods should be consistent from year to year. This establishes a base line so that subsequent benefit changes can be appropriately quantified.

C4.2. ANALYSIS OF TIME-OFF BENEFITS

Express survey establishment annual leave, holidays, and paid rest time in terms of hours or days and compare with U.S. Forces practice. Aggregate the differences, weighting the data by company, company size, specific company work-force employment, and/or number of matches at the company. Remember that each weighting factor carries different assumptions and subsequent data changes will have different effects on the aggregation depending on the type of weighting. For example, consider a survey with 100 participating companies. If annual leave differences are aggregated by company and a simple average is taken (sum the differences and divide by the number of participants), each company has equal weight -- 1 percent. If a particular company drops out of the next survey, the overall average is not likely to change much. On the other hand, if the differences are weighted by employment and the company that drops out constitutes 10 percent of the survey company total employment, the weighted average leave difference will be affected to a much greater degree, particularly if the company's leave plan is at one end of the distribution.

C4.3. ANALYSIS OF OTHER BENEFITS

Evaluate most other benefits according to the cost to the employer. These costs may be weighted a number of ways, as indicated above, prior to the aggregation and averaging process. Benefit to the employee is usually subjective and not easily quantifiable in a rational, consistent manner.

C4.4. USE OF BENEFIT DIFFERENCE IN TOTAL COMPENSATION COMPARABILITY (TCC) COMPUTATIONS

When the benefit analysis is complete, incorporate the benefit differences into the overall compensation plan. This may take the form of benefit-by benefit adjustments to the U.S. Forces benefits and/or adjustments in U.S. Forces pay rates. Sometimes an adjustment may not be possible - in that case, the benefit difference must be expressed in clearly labeled monetary terms and as a percentage of payroll. For example: "The U.S. Forces benefits cost for 1,548 employees exceeds average survey company benefit cost by \$85 per employee per year, for a total of \$131,580 per year or 0.85 percent of payroll." In short, differences identified in the analysis of benefits must be accounted for in total compensation or must be identified by cost and payroll percentage in the report to the ASD(FM&P). Also include in the report a plan to deal with TCC differences.

C5. CHAPTER 5

UPDATE SURVEYS

C5.1. GENERAL

The purpose of an update survey is to determine the compensation changes that have occurred since the previous full-scale survey. Generally speaking, contact those establishments that participated in the prior survey and collect data on the same matched jobs. The types of data that may be collected are:

- C5.1.1. General, across-the-board wage adjustments.
- C5.1.2. All other wage adjustments.
- C5.1.3. New job frequencies.
- C5.1.4. New benefit data or updated benefit data as appropriate.

C5.2. METHOD

C5.2.1. Using telephone, mail, or personal contact, collect data concerning pay adjustments for the pay components covered in the full-scale survey from each establishment that participated in the prior full-scale survey. Apply these pay adjustments to the wage rates from the prior survey to obtain new company survey job averages and therefore new survey job averages.

C5.2.2. Compute regression lines on the new data. Normally select the same regression line used in the full-scale survey, unless there are compelling reasons for change. Such reasons can include changes in the survey company list and significant variations in the pay data.

C5.2.3. Place the pay line developed as a result of the update survey in the step-rate structure in accordance with the policy and guidance in Chapter 3 and Appendix 7.

C5.2.4. Analyze benefit data collected. (See Chapter 4.)

C6. CHAPTER 6
ALTERNATIVES TO SURVEYS

C6.1. ACCEPTABLE ALTERNATIVES

The following are among the acceptable alternatives to U.S. Forces wage surveys:

C6.1.1. Compensation and benefits are patterned after host country practices (normally applicable to host country government employees) under terms of an international agreement or as sanctioned by appropriate authority. In such cases, negotiations on effecting adjustments for U.S. Forces employees should not commence until after final enactment or publication of the enabling directive(s) by the host government. This ensures that all aspects of the adjustments may be taken into account for TCC purposes.

C6.1.2. Compensation and benefits are directly related to industrial awards sanctioned under host country jurisdiction, in line with an international agreement. Example: H. E. Holt Communications Station, State of Western Australia.

C6.1.3. Third country national employment programs, when compensation is based either on third country national home country rates or host country rates and uniform benefits are applicable to all third country nationals in the theater. Example: PACOM Third Country National Program.

C6.2. WHEN SURVEYS MAY NOT BE FEASIBLE

Situations such as the following may make wage surveys not feasible:

C6.2.1. The number of U.S. Forces employees is so small that the cost of conducting a survey outweighs the advantages to be gained from surveying.

C6.2.2. There is a lack of counterpart industry in the area where U.S. Forces are located.

C6.3. ACTIONS WHEN SURVEYS ARE NOT FEASIBLE

When conditions such as those described in section C6.2., above, exist, alternatives to wage surveys that may be adopted are:

C6.3.1. Determine the proper relationship between the wage and salary rates in the nearest surveyed area and the area in question, and fix and adjust wages and salaries by maintaining this relative relationship. Such relationships may be established by:

C6.3.1.1. Comparing economic indicators or earnings figures for counterpart industries that may be available from governmental or private sources in the country concerned.

C6.3.1.2. Conducting surveys for only a limited number of establishments and comparing these data to data obtained from the reference area in which complete surveys were made to determine proper pay relationships. When this procedure is used, the jobs selected should represent both unskilled and skilled levels of work so any differences in pay relationships by skill level can be recognized.

C6.3.2. When the level of rates is similar among the areas in question, the wage schedule based on the complete survey should be extended in application to the broader area. This treatment is appropriate when the relationships found by comparisons such as those in paragraph C6.3.1., above, are similar.

C6.3.3. Requesting authority from the ASD(FM&P) to use a Joint Compensation Plan in conjunction with the American Embassy (and other U.S. Agencies) is a viable alternative when the U.S. Forces work force is small and closely associated with the work force of U.S. Government civilian agencies in the country concerned.

C7. CHAPTER 7

REPORTS

C7.1. PURPOSE

This reporting requirement documents the survey process and results, or if conditions in an area preclude the conduct of a wage survey, the basis for the determination that a survey is not feasible and the basis used for establishing the schedules.

C7.2. REQUIREMENTS

The reporting requirements prescribed herein have the following Report Control Symbol: DD-FM&P(A)1571. Existing DoD standard data elements shall be used for all reporting requirements, in accordance with DoD Directive 5000.11 (reference (e)). Submit the following materials to the Military Departments concerned and the ASD(FM&P) within 60 days after changes have been approved:

C7.2.1. Minutes of meetings of the joint committees.

C7.2.2. Schedules of wages and implementing instructions, along with the date of the schedule being superseded.

C7.2.3. A report of current fringe benefits.

C7.2.4. The current exchange rate.

C7.2.5. The distribution of employees paid from the schedules by grade and step.

C7.2.6. Report of surveys conducted of prevailing rates and benefits, consisting of the following:

C7.2.6.1. Brief narrative of the survey including the geographical scope.

C7.2.6.2. List of participating and nonparticipating firms by type of industry) and the reasons for nonparticipation.

C7.2.6.3. Survey job descriptions.

C7.2.6.4. Pay and benefit survey data:

C7.2.6.4.1. Usable data listed by company and survey job.

C7.2.6.4.2. Excluded data and the reasons for exclusion.

C7.2.6.4.3. Data analysis summaries.

C7.2.6.5. Considered and selected trend lines and supporting survey data, along with a rationale for each trend line selected.

C7.2.6.6. Explanation of schedule derivation and construction.

C7.2.6.7. Summary of the method used to meet the average-to-average policy requirement.

C7.2.6.8. Summary of the total compensation comparability method used and the annual dollar amount and percent of payroll that the value of the U.S. Forces compensation plan differs from that of the surveyed companies' compensation plans. Include a plan for dealing with significant TCC differences.

C8. CHAPTER 8

TOTAL COMPENSATION COMPARABILITY (TCC)

To implement the policy of TCC, DoD Components to whom wage fixing authority for foreign national employees has been delegated shall coordinate in the effort to update the TCC plan for each country. Requirements are:

C8.1.1. The plan must cover the pay and benefit components listed in Appendix 2.

C8.1.2. The plan must specify the time frame in which pay and benefits will be studied.

C8.1.3. The plan must specify the basis for monetizing each non-U.S. Forces and U.S. Forces benefit.

C8.1.4. The plan must specify for the country concerned which benefits are identical in the non-U.S. Forces sectors and how such benefits are to be treated.

C8.1.5. If a different benefit package is provided for different groups of employees within a country in the non-U.S. Forces sector, this must be recognized.

C8.1.6. The plan must specify any exclusions and the basis for the exclusions.

C8.1.7. The plan must specify the specific methodology to be used to compare U.S. Forces total compensation with non-U.S. Forces total compensation and the procedures must be statistically valid. The methodology must result in an overall monetary term, expressed in money and percentage, which portrays the amount by which U.S. Forces pay and benefits in the aggregate exceed or trail non-U.S. Forces pay and benefits.

C8.1.8. Updated plans for each country shall be submitted by DoD Components to the ASD(FM&P) for approval. Upon approval, the plans shall be incorporated by the ASD(FM&P) in this Manual as Appendix 8.

AP1. APPENDIX 1

UNIFORM STATE/AID/USIA REGULATIONS

MEMORANDUM OF AGREEMENT

SUBJECT: Agreement Concerning Joint Compensation Plans for Local Employees of the Department of State--United States Information Agency--Agency for International Development--Certain Designated Units of the Department of Defense--and the Foreign Agricultural Service and Other Designated Units of the Department of Agriculture.

PURPOSE

The purpose of this agreement is to establish new interagency working relationships governing the development, installation, and use of jointly-approved local employee compensation plans at posts abroad, and to reaffirm certain past policies in these matters.

POLICY

The signatory agencies to this memorandum agree that joint local compensation plans shall be used and joint compensation practices shall be followed in the remuneration of their direct-hire non-U.S. citizen employees, including third country nationals, at posts where two or more of these agencies employ local personnel. In the case of the Department of Defense, this agreement applies only to local employees of the military attache' offices, military assistance and advisory groups, and the units designated in Appendix A. Where personal services contracts are authorized by an agency for the employment of local personnel, the salaries and benefits provided therein shall be related to the rates (which may include offsets for fringe benefits) in a post's local compensation plan. (In the case of USIA and USDA/FAS, personal service contracts must have Washington Headquarters Agency approval prior to execution; for FAS Cooperators' non-U.S. citizen employees, see Title II, FASR, Chapter 4.)

The statutory authority and the basic policy relating to the development of local compensation plans is contained in section 444 of the Foreign Service Act of 1946, as amended. (P.L. 86-723; 22 U.S.C. 889; 74 Stat. 832;). The regulations and procedures which govern this activity are set forth in 3 FAM 910-970 and in the Interagency Handbook on Local Employee Compensation and pertinent signatory agency regulations.

PROCEDURES AND RESPONSIBILITIES

I. Responsibilities of Foreign Service Missions

The officer in charge of administrative operations of the Foreign Service at each mission or principal post directly under the supervision of the Department of State shall:

- a. Conduct local salary surveys or participate with DoD salary survey teams when available, evaluate the survey findings, and develop proposed revised local compensation plans for Foreign Service posts in the officer's country of assignment; give special consideration in selection of key positions in the survey to specific needs of other agencies--for example, positions requiring special or unique qualifications, working conditions, etc; include all position titles of other agencies in list of authorized position titles;
- b. Explain local salary survey findings to using agencies at post and provide necessary copies of the approved local compensation plan to using agencies at post and to agencies' headquarters;
- c. Advise and assist all agency representatives in developing position descriptions, in establishing suitable titles, in classifying positions in conformance with the approved list of position titles, and in establishing the qualifications requirements for the positions. Positions involving duties and responsibilities common to all agencies, for example, Secretary, Clerk-Typist, Chauffeur, etc., shall be placed in the same class level;
- d. Advise on classification of positions of an agency subject to the approval of the ranking officer of the agency, when the post administrative support agreement provides for this service;
- e. Review local compensation plan annually and at any other time when there is evidence of the plan's inadequacy;

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3 FAM Exhibit 931.3 (p. 2)

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f. Based on results of a local salary survey or on review of adequacy of a local compensation plan, develop and submit to Washington for approval the following types of modification of the plan:

- (1) Revisions in salary rates;
- (2) Changes in the basic structure (for example, adding a new class level or increasing the number of step rates in a class);
- (3) Changes in premium pay rates;
- (4) Adoption of new direct fringe benefit payment plans and substantive amendment of approved direct fringe benefit plans, including host government social security plans and health plans;
- * (5) Any amendment to the list of authorized position titles; and
- (6) Any other amendment which results in the increased expenditure of funds;*

* g.* Sign all proposed revised local compensation plans as evidence of the officer's formal and official concurrence therewith; and

* h.* Forward copies of proposed revised local compensation plans, cost data, and an explanation of proposals to the Department for approval in accordance with 3 FAM 932.5-d. Upon request, submit salary survey data and worksheets.

II. Responsibilities of Other Agency or Department

Representatives at Post

Each head of a USIA overseas establishment, Executive Agent (Army, Navy, or Air Attache', as appropriate), Agricultural Attache' or other designated representative of the Department of Agriculture, and Director of an AID Mission, or USAID Representative or Liaison officer, or their designated representatives, shall:

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3 FAM Exhibit 931.3 (p. 3)
(*) Revision

- a. Classify local positions even though provision for this service is a part of the administrative support agreement at the post. (The position classification action includes determination of the proper class and position title as well as the qualification requirements for the position.);
- b. In the preliminary stage of local salary surveys, participate in the selection of key positions and organizations to be surveyed;
- c. Participate in the salary survey by providing technical guidance on position requirements and/or by providing staff support in the survey effort;
- d. Review the completed survey to assure that salaries for comparable positions and accompanying fringe benefits have been properly evaluated and that the resulting local compensation plan is equitable;
- e. Adhere strictly to provisions of the local compensation plan in compensating local employees;
- f. Request the mission to conduct a survey of specific positions or all positions if local conditions appear to warrant a review of the local compensation plan; and
- g. Sign all proposed revised local compensation plans as evidence of that agency's formal and official concurrence therewith.

When a consensus on local personnel classification or pay practices cannot be reached at a post, the head of an overseas establishment may submit a request, with full justification and supporting data, for the establishment of special salary rates, a separate salary schedule, or classification of individual positions for headquarters agency review, advice, or decision. Such submissions should be sent to the appropriate headquarters office, Washington, with copies marked for the attention of the appropriate regional bureau and the *Bureau of Personnel,* Department of State. The post will be advised of the decision reached at the Washington level.

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3 FAM Exhibit 931.3 (p. 4)
(*) Revision

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III. Responsibilities of State and Other Agencies in Washington

Officers in State and other agencies in Washington as designated in 3 FAM 931.3 and in other pertinent agency regulations shall have the authority to:

- a. Request and review local salary survey data and worksheets in support of post's proposed revised local compensation plans as deemed necessary to insure the adequacy of the proposals;
- b. Approve all proposed revised local compensation plans subject to review of salary survey data and worksheets, as necessary, and budgetary clearances;
- c. Inspect overseas operations as deemed necessary to insure effectiveness and efficiency of post's local personnel programs; and
- d. Approve direct fringe benefit payment plans and health and social security plans in accordance with existing regulations.

IV. Delays in Implementation

Where one or more of the agencies find it impossible to implement the local compensation plan because of inadequate funds, all agencies shall postpone putting the plan into effect to afford the affected agencies a reasonable opportunity to seek the necessary funds. If, after 60 days, funds are not forthcoming, other agencies may install the revised or amended plan.

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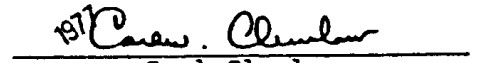
3 FAM Exhibit 931.3 (p. 5)

* This agreement supersedes the interagency agreement on the same subject signed during the period April thru June 1975.

For the Secretary of State:

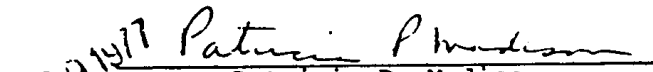
For the Secretary of Defense:

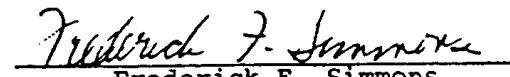

Thomas J. Ranson
Director, Office of
Employee Services


Carl Clewlow
Deputy Assistant Secretary for
Civilian Personnel Policy


For the Secretary of Agriculture:

For the Agency for International
Development:

IN 291977 
Patricia P. Madison
Director of Personnel Division
(FAS)


Frederick F. Simmons
Director of Personnel and
Manpower

For the Director
United States Information Agency:


Angie Garcia
Acting Assistant Director, USIA,
for Personnel and Training *

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3 FAM Exhibit 931.3 (p. 6)
(*) Revision

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DoD UNITS DESIGNATED TO APPLY STATE-DEFENSE AGREEMENT ON LOCAL SALARY ADMINISTRATION

All U.S. Defense Attache Offices

All Defense Mapping Agency units not covered by schedules set under the delegations of authority

All Military Assistance Advisory Groups (MAAGS)
(except Korea and Philippines)

Brussels, Belgium
European Office of Aeronautical Research

Congo
U.S. Military Mission

Hong Kong, B.C.C.
U.S. Navy Purchasing Branch

India
U.S. Defense Representative

Indonesia
U.S. Defense Liaison Group

Liberia
U.S. Military Mission

Lisbon, Portugal
U.S. Navy Shipbuilding Liaison Office

Madrid, Spain
U.S. Naval Shipbuilding Liaison Office

Mali
U.S. Military Mission

Pakistan
Office of Defense Representative

Singapore

U.S. Navy Office

Thailand

Armed Forces Research Institute of Medical Science, Bangkok

Wellington, New Zealand

U.S. Naval Support Antarctica, Christchurch

AP2. APPENDIX 2
PAY AND BENEFIT COMPONENTS

Consider the following pay elements and fringe benefits when measuring TCC:

AP2.1. PAY COMPONENT

AP2.1.1. Pay elements normally included in TCC:

AP2.1.1.1. Base Pay

AP2.1.1.2. Cash allowances or bonuses:

AP2.1.1.2.1. Cash bonus.

AP2.1.1.2.2. Cost of living.

AP2.1.1.2.3. Educational allowance.

AP2.1.1.2.4. Family allowance.

AP2.1.1.2.5. Housing and/or utilities.

AP2.1.1.2.6. Language.

AP2.1.1.2.7. Meals.

AP2.1.1.2.8. Pay differential.

AP2.1.1.2.9. Profit sharing.

AP2.1.1.2.10. Responsibility and/or trust.

AP2.1.1.2.11. Seasonal.

AP2.1.1.2.12. Seniority.

AP2.1.1.2.13. Skill.

AP2.1.1.2.14. Stock option.

AP2.1.1.2.15. Transportation.

AP2.1.3. Payments in kind:

AP2.1.1.3.1. Commissary privileges.

AP2.1.1.3.2. Food (e.g., rice or bread not part of a meal).

AP2.1.1.3.3. Free or discounted company product.

AP2.1.1.3.4. Free or discounted housing and/or utilities.

AP2.1.1.3.5. Free or discounted meals.

AP2.1.1.3.6. Free or discounted transportation (when employment situation is similar to that of the U.S. Forces).

AP2.1.1.3.7. Free or discounted vacation travel.

AP2.1.1.3.8. Uniforms.

AP2.1.1.3.9. Use of automobile.

AP2.1.2. Items of pay that may be included in TCC:

AP2.1.2.1. Those provided to identifiable groups of employees:

AP2.1.2.1.1. Occupational premium.

AP2.1.2.1.2. Remote area allowance

AP2.1.2.2. Those provided to individuals:

AP2.1.2.2.1. Educational assistance to dependent children.

AP2.1.2.2.2. Family allowance.

AP2.1.2.2.3. Funeral expenses for family members.

AP2.1.2.2.4. Marriage bonus.

AP2.1.3. Items of pay not included in TCC:

AP2.1.3.1. Premium Pay:

AP2.1.3.1.1. Hazardous duty pay.

AP2.1.3.1.2. Holiday pay.

AP2.1.3.1.3. Overtime.

AP2.1.3.1.4. Shift differential.

AP2.1.3.1.5. Sunday pay.

AP2.1.3.2. Those items for which the U.S. Forces and non-U.S. Forces provide like amounts.

AP2.2. BENEFIT COMPONENT

AP2.2.1. Fringe benefits normally included in TCC:

AP2.2.1.1. Time-off benefits:

AP2.2.1.1.1. Annual leave and/or vacation.

AP2.2.1.1.2. Holidays.

AP2.2.1.1.3. Paid rest time.

AP2.2.1.2. Financial assistance benefits:

AP2.2.1.2.1. Company investment or savings plans.

AP2.2.1.2.2. Low interest loans.

AP2.2.1.3. Social and social security type benefits:

AP2.2.1.3.1. Basic.

AP2.2.1.3.2. Life insurance.

AP2.2.1.3.3. Medical and hospital.

AP2.2.1.3.4. Provident fund.

AP2.2.1.3.5. Retirement Supplemental.

AP2.2.1.4. Other non-cash payments not included in subparagraphs AP2.2.1.1. through AP2.2.1.3., above.

AP2.2.2. Benefits not normally included in TCC:

AP2.2.1.1. Event-oriented time off benefits:

AP2.2.1.1.1. Bereavement leave.

AP2.2.1.1.2. Maternity leave.

AP2.2.1.1.3. Military leave.

AP2.2.1.1.4. Personal time off.

AP2.2.1.1.5. Physiological leave.

AP2.2.1.1.6. Sick leave.

AP2.2.2.2. Severance pay, unless granted for all separations.

AP2.2.2.3. First aid or health stations when the U.S. Forces provide similar facilities for their employees.

AP2.2.2.4. Any other benefit provided by the U.S. Forces that is substantially similar to that provided by the non-U.S. Forces sector.

AP3. APPENDIX 3

INSTRUCTIONS FOR DATA COLLECTION

AP3.1. INITIAL CONTACT WITH SURVEY COMPANIES

When it is expected that the company has received the letter requesting its participation, contact the establishment in person or by telephone to advise the company official of the type of survey information desired and to set a date and time for the visit. If letters requesting participation are hand delivered, these arrangements may be accomplished at the same time. It is important that the interview be arranged with a company representative familiar with company jobs, compensation, and employment conditions and practices.

AP3.2. ACTION WHEN AN ESTABLISHMENT DECLINES TO PARTICIPATE

If the company representative declines to participate during the initial contact or the data collection interview, explain why the information is desired to ensure that the refusal is not due to a lack of understanding of the purpose and nature of the survey. If the official still refuses to participate, report the reason to the survey chair who may make further efforts to obtain the company's participation.

AP3.3. THE INTERVIEW

AP3.3.1. The interview with the company representative is a very important part of the data collector's assignment. Factual data must be obtained at a minimum expenditure of time and money to both the company and the U.S. Forces. Data collectors must be fully prepared to conduct each interview as efficiently as possible while establishing and maintaining good public relations. In preparation for the interview, data collectors should:

AP3.3.1.1. Be able to explain to company representatives the wage administration policies of the U.S. Government, the wage survey process, and the use that will be made of survey data.

AP3.3.1.2. Review thoroughly the data on kinds of jobs, numbers of employees, rates of pay, and other survey information collected on the last survey of the establishment.

AP3.3.1.3. Be thoroughly familiar with the survey key jobs and grade distinctions.

AP3.3.1.4. Be thoroughly familiar with data to be collected, the meaning and interpretation of questions on data collection sheets or fringe benefit questionnaires, and instructions for recording data on wage survey forms. Keep the instructions and key job definitions available for reference during the company contact.

AP3.3.1.5. Have a copy of current U.S. Forces pay schedule and benefit information, and be able to answer questions regarding this information.

AP3.3.2. Conduct. Data collectors should ensure that their appearance and behavior reflect credit on themselves and the U.S. Forces. They should be on time for appointments and polite and considerate in all dealings with company representatives.

AP3.3.3. Introductory Remarks

AP3.3.3.1. Initially, give the company official a brief explanation of wage determination policies. Explain that a major objective is to establish a satisfactory relationship between the general level of wage rates paid by local U.S. Forces activities and those paid by other employers in the area. To accomplish this objective, each wage area is surveyed periodically to ascertain going rates of pay for comparable work found in the survey companies. Wage survey data are carefully and confidentially reviewed at the local level and at higher Military Service Headquarters that approve the resulting wage schedules. After data review, survey key job weighted averages are arrayed to reflect the trend of rates by grade level. A pay line is then fit to this trend of rates. The resulting pay schedule does not provide rates that conform exactly to the average rate for each survey key job, but it does provide a rate relationship consistent with the overall pattern of prevailing rates found in survey companies. In addition, it provides employees equitable compensation levels in accordance with the responsibilities of their positions.

AP3.3.3.2. During the early part of the introductory phase of the interview, the data collectors should emphasize that information provided by the company will be treated confidentially and will not be divulged to unauthorized personnel. Also, they should explain that a summary of survey data will be sent to each participating company at the conclusion of the survey, and that the summary will not associate a specific company with its data.

AP3.4. DATA COLLECTION

AP3.4.1. Gathering accurate data is essential to the reliability and validity of wage survey results. Every effort should be made to obtain necessary data and to record it in sufficient detail to determine comparability with survey key jobs and ensure that accurate wage information is obtained. Gather data in a manner convenient to the company representative, realizing that data must be collected in person (for full-scale surveys) from knowledgeable company officials. Follow-up information may be obtained by telephone. If the company representative has no preference, the following approach is suggested.

AP3.4.1.1. Complete the company information sheet.

AP3.4.1.2. Match the survey jobs and obtain data necessary to complete data collection forms.

AP3.4.1.2.1. Briefly explain the content of each survey job and get the company official's opinion on which jobs might be found at the company.

AP3.4.1.2.2. For each possible job match, discuss the duties of the company job with the official. Review any formal company job descriptions for accuracy.

AP3.4.1.2.3. Compare duties of company jobs with survey key job descriptions. Sometimes observing the job in operation helps determine comparability. DO NOT match jobs solely on the basis of job titles. Make an initial job match determination. This determination is subject review and change at the local or headquarters level, so appropriate documentation is vital.

AP3.4.1.2.4. If a job match determination cannot be made or cannot be agreed upon by the data collectors, obtain detailed information on the company job duties.

AP3.4.1.2.5. Explain on the appropriate forms differences between data collected during the prior survey and data collected on the current survey.

AP3.4.1.3. After job matches have been determined, obtain the number of employees at each pay rate for each matched job or questionable match. This may be done after each job match decision, or after all matching determinations have been made. Record and report all wage data obtained on matched jobs. Compare rates with contracts and explain any discrepancies.

AP3.4.1.4. Obtain data on remaining survey questions regarding pay, benefits and employment practices and/or conditions. Collect these data whether universally applied or provided to select individuals or groups of employees.

AP3.5. INCLUSIONS

Data on jobs at participating companies are usable when:

AP3.5.1. The company job is comparable to a survey job. Remember that comparable does not necessarily mean identical. In general, the survey job descriptions are broad enough to allow collection of adequate wage data. If more than one company job is a match to a survey key job, obtain pay data for each of the company jobs. If the converse is true, try to obtain data on employees who mainly perform work comparable to each of the narrower survey jobs.

AP3.5.2. The number of employees at each rate in the rate range is obtained. If, however the company can furnish only the total number of employees in the matched job and the weighted average pay rate for those employees, accept the data. Collect data in a format allowing conversion to the appropriate survey pay unit. For example, monthly rates are acceptable if the number of work hours per month is known and the survey pay unit is hourly. Incentive or piecework rates paid for comparable jobs may be used, provided the base rates and guaranteed rates are obtained. Also, record the type of incentive plan used by the company. Any such rates must be based either on documented average percentage-over-guaranteed-minimum by occupation or average weekly earnings for four or more recent pay periods.

AP3.6. EXCLUSIONS

AP3.6.1. Exclude data on company jobs that are definitely not comparable to survey jobs.

AP3.6.2. Exclude trainee, pensioner, part-time, or temporary jobs.

AP3.6.3. Exclude data on leader and supervisory jobs except when such duties are a part of the survey key job description.

AP3.6.4. Exclude data for jobs when only the rate range and not specific rates or weighted averages is available. Report the rate range data for informational purposes, however.

AP3.6.5. Exclude data for jobs paid below minimum rates established by the host country. Again, report the rates for informational reasons.

AP3.6.6. Report any apparent discriminatory hiring practices so the survey officials can make decisions on use of the data.

AP3.7. SUMMARY OF DATA COLLECTION METHODS

The best method of obtaining survey data will depend to a large extent on the company official's records and willingness to allow data collectors to use them. Data may be obtained with the expenditure of relatively little time if the collectors have access to adequate job descriptions and pay records. Otherwise, a more lengthy interview with the company official may elicit the necessary data. Regardless of the method used, the rates and other information should be cross-checked with other available sources, such as collective bargaining agreements, to ensure the highest possible accuracy.

AP4. APPENDIX 4

GUIDELINES FOR INITIAL REVIEW OF PAY AND BENEFIT DATA

AP4.1. GENERAL

Review all pay and benefit data collected for acceptability, reasonableness, comparability with survey key jobs, accuracy of computations, correct preparation of survey forms, and to ensure that the survey is conducted within prescribed procedures and specifications. The reviewer should meet with the data collectors as soon as possible after each company contact, while the information collected is still fresh in their minds, to go over all items in the survey questionnaire. Discuss each job match and ensure that each is comparable to the appropriate survey key job.

AP4.2. REVIEW GUIDELINES

AP4.2.1. Check to see that all available written materials, such as union contracts, pay tables, job descriptions, and benefit pamphlets were collected and filed with the company survey data. Use the written material to verify the data reported on survey forms.

AP4.2.2. Check all questionnaire items for completeness and clarity. For example:

AP4.2.2.1. Is the company product or service reported?

AP4.2.2.2. Are overtime provisions covered?

AP4.2.2.3. Is the total employment figure consistent with the last survey? If not, are differences explained?

AP4.2.2.4. Are the company employment subtotals consistent with the sample reported?

AP4.2.2.5. Are bonus plans clearly described?

AP4.2.2.6. Is the annual leave plan adequately documented?

AP4.2.2.7. Are calculations of company cost for particular benefits clear and correct?

AP4.2.3. Ensure that the required information on survey key jobs is complete, for example:

AP4.2.3.1. Check that the number of employees at each rate or the total number of employees at a weighted average rate has been recorded.

AP4.2.3.2. Check that the rates are properly recorded. Pay units and work hour information necessary to convert the data to survey pay units should be clear.

AP4.2.3.3. Check that all rates reported as base rates exclude additives such as shift differentials, overtime pay, cost-of-living allowances, and/or bonuses unless they are considered as part of base pay for purposes of premium pay in the host country. If piecework or incentive rates are reported, make sure the base rate, guaranteed minimum, and average percentage over the guaranteed minimum or average earnings over at least four pay periods are clearly reported.

AP4.2.3.4. Check that information on other pay components, including payments in kind, is provided in sufficient detail to permit both monetizing and identification of the specific jobs to which the components apply.

AP4.2.4. Review the company's intervals between rates within jobs and among occupations. Note exceptions to the normal intervals and check that explanations are provided for these exceptions. Also note occupational intervals that run counter to the U.S. Forces grading structure; i.e., rates for low skill jobs that exceed rates for higher skilled jobs.

AP4.3. COMPARABILITY

Verify the comparability of all job matches. To be a good match, the company job must "fit" the survey key job with regards to duties and skill level. While the pay rate for the job may provide some insight into the level of work or the degree of skill required, the relative level of the pay rate does not automatically govern the inclusion or exclusion of data. Give special attention to situations where:

AP4.3.1. Data collectors disagree on comparability.

AP4.3.2. Jobs matched by the collectors differ from those reported on the previous survey.

AP4.3.3. Job information reported on the data collection forms raises a question of comparability.

AP4.3.4. Pay data show marked deviations from data for other jobs in the same company or other companies in the survey.

AP4.3.5. Very large rate ranges are reported for the same job. Frequently, a large range includes levels from trainee or apprentice to supervisor or manager. Only data applicable to the duties of the matched survey key job may be used.

AP4.4. CONSISTENCY WITH PREVIOUS DATA FROM THE SAME ESTABLISHMENT

The review must determine how individual rates, matched jobs, numbers of matched employees, and benefit data compare with data obtained from the same company in the preceding survey. When differences are found that cannot be explained, it may be necessary to recontact the company. Recontacts may be necessary if no explanation is provided for the following:

AP4.4.1. Inconsistent rate relationships with previous survey data. For example, the pay rate for one matched job increased 15 percent while other matched job rates increased 5 percent over the previous survey.

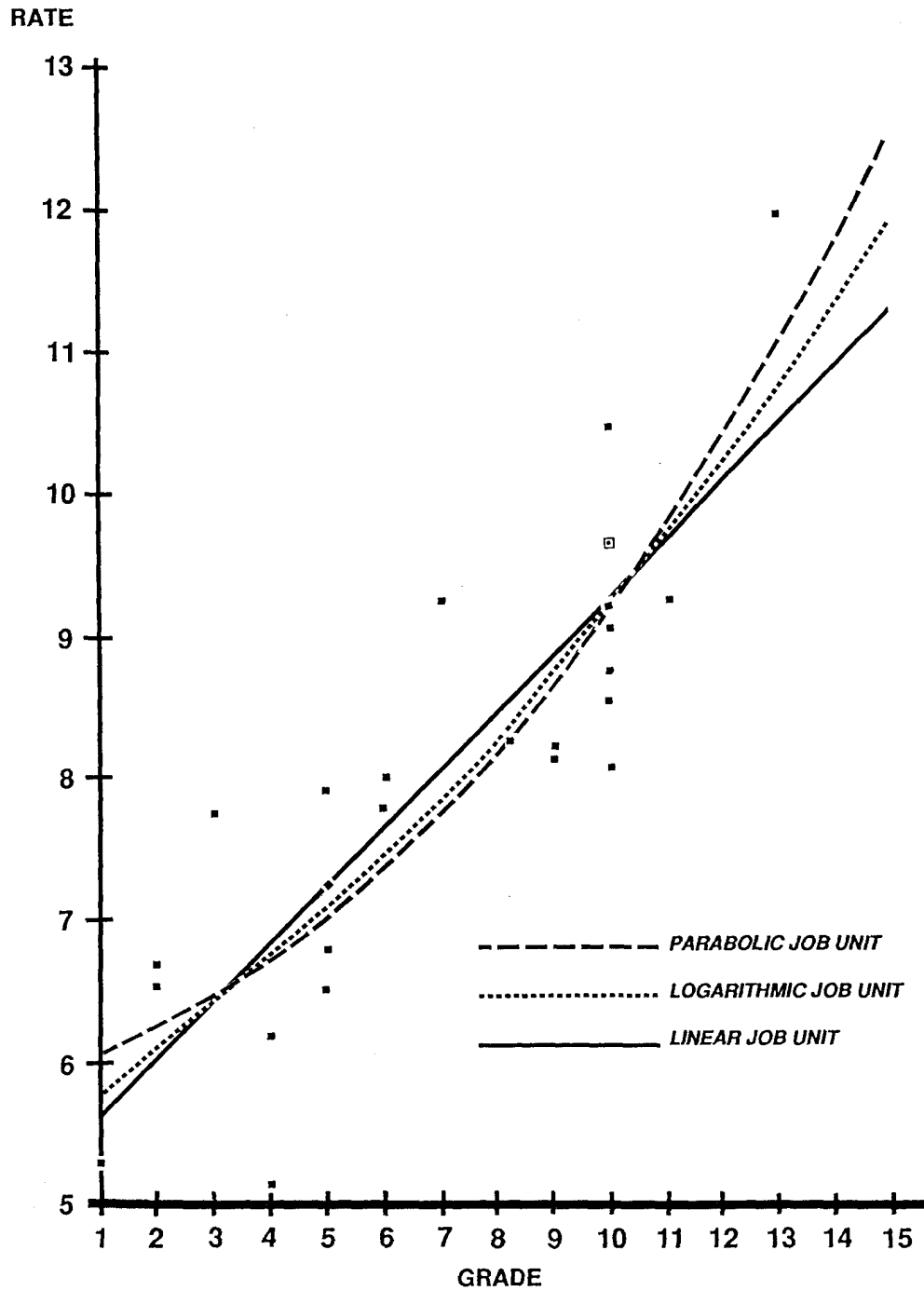
AP4.4.2. Significant differences in matched job populations from survey to survey.

AP4.4.3. Company jobs matched this survey that were not matched last survey, and vice versa.

AP4.4.4. Significant changes in benefits or employer costs since the last survey.

AP5. APPENDIX 5

SCATTER DIAGRAM



AP6. APPENDIX 6

COMPUTING WAGE TREND LINES

AP6.1. GENERAL

AP6.1.1. A wage trend line passes through an array of wage data so that the data above the line and the data below the line are in balance. When plotted, the mathematical equation for a trend line shows the trend of a set of data points and provides a concise definition of the trend. The "least squares" method is such an equation, and is accepted by statisticians as a sound, convenient device for obtaining an objective fit of a trend line. Consistent with the name "least squares," the sum of the squares of the deviations of all the data, both above and below the line, is less than the sum of the squares of the deviations of the data from any other line of the same type (linear, parabolic, or logarithmic). Another characteristic is that the sum of the squared deviations of the data above the line exactly balances the sum of the squared deviations below.

AP6.1.2. The first step in computing a trend line is to plot the weighted averages for each survey job on a scatter diagram (Appendix 5) to portray graphically the general pattern of the rate structure in the area. Judging from the scatterplot, decide if a straight line or one of the curved lines (parabolic or logarithmic) best fits the data. To further test for the logarithmic, plot the logarithms of the job averages on semi-log paper; the result should indicate a straight line.

AP6.1.3. The data from which the scatter diagram is plotted are shown below in the x and y columns of the Linear Regression Computation Sheet. Other computations and data necessary to solve the linear, second degree (parabolic), and exponential (logarithmic) trend line formulas are shown below on the respective computation sheets. The illustrative computations that follow are based on 26 survey job averages, but the same principles apply using company job averages (which would simply mean more rows of data to sum) or grade averages (which would mean fewer rows to sum).

AP6.1.4. In computing trend lines two methods are used: The unit line approach gives equal weight to each data point and the frequency line weights each data point by the number of observations at the data point.

AP6.2. LINEAR REGRESSION

AP6.2.1. The formula for a straight line is $Y=a+bx$.

AP6.2.2. The Linear Regression Computation Sheet, below, illustrates the initial computations necessary for calculating unit and frequency linear trend lines. For this and subsequent computation sheets,

n = survey job

x = survey job grade

y = survey job weighted average

f = number of observations for the survey job.

The remaining columns on the computation sheets are mathematical operations — multiply x by y for the xy column, for example. The last line of the computation shows the column summations (Σ).

LINEAR REGRESSION COMPUTATION SHEET

n	x	y	f	xy	x ²	fx	fy	fxy	fx ²
A	1	5.29	194	5.29	1	194	1,026.26	1,026.26	194
B	2	6.52	215	13.04	4	430	1,401.80	2,803.60	860
C	2	6.69	386	13.38	4	772	2,582.34	5,164.68	1,544
D	3	7.76	173	23.28	9	519	1,342.48	4,027.44	1,557
E	4	5.11	207	20.44	16	828	1,057.77	4,231.08	3,312
F	4	6.20	125	24.80	16	500	775.00	3,100.00	2,000
G	5	6.80	66	34.00	25	330	448.80	2,244.00	1,650
H	5	6.50	54	32.50	25	270	351.00	1,755.00	1,350
I	5	7.26	757	36.30	25	3,785	5,495.82	27,479.10	18,925
J	5	7.91	439	39.55	25	2,195	3,472.49	17,362.45	10,975
K	6	8.00	228	48.00	36	1,368	1,824.00	10,944.00	8,208
L	6	7.79	63	46.74	36	378	490.77	2,944.62	2,268
M	7	9.23	884	64.61	49	6,188	8,159.32	57,115.24	43,316
N	8	8.27	327	66.16	64	2,616	2,704.29	21,634.32	20,928
O	9	8.20	821	73.80	81	7,389	6,732.20	60,589.80	66,501
P	9	8.16	37	73.44	81	333	301.92	2,717.28	2,997
Q	10	9.63	227	96.30	100	2,270	2,186.01	21,860.10	22,700
R	10	9.21	46	92.10	100	460	423.66	4,236.60	4,600
S	10	9.08	24	90.80	100	240	217.92	2,179.20	2,400
T	10	8.08	274	80.80	100	2,740	2,213.92	22,139.20	27,400
U	10	8.55	529	85.50	100	5,290	4,522.95	45,229.50	52,900
V	10	8.77	536	87.70	100	5,360	4,700.72	47,007.20	53,600
W	10	10.44	205	104.40	100	2,050	2,140.20	21,402.00	20,500
X	10	9.63	786	96.30	100	7,860	7,569.18	75,691.80	78,600
Y	11	9.27	222	101.97	121	2,442	2,057.94	22,637.34	26,862
Z	13	11.93	330	155.09	169	4,290	3,936.90	51,179.70	55,770
$\Sigma=26$	185	210.28	8,155	1,606.29	1,587	61,097	68,135.66	538,701.51	531,917

3. To compute a unit linear trend line, derive the values of the unknown a and b through the use of the following equations:

$$a = \frac{(\Sigma x^2)(\Sigma y) - (\Sigma x)(\Sigma xy)}{(\Sigma n)(\Sigma x^2) - (\Sigma x)^2} \quad b = \frac{(\Sigma n)(\Sigma xy) - (\Sigma x)(\Sigma y)}{(\Sigma n)(\Sigma x^2) - (\Sigma x)^2}$$

By substituting the appropriate column totals from the Linear Regression Computation Sheet on the preceding page we have:

$$a = \frac{(1,587)(210.28) - (185)(1,606.29)}{(26)(1,587) - (185)^2} \quad a = 5.1941$$

$$b = \frac{(26)(1,606.29) - (185)(210.28)}{(26)(1,587) - (185)^2} \quad b = 0.40667$$

4. To determine the wage rate (Y) for any given grade level (x) the values for a, b, and x are substituted in the formula $Y = a + bx$. The table below illustrates the computations for grades 1 to 15:

x	a +	bx	= Y
1	5.1941	0.40667	5.60
2	5.1941	0.81334	6.01
3	5.1941	1.22001	6.41
4	5.1941	1.62668	6.82
5	5.1941	2.03335	7.23
6	5.1941	2.44002	7.63
7	5.1941	2.84669	8.04
8	5.1941	3.25336	8.45
9	5.1941	3.66003	8.85
10	5.1941	4.06670	9.26
11	5.1941	4.47337	9.67
12	5.1941	4.88004	10.07
13	5.1941	5.28671	10.48
14	5.1941	5.69338	10.89
15	5.1941	6.10005	11.29

5. Use the following equations to compute the frequency a and b values:

$$a = \frac{(\sum fx^2)(\sum fy) - (\sum fx)(\sum fxy)}{(\sum f)(\sum fx^2) - (\sum fx)^2} \quad b = \frac{(\sum f)(\sum fxy) - (\sum fx)(\sum fy)}{(\sum f)(\sum fx^2) - (\sum fx)^2}$$

Solve the equations by substituting the appropriate column totals from the Linear Regression Computation Sheet. In this example, the frequency a and b values are 5.5038 and 0.38058 respectively. To determine the wage rate at any given grade level follow the same procedures used for the unit line.

C. Second Degree Regression

1. The equation for a second degree (parabolic) regression is $Y=a+bx+cx^2$.
2. Using the same data from which the linear trend line values were computed, the computation sheet for a unit second degree regression is as follows:

SECOND DEGREE REGRESSION COMPUTATION SHEET (UNIT)

n	x	y	x^2	x^3	x^4	xy	x^2y
A	1	5.29	1	1	1	5.29	5.29
B	2	6.52	4	8	16	13.04	26.08
C	2	6.69	4	8	16	13.38	26.76
D	3	7.76	9	27	81	23.28	69.84
E	4	5.11	16	64	256	20.44	81.76
F	4	6.20	16	64	256	24.80	99.20
G	5	6.80	25	125	625	34.00	170.00
H	5	6.50	25	125	625	32.50	162.50
I	5	7.26	25	125	625	36.30	181.50
J	5	7.91	25	125	625	39.55	197.75
K	6	8.00	36	216	1,296	48.00	288.00
L	6	7.79	36	216	1,296	46.74	280.44
M	7	9.23	49	343	2,401	64.61	452.27
N	8	8.27	64	512	4,096	66.16	529.28
O	9	8.20	81	729	6,561	73.80	664.20
P	9	8.16	81	729	6,561	73.44	660.96
Q	10	9.63	100	1000	10,000	96.30	963.00
R	10	9.21	100	1000	10,000	92.10	921.00
S	10	9.08	100	1000	10,000	90.80	908.00
T	10	8.08	100	1000	10,000	80.80	808.00
U	10	8.55	100	1000	10,000	85.50	855.00
V	10	8.77	100	1000	10,000	87.70	877.00
W	10	10.44	100	1000	10,000	104.40	1,044.00
X	10	9.63	100	1000	10,000	96.30	963.00
Y	11	9.27	121	1331	14,641	101.97	1,121.67
Z	13	11.93	169	2197	28,561	155.09	2,016.17
$\Sigma=26$	185	210.28	1,587	14,945	148,539	1,606.29	14,372.67

3. In addition to a and b, a third parameter, c, must be calculated for second degree regressions. Determine the a, b, and c parameters for a unit second degree regression trend line by solving the following simultaneous equations. Equations are identified by Roman numerals.

$$\text{I. } \Sigma x^2 y = a \Sigma x^2 + b \Sigma x^3 + c \Sigma x^4$$

$$\text{II. } \Sigma xy = a \Sigma x + b \Sigma x^2 + c \Sigma x^3$$

$$\text{III. } \Sigma y = a \Sigma n + b \Sigma x + c \Sigma x^2$$

SUBSTITUTE THE APPROPRIATE VALUES FROM THE COMPUTATION SHEET:

$$\text{I. } 14,372.67 = 1,587a + 14,945b + 148,539c$$

$$\text{II. } 1,606.29 = 185a + 1,587b + 14,945c$$

$$\text{III. } 210.28 = 26a + 185b + 1,587c$$

SOLVE FOR c:

$$\text{Eliminate a: } 185(\text{I}) - 1,587(\text{II}) = \text{IV}$$

$$26(\text{II}) - 185(\text{III}) = \text{V}$$

$$\text{IV. } 109,761.72 = 246,256b + 3,762,000c$$

$$\text{V. } 2,861.74 = 7,037b + 94,975c$$

$$\text{Eliminate b: } 7,037(\text{IV}) - 246,256(\text{V}) = \text{VI}$$

$$\text{VI. } 67,672,578.2 = 3,085,030,400c$$

$$c = 0.021936$$

SUBSTITUTE c IN IV TO SOLVE FOR b:

$$b = 0.11061$$

SUBSTITUTE c AND b IN I TO SOLVE FOR a:

$$a = 5.9617$$

PROOF: SUBSTITUTE a, b AND c IN II:

$$1,606.29 = 185(5.9617) + 1,587(0.11061) + 14,945(0.021936)$$

$$= 1,102.9145 + 175.53807 + 327.83352$$

$$= 1,606.29 \text{ (rounded to 2 decimal places)}$$

4. Substituting the calculated values of a, b, and c into the formula $Y = a + bx + cx^2$ results in the following table:

x	a +	bx +	cx ²	= Y
1	5.9617	0.11061	0.021936	6.09
2	5.9617	0.22122	0.087744	6.27
3	5.9617	0.33183	0.197424	6.49
4	5.9617	0.44244	0.350976	6.76
5	5.9617	0.55305	0.548400	7.06
6	5.9617	0.66366	0.789696	7.42
7	5.9617	0.77427	1.074864	7.81
8	5.9617	0.88488	1.403904	8.25
9	5.9617	0.99549	1.776816	8.73
10	5.9617	1.10610	2.193600	9.26
11	5.9617	1.21671	2.654256	9.83
12	5.9617	1.32732	3.158784	10.45
13	5.9617	1.43793	3.707184	11.11
14	5.9617	1.54854	4.299456	11.81
15	5.9617	1.65915	4.935600	12.56

5. To calculate frequency a, b, and c parameters, compute the following additional sums: Σfx^2y , Σfx^3 , Σfx^4 , Σfxy , Σfx , Σfx^2 , Σf and Σfy . Solve for a, b, and c in the following equations in the same manner as for the unit computations:

$$\Sigma fx^2y = a\Sigma fx^2 + b\Sigma fx^3 + c\Sigma fx^4$$

$$\Sigma fxy = a\Sigma fx + b\Sigma fx^2 + c\Sigma fx^3$$

$$\Sigma fy = a\Sigma f + b\Sigma fx + c\Sigma fx^2$$

In this example, the frequency a, b, and c values are 5.9859, 0.20421, and 0.012867, respectively. Calculate Y values as before by substituting the a, b, c, and x values in the second degree regression equation.

D. Exponential Regression

1. Exponential trend line parameters log a and log b are calculated in a manner similar to that for linear a and b values, except references to y in the formulas are replaced by log y. The equation for an exponential line is $Y = ab^x$. Using logs, this equation becomes $\log Y = \log a + (\log b)x$.

2. Again, using the same wage data, the computation sheet for calculating the unit log a and log b values is shown below:

n	x	y	log y	(log y)(x)	x ² y
A	1	5.29	0.723455	0.723455	1
B	2	6.52	0.814247	1.628494	4
C	2	6.69	0.825426	1.650852	4
D	3	7.76	0.889861	2.669583	9
E	4	5.11	0.708420	2.833680	16
F	4	6.20	0.792391	3.169564	16
G	5	6.80	0.832508	4.162540	25
H	5	6.50	0.812913	4.064565	25
I	5	7.26	0.860936	4.304680	25
J	5	7.91	0.898176	4.490880	25
K	6	8.00	0.903089	5.418534	36
L	6	7.79	0.891537	5.349222	36
M	7	9.23	0.965201	6.756407	49
N	8	8.27	0.917505	7.340040	64
O	9	8.20	0.913813	8.224317	81
P	9	8.16	0.911690	8.205210	81
Q	10	9.63	0.983626	9.836260	100
R	10	9.21	0.964259	9.642590	100
S	10	9.08	0.958085	9.580850	100
T	10	8.08	0.907411	9.074110	100
U	10	8.55	0.931966	9.319660	100
V	10	8.77	0.942999	9.429990	100
W	10	10.44	1.018700	10.187000	100
X	10	9.63	0.983626	9.836260	100
Y	11	9.27	0.967079	10.637869	121
Z	13	11.93	1.076640	13.996320	169
$\Sigma=26$	185	210.28	23.395559	172.532932	1,587

3. The equations for log a and log b are derived by substituting log y for y in the linear regression equations, giving:

$$\log a = \frac{(\Sigma x^2)(\Sigma \log y) - (\Sigma x)(\Sigma x \log y)}{(\Sigma n)(\Sigma x^2) - (\Sigma x)^2} \quad \log b = \frac{(\Sigma n)(\Sigma x \log y) - (\Sigma x)(\Sigma \log y)}{(\Sigma n)(\Sigma x^2) - (\Sigma x)^2}$$

Substituting the sums above results in:

$$\log a = 0.740395$$

$$\log b = 0.022407$$

4. Substituting the computed values of log a and log b in the formula $\log Y = \log a + (\log b)(x)$ gives the following table. Take the antilog of the log Y column to find Y.

x	log a	(log b)(x)	log Y	Y
1	0.740395	0.022407	0.762802	5.79
2	0.740395	0.044814	0.785209	6.10
3	0.740395	0.067221	0.807616	6.42
4	0.740395	0.089628	0.830023	6.76
5	0.740395	0.112035	0.852430	7.12
6	0.740395	0.134442	0.874837	7.50
7	0.740395	0.156849	0.897244	7.89
8	0.740395	0.179256	0.919651	8.31
9	0.740395	0.201663	0.942058	8.75
10	0.740395	0.224070	0.964465	9.21
11	0.740395	0.246477	0.986872	9.70
12	0.740395	0.268884	1.009279	10.22
13	0.740395	0.291291	1.031686	10.76
14	0.740395	0.313698	1.054093	11.33
15	0.740395	0.336105	1.076500	11.93

5. Use the following equations to compute the frequency log a and log b values:

$$\log a = \frac{(\sum fx^2)(\sum flogy) - (\sum fx)(\sum fxlogy)}{(\sum f)(\sum fx^2) - (\sum fx)^2} \quad \log b = \frac{(\sum f)(\sum fxlogy) - (\sum fx)(\sum flogy)}{(\sum f)(\sum x^2) - (\sum x)^2}$$

Calculate the additional sums required and solve the equations by substituting the appropriate sums. In this example, the frequency log a and log b values are 0.761313 and 0.020607, respectively. To determine the wage rate at any given grade level follow the same procedures used for the unit line.

AP7. APPENDIX 7

AVERAGE-TO-AVERAGE

Survey results must be incorporated into U.S. Forces pay schedules in a manner that ensures that the average total pay of U.S. Forces employees equals the average total pay of non-U.S. Forces employees, as measured by the survey results. Several approaches that will achieve this result are shown in sections AP7.1. through AP7.4., below.

AP7.1. THE UNIVERSE APPROACH

AP7.1.1. Subtract from the selected total pay trend line the value of pay components paid separately. The remainder is the adjusted pay line.

AP7.1.2. Compute the weighted average step of all employees paid from the schedule. This may be the current average step or a moving average. Regardless of the method, the average step used may not change more than one third of the value of a step from year to year.

AP7.1.3. Establish the average step as the point in the schedule structure to which the adjusted pay line rates shall apply.

AP7.1.4. Compute the schedule step rates, as shown in the following example:

AP7.1.4.1. Assumptions: Schedule has 5 steps
4 percent of step 2 is the step increment
Average step is 4.28

AP7.1.4.2. Step 4.28 represents a point in the step rate structure that is 109.12 percent of step 2 (8 percent plus 0.28 of the 4 percent interval between steps 4 and 5).

AP7.1.4.3. Determine the step 2 rate at each grade by dividing the adjusted pay line by 1.0912 at each grade. If, for example, the adjusted pay line rate at grade 1 is \$5.00 per hour, the grade 1 step 2 rate of the schedule is \$4.58 per hour ($5.00/1.0912 = 4.58$).

AP7.1.4.4. Once the step 2 rates for each grade have been determined, calculate the remaining steps at each grade by multiplying step 2 by 0.96 for step 1, 1.04 for step 3, 1.08 for step 4, and 1.12 for step 5.

AP7.2. MODIFIED UNIVERSE APPROACH

This approach sets the adjusted pay line at the average step for each grade.

AP7.2.1. Subtract from the selected total pay trend line the value of pay components paid separately. The remainder is the adjusted pay line.

AP7.2.2. Compute the weighted average step of all employees paid from the schedule by grade. This may be the current average step or a moving average. Regardless of the method, each average step used may not change more than one third of the value of a step from year to year.

AP7.2.3. Establish the average step for each grade as the point to which the adjusted pay line rates shall apply.

AP7.2.4. Compute the schedule step rates, as shown in the following example:

AP7.2.4.1. Assumptions: Schedule has 5 steps

4 percent of step 2 is the step increment

Average steps:	Grade 1	3.28
	Grade 2	3.75
	Grade 3	3.55
	Grade 4	3.86
	Grade 5	4.00

AP7.2.4.2. Determine the percentage of step 2 that each average represents:

AP7.2.4.2.1. For grade 1, step 3.28 represents a point in the step rate structure that is 105.12 percent of step 2 (4 percent plus 0.28 of the 4 percent interval between steps 4 and 5).

AP7.2.4.2.2. The corresponding percentages for the remaining grades in the example are: grade 2, 107.00 percent; grade 3, 106.20 percent; grade 4, 107.44 percent; and grade 5, 108.00 percent.

AP7.2.4.3. Determine the step 2 rate at each grade by dividing the adjusted pay line by the percentage calculated in subparagraph AP7.2.4.2., above, for each grade. If, for example, the adjusted pay line rate at grade 1 is \$5.00 per hour, the grade 1 step 2 rate of the schedule is \$4.76 per hour ($5.00/1.0512 = 4.76$).

AP7.2.4.4. Once the step 2 rates for each grade have been determined; calculate the remaining steps at each grade by multiplying step 2 by 0.96 for step 1, 1.04 for step 3, 1.08 for step 4, and 1.12 for step 5.

AP7.3. DUAL-PAY LINE APPROACH

AP7.3.1. Select the best fit total pay line for the survey data.

AP7.3.2. Compute weighted averages of current U.S. Forces total pay by grade, including separately paid pay components as well as step rates in the calculations.

AP7.3.3. Compute a regression line on the U.S. Forces data, using the same type of regression that resulted in the best fit total pay line from the survey data.

AP7.3.4. Adjust current total pay at each grade by the difference between the two total pay lines.

AP7.3.5. Apportion the difference among the various pay elements taking into account prevailing practice and the U.S. Forces compensation plans. Ensure that the new total pay, on average, does not exceed current total pay plus the difference calculated in paragraph AP7.3.4., above.

AP7.4. ADDITIONAL GUIDANCE

AP7.4.1. Consider the following when selecting the approach to achieve the average-to-average policy requirement:

AP7.4.1.1. If the average step of U.S. Forces employees varies significantly by grade, the modified universe or the dual pay line approach may be indicated. These procedures allow a more incremental approach, by grade, than the universe approach. The trade-off is that the resulting pay schedule may not progress smoothly from grade to grade.

AP7.4.1.2. If the average steps of U.S. Forces employees tend to cluster at certain skill levels (i.e., similar average steps at unskilled grade levels), it may be desirable to compute average-to-average values for the grades at that skill level using the average step for those grades.

AP7.4.2. To minimize the impact of year-to-year fluctuations in the average step figures, 3- or 4-year moving averages may be used. For example:

<u>YEAR</u>	<u>AVERAGE STEP</u>	<u>3-YEAR MOVING AVERAGE</u>
1985	3.13	
1986	2.70	
1987	3.26	3.03
1988	3.37	3.11
1989	3.55	3.39

AP7.4.3. Once an average-to-average policy is implemented, do not change it solely for the purpose of controlling wage adjustments.