
NAVAL FACILITIES ENGINEERING COMMAND
GUIDE PERFORMANCE WORK STATEMENT (GPWS)
FOR
ELECTRICAL POWER GENERATION, HEATING PLANT, AND STEAM
DISTRIBUTION SYSTEMS OPERATION, MAINTENANCE, AND REPAIR
JUNE 1989

PREPARED BY
SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
CHARLESTON, SOUTH CAROLINA

NAVAL FACILITIES ENGINEERING COMMAND
GUIDE PERFORMANCE WORK STATEMENT (GPWS) FOR
ELECTRICAL POWER GENERATION, HEATING PLANT, AND
STEAM DISTRIBUTION SYSTEMS OPERATION, MAINTENANCE, AND REPAIR

TABLE OF CONTENTS

| | |
|--|------|
| USER'S GUIDE | UG-i |
| GUIDE PERFORMANCE WORK STATEMENT | |
| SECTION B SUPPLIES OR SERVICES AND PRICES/COSTS | B-1 |
| SECTION C DESCRIPTION/SPECIFICATION/WORK STATEMENT | C-i |
| SECTION J LIST OF ATTACHMENTS | J-i |
| QUALITY ASSURANCE GUIDE | QA-i |

USER'S GUIDE
GUIDE PERFORMANCE WORK STATEMENT FOR
ELECTRICAL POWER GENERATION, HEATING PLANT, AND STEAM DISTRIBUTION
SYSTEMS OPERATION, MAINTENANCE, AND REPAIR

USER'S GUIDE
 GUIDE PERFORMANCE WORK STATEMENT FOR
 ELECTRICAL POWER GENERATION, HEATING PLANT, AND STEAM
 DISTRIBUTION SYSTEMS OPERATION, MAINTENANCE, AND REPAIR

TABLE OF CONTENTS

| | PAGE NO. |
|---|-------------|
| I. INTRODUCTION | UG-1 |
| A. Purpose | UG-1 |
| B. Function Definition | UG-1 |
| C. Responsibilities | UG-1 |
| II. GPWS DEVELOPMENT AND USER CONSIDERATIONS | UG-3 |
| A. Development of the GPWS | UG-3 |
| B. GPWS User Considerations | UG-3 |
| III. TAILORING THE GPWS | UG-4 |
| A. Getting Started | UG-5 |
| B. Contract Line Item Requirements | UG-5 |
| C. Technical Specifications | UG-9 |
| D. Schedule of Deductions | UG-9 |
| E. Davis-Bacon Considerations | UG-10 |
| F. Performance Requirements Summary | UG-11 |
| IV. COMMERCIAL ACTIVITIES (CA) PROGRAM CONSIDERATIONS | UG-11 |
| A. Scope of Work | UG-11 |
| B. Pre-Priced Options to Extend | UG-11 |
| C. Davis-Bacon Considerations | UG-12 |
| D. Continuity of Services | UG-12 |
| E. Multi-Function CA Contracts | UG-13 |
| V. PRE-AWARD CONSIDERATIONS | UG-13 |
| A. Quality Assurance Evaluator Training | UG-13 |
| B. Site Visits | UG-13 |
| C. Government Furnished Property | UG-13 |
| D. Quality Assurance Plans | UG-13 |

USER'S GUIDE
GUIDE PERFORMANCE WORK STATEMENT FOR
ELECTRICAL POWER GENERATION, HEATING PLANT, AND STEAM
DISTRIBUTION SYSTEMS OPERATION, MAINTENANCE, AND REPAIR

I. INTRODUCTION

A. Purpose. This NAVFAC Guide Performance Work Statement (GPWS) has been written to provide assistance in preparing facilities support contracts to procure operation, maintenance, and repair services for electrical power generation, heating plant, and steam distribution systems. Contracts for such services may either be a continuing contracting effort or conversion of services from in-house to contract performance under the Commercial Activities (CA) program. This NAVFAC GPWS may be used in either application. This GPWS Package consists of a User's Guide, guide contract sections B, C, and J in the Uniform Contract Format, and a Quality Assurance (QA) Guide.

1. The NAVFAC manual MO-327, *Service Contracts: Specifications and Surveillance*, provides extensive information on the preparation of NAVFAC facilities support contracts, from guidance on making the initial decision to contract a given function through the entire PWS and surveillance program development process. This User's Guide is designed to supplement and to be used in conjunction with the MO-327 in developing a PWS for electrical power generation, heating plant, and steam distribution systems services. It provides specific guidance on developing and tailoring the GPWS, special items which must be considered if the specification is being written in conjunction with a CA program study, and general guidance on required pre-award actions. Additional guidance on implementing CA program requirements can be found in the Supplement to OMB Circular A-76 and in OPNAVINST 4860.7B.

2. Sections B, C, and J provide suggested formats for displaying contract line (bid) items, technical specifications which the user may tailor to site specific needs, and attachments which provide supplemental information, historical data, etc. If desired, Section C may be designated as Annex 1 and other utility systems, such as gas distribution, compressed air plants and distribution system, potable water system, etc., may be added as Annexes 2, 3, 4, etc.

3. The QA guide is designed to provide the framework for development of a comprehensive contract surveillance program. The user should modify and expand upon the sample QA plans provided as the GPWS is tailored.

B. Function Definition. The functional area covered by this GPWS includes all labor, transportation, equipment, materials, supplies, management, coordination, and supervision required to provide operation, maintenance, and repair services to electrical power generation, heating plant, and steam distribution systems. These systems may include turbine generators, diesel generators, boilers, and the central power plant's main switching substation; related equipment including fuel storage and handling equipment, boiler water treatment equipment, associated pumps, components, emission control equipment and controls; and steam distribution systems.

C. Responsibilities

1. Experience has shown that the best method of developing a facilities support contract specification is to involve a number of activity personnel,

each having a portion of the knowledge and experience required to put the entire package together. A team of experienced activity personnel should be formed and a team leader appointed. The team leader will be responsible for development and tracking of procurement milestones, ensuring that each team member understands what specific tasks he/she is responsible for, when each task must be completed, etc. At least one member of the team must be intimately familiar with each of the following areas:

- a. Must be familiar with and understand the applicable GPWS(s) and QA Guide(s).
- b. Must have a working knowledge of basic contracting procedures.
- c. Must have first hand knowledge of the services, and/or equipment/system operations, repairs, and maintenance to be provided by contract.
- d. Must be able to identify local needs/requirements that are different from the GPWS and apply specifically to the activity.

2. The following activity personnel are suggested as members of the specification development team.

a. Specification Writer. The electrical power generation, heating plant, and steam distribution systems specification is most properly prepared by an engineer or engineering technician at the activity who has had at least some experience in writing facilities support contracts. The use of a planner and estimator (P&E) is also appropriate if one is experienced with writing contract specifications. The writer, regardless of who the person is, should have attended the Civil Engineer Corps Officers School (CECOS) course on Facilities Support Contracts. Assistance and guidance may be requested from the geographical NAVFACENGCOCOM Engineering Field Division (EFD), Code 10. The EFD may offer courses on PWS development, quality assurance, and other related subjects that may benefit the specification writer.

b. Functional Manager/Customer. The functional manager is the technical representative of the team who is most familiar with the function to be contracted. Early in the tailoring process the functional manager must determine the total scope of the services required, develop detailed inventories of the facilities and equipment to be maintained, collect historical information on work quantities, and identify the specific needs of the activity which may differ from this GPWS. Customer representatives should also be contacted, if appropriate, since they should be able to identify any specific needs or concerns.

c. Contract Specialist. The Contract Specialist provides overall contractual guidance in the preparation of the specification. This person will work with the writer in the preparation of sections B, C, and J, and will prepare the majority of the clauses in sections E, F, G, H, I, K, L, and M. Additionally, there are many pre-award and post-award contract actions to be initiated by the Contract Specialist.

d. CA Program Manager. If the specification is being prepared under the CA program, the CA Program Manager provides overall guidance on the CA program, and will ensure that the specification is developed in conjunction with required most efficient organization (MEO) and management studies.

3. The tailored specification should be reviewed by customer and functional manager representatives, the activity's Facilities Support Contract Manager (FSCM), Quality Assurance Evaluators (QAEs), the Engineering Division Director, and the Facilities Management Engineering Director. Consult appropriate EFD instructions to determine if EFD review/approval is required prior to solicitation.

II. GPWS DEVELOPMENT AND USER CONSIDERATIONS. This section of the User's Guide discusses certain assumptions which were made and special items that were considered during the development of the Electrical Power Generation, Heating Plant, and Steam Distribution Systems Operation, Maintenance, and Repair GPWS, and provides general information and considerations that the user should be aware of during the tailoring process.

A. Development of the GPWS. In developing this GPWS a tree diagram, as described in NAVFAC MO-327, was used to identify each of the major subfunctions for electrical power generation, heating plant, and steam distribution systems operation, maintenance, and repair. Each of these subfunctions was carefully reviewed to determine which could realistically be contracted for. Once a final list was developed, each subfunction was further subdivided to develop basic work requirements (performance indicators) and standards of performance. Once all of the basic work requirements were identified for each subfunction, a Performance Requirements Summary (PRS) Table was developed and the requirements were put into narrative form.

B. GPWS User Considerations. The clauses and provisions of this GPWS are arranged in the uniform contract format as required by the Federal Acquisition Regulation (FAR). The sections to which they are assigned shall not be changed.

1. This GPWS contains sections B, C, and J only. These sections contain information and clauses peculiar to the technical services required, while Sections D, E, F, G, H, I, K, L, and M contain contract clauses and provisions more closely related to administrative and contractual requirements. Since the latter group will generally be the same in the majority of NAVFAC contracts, their inclusion in each GPWS would be unnecessary duplication. Therefore, this group, to be referred to as the standard facilities support contract clauses, shall be packaged at each geographical EFD and contracting office, and made available to specification writers as required.

2. FAR clauses and provisions may be added or deleted as required by the FAR for specific functions, dollar limitations, bonding, small businesses, etc. They may not be altered unless specifically authorized by the FAR. Most of the clauses in Sections I and L, other than those requiring tailoring (i.e. blanks to be completed), may be included by reference. All other FAR clauses and provisions shall be included in full text. Procurement offices shall make available to bidders the full text of all clauses incorporated by reference upon request.

3. The "SCHEDULE OF DEDUCTIONS", "ESTIMATING THE PRICE OF NONPERFORMED OR UNSATISFACTORY WORK", and "CONSEQUENCES OF CONTRACTOR'S FAILURE TO PERFORM REQUIRED SERVICES" clauses are NAVFAC, not FAR clauses, and shall not be altered without NAVFAC approval. All other non-FAR clauses and provisions in the standard facilities support contract clauses should be used substantially as shown or deleted if not applicable to the solicitation. Extensive deliverable

performance requirements should not be added to these clauses, but should be included in Section C.

4. Technical Specification

a. Section C, which describes the services to be provided, should be a performance specification to the extent possible. That is, over defining the Contractor's responsibilities in terms of methods or procedures should be avoided in writing the technical specifications since we hope to purchase not only the Contractor's labor, but also his/her expertise in the services to be provided and management of those services. A performance oriented specification should minimize the use of words describing "how to", but should describe work outputs required as explicitly as possible while leaving the Contractor latitude to manage his/her own work force and choose his/her own methods for accomplishing the work.

b. On the other hand, the specification must provide enough information to clearly and precisely define the magnitude (number of services we want to buy) and quality of each of the services to be provided, as well as the scope or limit of each. This is accomplished in the GPWS by specifying, in addition to the desired outputs, schedules of accomplishment and/or specific time limitations in which all services must be completed; listing mandatory operating procedures or steps that the Contractor must follow for some services; and providing historical data on the magnitude of services provided under previous contracts or by in-house forces. Such information will only slightly restrict the Contractor's latitude in managing his/her workforce, but will help ensure all bidders clearly visualize the magnitude of effort which will be required to provide the clearly defined scope of work. Typically this will result in more accurate/realistic Contractor bids, make payment deductions for unsatisfactorily performed or non-performed work easier to calculate, and reduce the number of contract administration problems.

5. As you use this GPWS you will find in many instances there will be a "NOTE TO THE SPECIFICATION WRITER". These notes provide the user with additional information and/or advise the user to select the appropriate paragraph, insert additional information, or delete the paragraph in its entirety. If the final document is to be printed from the WANG diskette, it is not necessary to delete the notes as the equipment will print a justified copy without the notes. There are also many areas within the text of the GPWS where notes indicate that additional information must be provided; i.e. start times, dates, quantities, etc. These notes will always be enclosed by the symbol "!". All that is required is to replace the note with the required information.

III. TAILORING THE GPWS. The NAVFAC GPWS for Electrical Power Generation, Heating Plant, and Steam Distribution Systems Operation, Maintenance, and Repair Services is not intended to fit the requirements of a specific activity, but rather, is to serve as a model to be tailored by activities in preparing their specific PWS. The first step in tailoring a GPWS to a specific case is for the user to become intimately familiar with the GPWS and its User's Guide. The user must know what is, and is not, included in the GPWS and what was intended before any required modifications may be assessed. The PWS is the instrument that lays out the functional and technical requirements and ultimately becomes part of a contract. The User's Guide provides the user with information concerning the GPWS and provides instructions on tailoring. Users should not assume that the GPWS can be "plugged" into their application with little or no effort. A detailed analysis of the activity's requirements will be required.

A. Getting Started

1. The first step in tailoring this GPWS to a specific user activity must be to determine one of the following:

a. Requirements are currently contracted and this will be a continuation of the contracted services or the consolidation of several contracts. If this is the case, the GPWS may be tailored to accomplish any desired scope of work and level of performance.

b. Requirements to be included are subject to a CA cost comparison study under OMB Circular A-76. If this is the case, it is mandatory that the scope of work and level of performance specified be equivalent to the current in-house effort or to the level of effort that can be achieved by the Most Efficient Organization (MEO) if the function is retained in-house. Additional information on tailoring of the GPWS for a CA program study is included in paragraph IV of this User's Guide.

2. The next step should be a thorough review of Chapters 2, 3 and 4 of NAVFAC MO-327. These three chapters outline in some detail how to perform a job analysis to determine the specific subfunctions to be contracted (including specific performance indicators and standards of performance) and how to use the job analysis information and data collected to actually write the PWS. As the job analysis is being performed, the user should compare unique activity requirements with GPWS requirements to determine if any major changes are required, or if some of the questions being identified in the job analysis have already been answered in the GPWS. If major changes are required, the user will need to re-write the affected GPWS section. A thorough job analysis will make the actual tailoring of the GPWS and re-writing of paragraphs relatively easy since all required data will be readily available and the subfunctions to be contracted will be well defined. Figure 1 on the following page is a typical list of the types of data the user will need to collect during the job analysis process.

B. Contract Line Item (Section B) Requirements. A combination firm fixed-price and indefinite quantity contract is used in this GPWS. The contract line items shown in Section B are intended to encompass all of the services to be provided in the technical specifications. Of course they must be tailored to account for work items added or deleted during the job analysis process and the projected start date of contract performance. The line items are made up of two types of work items: firm fixed-price items and fixed unit price (indefinite quantity) items. All new work items added by the user must fall into one of these two categories.

1. Fixed-Price Requirements. Fixed-price items are bid and payment is made for the total performance of a given work item over a given period of time (usually one month). These work items are either fixed in scope (time, location, frequency, quantity, etc. are known or can be accurately estimated) or adequate historical data is available to make a biddable estimate. Because the scope of work is known, the Contractor agrees to perform a given function for a total price, and in essence there is one work order. The Contractor performs the work as scheduled and invoices are submitted for the services provided.

FIGURE 1

**ELECTRICAL POWER GENERATION, HEATING
PLANT, AND STEAM DISTRIBUTION SYSTEMS CHECKLIST**

1. Plant Location _____ Date _____
2. Steam Design Output (lbs/hr) _____ Present Output (av) _____
3. Electrical Design Output (MWH) _____ Present Output (av) _____
4. O&M Manuals/Procedures available _____ Drawings & Specs Available _____
5.

| <u>Personnel</u> | <u>Number</u> | <u>Labor-hours/week</u> | <u>Certified</u> | <u>Grade</u> |
|------------------|---------------|-------------------------|------------------|--------------|
| Supervisor | _____ | _____ | _____ | _____ |
| Operator | _____ | _____ | _____ | _____ |
| Maintenance | _____ | _____ | _____ | _____ |
| Other | _____ | _____ | _____ | _____ |
6. Known M&R Deficiencies: Major _____ Minor _____
7. When will major deficiencies be corrected? _____
8. Remarks _____
9. Inspector _____ Phone _____
10. Water treatment and distribution components:

Water treatment chemicals (lbs/day) presently used:
Hydroxide (OH) _____
Sulfate (SO₄) _____
Phosphate (PO₄) _____
Other _____
11. Type fuel & fuel handling procedures _____
12. Type boiler/boilers _____ Manufacturer/Model _____

Major System Components:
13. Type Turbines/Diesel Engines _____ Manufacturer/Model _____

Major System Components:
14. Type Generators _____ Manufacturer/Model _____

Major System Components:
15. Steam Distribution System:

Major Components:
16. Environmental Requirements:
17. Special Electrical and Steam Requirements

Hospitals (special operating requirements):

Piers/Shipyards (nuclear/non-nuclear ships), steam quality regarding chemical criteria of NAVSEA:

a. Examples of firm fixed-price items in this GPWS are: Service calls, preventive maintenance inspections, and plant operation. Some of these work items, such as service calls, are limited in scope to specified labor and/or dollar amounts. Work beyond these limits will either not be required by the contract, or will be included in the indefinite quantity portion of the contract. The higher the labor/dollar limits specified, the more historical data that must be provided.

b. Fixed-price work items added by the user must either have clearly defined scopes, or additional historical data will also have to be added to Attachment J-C10 of the PWS.

2. Indefinite Quantity Work Items. All items not included in the firm fixed-price portion of the contract are considered indefinite quantity work items. That is, the Contractor agrees to perform this work on an "as ordered" basis, and a fixed unit price to perform one occurrence or a given quantity of each type of work is bid. Payment for this type of work is based on the unit price bid per unit times the number of units performed. Because each Government order for indefinite quantity work is paid for separately, each and every work order must be inspected and accepted as being satisfactorily completed before payment may be made. Indefinite quantity work in this GPWS is divided into two separate categories, each with its own contract line item and set of subline items.

a. Unit Priced Tasks. Bid prices for unit priced tasks include all labor, materials, and equipment for performing a given quantity of work, such as replacing a linear foot of 12 inch steam main. The unit prices bid are multiplied by a maximum estimated quantity of units to be ordered during the contract term, but only for purposes of bid evaluation, since work will only be paid for as ordered and completed.

b. Engineered Performance Standards (EPS) Hour Labor. This type of indefinite quantity work, which is also referred to as "level of effort work", should be used only in connection with maintenance, repairs, and alterations to facilities and/or equipment, and then only when such work cannot be identified in advance in sufficient detail to be included in the firm fixed-price or indefinite quantity - unit priced portions of the contract. The unit prices bid for labor include all costs to provide one EPS estimated hour of labor. The Contractor is reimbursed for the cost of materials (except for pre-expended bin materials) and equipment, as specified in the "ESTIMATES" paragraph of Section C.

c. As many indefinite quantity work requirements as possible should be included as unit priced tasks vice as level of effort work since unit priced tasks are easier to understand, easier for Contractors to bid on, the work is easier to order and administer, and material and equipment costs are included in the unit prices bid. Regardless of which of the two types of indefinite quantity work are used, the quantities provided in the solicitation for bid evaluation must be realistic estimates of the maximum anticipated quantities to be ordered during the contract term.

3. Partial first year of performance

a. Because of funding restrictions, only four types of facilities support contracts (janitorial, grounds maintenance, pest control, and guard services) may be awarded for a 12-month period to begin at any time during the

fiscal year. All other contracts, including those for electrical power generation, heating plant, and steam distribution systems services must be funded using funds from the fiscal year in which the work will be performed. This means that only contracts with terms beginning on 1 October may be awarded for a full 12-month period. Contract terms beginning on any other date must be awarded for something less than 12 months and must end on or before 30 September. Normally such contracts will not be awarded for less than three months. For example, a contract which begins on 1 April would have a six-month initial term, and then options to extend for up to 54 additional months. However, no single option period could be more than 12 months long, and the total term of contract could not exceed 60 months.

b. Section B of this GPWS assumes that the initial contract period will be less than 12 months. The user must also consider each of the following items in this situation.

(1) As illustrated in this GPWS, at least two sets of contract line items will be required in Section B. One set for the initial (base) period for performance of work from the specified contract start date through 30 September. The other set will be for performance during the first 12-month option period, if the Government exercises its option to extend the contract. In most cases only the initial performance period and first option period may be pre-priced unless the specification is being written for a CA program study. See paragraph IV.C of this User's Guide.

(2) Section C, the technical specifications, must clearly outline the scope of work for both the initial and first 12-month option period since the work load can vary significantly from month to month. For example, the specification must state whether or not annual preventive maintenance inspections will be performed during the initial period.

(3) Two Schedules of Deductions, one for the initial period and one for the first option period, must be included. Of course the items of work and number of units in the Schedules of Deductions must agree with the firm fixed-price contract line items in Section B and the scopes of work defined in Section C. Paragraph III.D of this User's Guide provides more in depth information on the development of Schedules of Deductions.

(4) The "TERM OF THE CONTRACT" clause in Section F should read as follows:

"TERM OF CONTRACT. The initial contract term shall be for a !INSERT NUMBER! month period commencing on !INSERT DATE! and ending on 30 September !INSERT YEAR!; however, the Government reserves the right to award for the base period a number of months less than the !INSERT SAME NUMBER! months stated at the unit prices bid. The Government has the option to extend the term of the contract in accordance with the "OPTION TO EXTEND THE TERM OF THE CONTRACT-SERVICES" clause in Section I by giving written notice to the Contractor 10 calendar days prior to expiration of the contract. In the option periods the Government will adjust the prices, as required, based on new Department of Labor Wage Rate Determinations."

(5) The "BASIS FOR AWARD" clause should read as follows:

"BASIS FOR AWARD. The low bidder for purposes of award shall be the conforming, responsive, responsible bidder offering the lowest total price for Contract Line

Items 0001, 0002, 0003, 0004, 0005, and 0006. However, the initial award will include only contract line items 0001, 0002 and 0003. Bids are solicited on an "all or none" basis and provision 52.214-10 "CONTRACT AWARD - SEALED BIDDING" in Section L is hereby modified. **FAILURE TO SUBMIT BIDS FOR ALL ITEMS AND QUANTITIES LISTED SHALL BE CAUSE FOR REJECTION OF THE BID.**"

c. If the initial contract term will be projected to begin on 1 October, make the following changes to the GPWS contract line items, Section B:

(1) The dates shown in contract line items 0001, 0002, and 0003 should read "(1 October !INSERT YEAR! through 30 September !INSERT YEAR!)".

(2) Delete contract line items 0004, 0005, and 0006 in their entirety, unless the PWS is being written under the CA program (see paragraph IV.C of this User's Guide).

4. Specific clauses included in Section B differ from NAVFAC EFD to EFD. The user must contact the activity's geographical EFD to identify the specific clauses, if any, which may be required.

C. Technical Specifications (Section C). The technical specifications are the single most important part of a PWS. Within this section, the user should add or modify the paragraphs in the GPWS to accommodate the particular services for that activity.

1. Section C of this GPWS has been prepared based on the fact that boilers and steam turbine generators are installed in most of the Government owned central electrical power generating plants. The sample specifications must be modified to reflect the type of equipment actually installed, e.g., diesel engine generators or gas turbines. All paragraphs pertaining to boilers should be deleted and additional paragraphs added if the operation of other power producing equipment is utilized.

2. In preparing this section the specification writer should give particular attention to the "PLANT PROCEDURES" paragraph. This paragraph requires the Contractor to prepare and adhere to written operating procedures. Upon approval of these procedures by the ACO, they will serve as the standards for operating and maintaining the electrical power generating, and heating plant. It is emphasized that if standard operating and maintenance procedures are in existence and current use, these should be used in the contract. These standard procedures could be tailored for a contract operation and included in Section J of the tailored GPWS.

D. Schedule of Deductions. The Schedule of Deductions in Section E is one of the most important items that the specification writer must consider in tailoring of this GPWS since it directly affects the degree of difficulty required to make payment deductions for unsatisfactory performance or non-performance of work. The schedule, which is used in conjunction with the "CONSEQUENCES OF CONTRACTOR'S FAILURE TO PERFORM REQUIRED SERVICES" and "ESTIMATING THE PRICE OF NONPERFORMED OR UNSATISFACTORY WORK" clauses (Section E), and the PRS Table (Attachment J-E2), requires the successful bidder to break the firm fixed-price portion of the bid down for each of the firm fixed-price contract requirements in the PWS. The completed schedule must be provided by the Contractor within 15 days after award of the contract. The specification writer must consider changes made to the technical specifications and the length

of the initial term when tailoring the sample schedules which follow.
 Corresponding changes must also be made to the PRS table in Attachment J-E2.

**SCHEDULE OF DEDUCTIONS FOR BASE PERIOD
 (DO NOT SUBMIT SCHEDULE OF DEDUCTIONS WITH BID)**

| <u>CONTRACT REQUIREMENTS</u> | <u>UNITS</u> | <u>NUMBER OF UNITS</u> | <u>UNIT PRICE</u> | <u>TOTAL PRICE</u> |
|---|--------------|----------------------------|-----------------------|------------------------|
| 1. Operate Central Plant (Paragraphs C.9, C.11, C.24, and C.25) | MONTH | !INSERT! | \$_____ | \$_____ |
| 2. Maintenance of Plant (Paragraph C.25) | MONTH | !INSERT! | \$_____ | \$_____ |
| 3. Preventive Maintenance (Paragraph C.19) | MONTH | !INSERT! | \$_____ | \$_____ |
| 4. Service Calls (Paragraph C.20) | MONTH | !INSERT! | \$_____ | \$_____ |
| 5. Records and Reports (Paragraphs C.8 and C.11) | MONTH | !INSERT! | \$_____ | \$_____ |
| | | | TOTAL = | \$_____ |
| (Must equal amount bid for contract line item 0001) | | | | |

**SCHEDULE OF DEDUCTIONS FOR FIRST OPTION PERIOD
 (DO NOT SUBMIT SCHEDULE OF DEDUCTIONS WITH BID)**

| <u>CONTRACT REQUIREMENTS</u> | <u>UNITS</u> | <u>NUMBER OF UNITS</u> | <u>UNIT PRICE</u> | <u>TOTAL PRICE</u> |
|---|--------------|----------------------------|-----------------------|------------------------|
| 1. Operate Central Plant (Paragraphs C.9, C.11, C.24, and C.25) | MONTH | 12 | \$_____ | \$_____ |
| 2. Maintenance of Plant (Paragraph C.25) | MONTH | 12 | \$_____ | \$_____ |
| 3. Preventive Maintenance (Paragraph C.19) | MONTH | 12 | \$_____ | \$_____ |
| 4. Service Calls (Paragraph C.20) | MONTH | 12 | \$_____ | \$_____ |
| 5. Records and Reports (Paragraphs C.8 and C.11) | MONTH | 12 | \$_____ | \$_____ |
| | | | TOTAL = | \$_____ |
| (Must equal amount bid for contract line item 0004) | | | | |

E. Davis-Bacon Considerations

1. A Contractor providing maintenance, repair and/or alteration services to Government facilities must pay employees not less than the minimum wages and

fringe benefits specified in the applicable Davis-Bacon wage determination, if the total cost (labor and materials) of the one-time work effort exceeds \$2,000. While any facilities support contract may contain Davis-Bacon wage provisions, only CA program contracts may contain options to extend the Davis-Bacon portion of the work. Therefore, Davis-Bacon wage provisions will not normally be included in non CA program contracts without prior NAVFAC approval.

2. In the case of the GPWS for Electrical Power Generation, Heating Plant, and Steam Distribution Systems, the \$2,000 Davis-Bacon limit applies to any individual order for maintenance, repair, or alteration services to the steam or power generation/distribution facilities. Because most non CA program contracts do not contain Davis-Bacon provisions, no single work order may exceed \$2,000 in total cost. Work requirements greater than \$2,000 would be considered out of the scope of a non CA contract and would have to be procured by a separate contract or performed by in-house forces. Refer to paragraph IV of this Users Guide for additional Davis-Bacon considerations in CA program contracts.

F. Performance Requirements Summary. As the GPWS is being tailored a PRS Table should be prepared. This table (less the METHOD OF SURVEILLANCE column) will be included in Section J of the PWS and will be used primarily by the Administrative Contracting Officer (ACO), in conjunction with the "CONSEQUENCES OF CONTRACTOR'S FAILURE TO PERFORM REQUIRED SERVICES", "ESTIMATING THE PRICE OF NONPERFORMED OR UNSATISFACTORY WORK", and "SCHEDULE OF DEDUCTIONS" clauses, in making payment deductions for unsatisfactory performance or non-performance of firm fixed-price contract requirements. Additionally, the table is also very useful in the preparation of QA plans (as discussed in the QA Guide to this GPWS) and the Schedule of Deductions, and to provide the FSCM, QAEs, and customers a convenient overview of services to be provided. A sample PRS Table, which reflects the contract requirements of this GPWS, is provided in Table 1 of the QA Guide. Suggested MADRs and methods of surveillance are also shown. The user should modify this table to reflect the tailored PWS's requirements and consideration of the various factors which influence the selection of MADRs and methods of surveillance.

IV. COMMERCIAL ACTIVITIES (CA) PROGRAM CONSIDERATIONS. This section of the User's Guide discusses some of the special items which must be considered when using this GPWS to prepare a PWS as part of a CA program study. Included are a number of provisions and changes which must be considered by the user.

A. Scope of Work. The user must remember that the scope of work and standards of performance specified in the PWS must be equivalent to the projected capabilities of the MEO. This GPWS has been written with a somewhat limited scope in that single instances of maintenance and repair are limited to a total cost of \$2,000 or less. In CA program solicitations repairs costing more than \$2,000 (Davis-Bacon type work) will normally be included, and will require the user to make some modifications to the contract line items (Section B), the technical specifications (Section C), and other sections of the specification. See paragraph IV.D below.

B. Pre-Priced Options to Extend. OMB Circular A-76 requires in-house and Contractor bids to be evaluated on at least a three year basis, unless contract funding limitations prevent the initial contract term from being a full 12 months in length. In this situation, pre-priced options must be included to cover at least two full fiscal years after the initial term. This means that

Section B must contain contract line items for a base period and at least two, one year, pre-priced option periods. For example:

1. If the contract term is projected to begin on 1 October, Section B would include contract line items for the base year (12 months) of performance (items 0001, 0002, and 0003) and at least two, one year, pre-priced option periods (items 0004, 0005, and 0006; and 0007, 0008, and 0009).

2. If the contract term is projected to begin on 1 April, Section B would include contract line items for the initial six-month base period of performance through 30 September (items 0001, 0002, and 0003), and two one-year, pre-priced option periods (items 0004, 0005, and 0006; and 0007, 0008, and 0009).

3. In no case may the total contract term exceed 60 months.

C. Davis-Bacon Considerations. Since the in-house performance of electrical power generation, heating plant, and steam distribution systems services normally includes single repairs and alterations costing in excess of \$2,000, such work will have to be included in the CA program PWS. This means that both Service Contract and Davis-Bacon wage determinations will be included in the contract and the Contractor will be required to pay the appropriate minimum wage, depending on the total cost of each work order. Service Contract wages apply to work orders costing less than \$2,000. Davis-Bacon wages apply to work orders costing more than \$2,000 (labor and materials). Since significant changes will be required to the contract line items (Section B) and other sections of the contract, the user should contact the activity's geographic EFD for guidance.

D. Continuity of Services. The PWS should address certain issues and requirements relative to the change-over from in-house to contracted performance of services. Therefore, add the following "CONTINUITY OF SERVICES" paragraph to Section C:

"At the time of the contract start date the Contractor shall be prepared to accept approximately !INSERT! delivery orders for backlogged minor work for which materials are already on hand. These proposed delivery orders will be provided to the Contractor and a joint inventory by the Contractor and a Government Representative of all materials on hand shall be conducted within !INSERT! calendar days after the contract start date. The Contractor shall assume custody of these materials (which shall be used only for the work order for which specifically designated) upon completion of the inventory. The Contractor shall prepare an estimate for each of the backlogged delivery orders following the procedures outlined in the "ESTIMATES" paragraph of this Section. Completed estimates shall be provided to the ACO within !INSERT! calendar days after receipt of backlogged urgent minor work and within !INSERT! calendar days of receipt of other backlogged delivery orders. The Contractor's estimate will be evaluated to determine if: (1) the scope has been clearly and accurately identified, (2) the EPS standards (including work content comparison) have been accurately applied, (3) work which is not covered by EPS has been properly estimated with supporting data presented, (4) equipment and material estimates are reasonable and properly documented, and (5) unit priced work has been estimated using the unit prices that were bid. After the estimate has been reviewed and there are no mathematical, typographical, scope, or

estimating errors, the ACO will approve the estimate. Completion dates for each backlogged minor delivery order shall be negotiated."

E. Multi-Function CA Contracts. In many instances, CA program studies involve contracts containing more than one functional area or service. For example, the user may want to study electrical power generation, heating plant, and steam distribution systems services in conjunction with HVAC operation, maintenance, and repair services, and issue a single solicitation. Since most NAVFAC GPWSs are written in the same format, the technical requirements of Sections C and J of this guide may be easily combined with those of other GPWSs to produce a tailored multi-function PWS.

V. PRE-AWARD CONSIDERATIONS. Prior to award it is essential that the activity consider the following aspects of the operation and administration of an electrical power generation, heating plant, and steam distribution systems contract. Additionally, Chapter 7 of NAVFAC MO-327 discusses a number of items which must be considered by the activity prior to the award of a contract, including a pre-award survey of the apparent low, responsive, responsible bidder, and a review of the submitted quality control program.

A. Quality Assurance Evaluator Training. It is vitally important to have an adequate number of qualified QAEs on board prior to the contract start date. In fact NAVFAC EFD contract offices will not allow contracts to be advertised until the activity provides assurance that such resources will be provided. NAVFAC P-68, *Contracting Manual* requires all individuals assigned to QAE duties to attend the QAE training course provided by each of the EFDs within six months of their assignment. If this training has not been received, the activity should take steps to have the QAE(s) attend the next available course and in the meantime should develop a local training program. EFD Code 10/16s (Facilities Division) should be contacted for QAE training scheduling or assistance. The QAE should have a good working knowledge of maintenance and inspection procedures and requirements for electrical power generation, heating plant, and steam distribution systems and preferably attended a training course on power boiler operation. Prior to bid opening it is essential that the QAE become familiar with the electrical power generation, heating plant, and steam distribution systems specification.

B. Site Visits. The QAE or other Government representative should be prepared to conduct site visits with potential bidders after inviting bids. The purpose of these visits is to familiarize the Contractor with the location of contract requirements, not to provide additional information which should have been included in the PWS. QAEs must be briefed by the ACO or the Contract Specialist as to what can be said to potential bidders during site visits. Customers must be briefed by the ACO on precautions to be taken so as not to reveal sensitive information to potential bidders during these visits.

C. Government Furnished Property. Are Government furnished facilities, equipment, and materials, if any, ready for turnover?

D. Quality Assurance Plans. Are adequate QA Plans prepared and ready for use?

END OF USER'S GUIDE

GUIDE PERFORMANCE WORK STATEMENT
FOR
ELECTRICAL POWER GENERATION, HEATING PLANT, AND STEAM
DISTRIBUTION SYSTEMS OPERATION, MAINTENANCE, AND REPAIR

PART I - THE SCHEDULE

SECTION B: SUPPLIES OR SERVICES AND PRICES/COSTS

!*****
 NOTE TO SPECIFICATION WRITER: Some NAVFAC Engineering Field Divisions (EFDs) require additional clauses to be added to Section B. The user must contact the appropriate geographical EFD to identify additional clauses, if any, which may be required. The numbering system for contract line items and subline items shall follow the method prescribed in Subpart 4.71 of the DOD FAR Supplement. In the following example contract line items 0001 and 0004 are prepared as single line items supported by a Schedule of Deductions. An alternate method would be to eliminate the Schedules of Deductions from the contract and prepare detailed Schedules of Firm Fixed-Price Work, with detailed contract line items similar to those in the Schedules of Deductions.
 *****!

SCHEDULE

| Item No. | Supplies/Services | Maximum Quantity | * Unit | Unit Price | Amount |
|----------|---|------------------|--------|------------|----------|
| 0001 | FIRM FIXED-PRICE WORK: Price for the BASE PERIOD (!INSERT BEGINNING AND ENDING DATES!) for all work specified in the contract, except for work specifically identified as being included in the indefinite quantity portion of the contract. | !INSERT! | MONTH | \$ _____ | \$ _____ |
| 0002 | INDEFINITE QUANTITY WORK - UNIT PRICED TASKS: Price for the BASE PERIOD (!INSERT BEGINNING AND ENDING DATES!) to perform the unit priced tasks listed in the Schedule of Indefinite Quantity Work below. The quantities shown are realistic estimates provided solely for the purpose of bid evaluation and establishing penal sums of bonds (if required). The price for this bid item is the total of the subline items listed in the Schedule of Indefinite Quantity Work - Unit Priced Tasks. | | | | |

SCHEDULE OF INDEFINITE QUANTITY WORK - UNIT PRICED TASKS

| | | | | | |
|---|---|----------|----|----------|----------|
| 0002AA | Replace 12-inch steam mains per paragraph C.! | !INSERT! | LF | \$ _____ | \$ _____ |
| 0002AB | Replace 12-inch Pressure Relief Valve per paragraph C.! | !INSERT! | EA | \$ _____ | \$ _____ |
| TOTAL PRICE FOR CONTRACT LINE ITEM 0002 | | | | | \$ _____ |

SCHEDULE

| Item No. | Supplies/Services | Maximum Quantity | * Unit | Unit Price | Amount |
|----------|--|------------------|--------|------------|--------|
| 0003 | INDEFINITE QUANTITY WORK - EPS HOUR LABOR: Price for labor in the BASE PERIOD (!INSERT BEGINNING AND ENDING DATES!) to perform maintenance, repair, and alteration work requirements that cannot be identified in sufficient detail to be included in Contract Line Items 0001 and 0002. This work is defined in paragraphs C.22 and C.23. The quantities listed below are realistic estimates provided solely for the purpose of bid evaluation and for establishing penal sums of bonds (if required). The price for this bid item is the total of the subline items listed in the Schedule of Indefinite Quantity Work - EPS Hour Labor, Material, and Equipment below. | | | | |

SCHEDULE OF INDEFINITE QUANTITY WORK - EPS HOURLABOR, MATERIAL, AND EQUIPMENT

| | | | | | |
|--------|--|----------|----|----------|-------------|
| 0003AA | Electrical | !INSERT! | HR | \$ _____ | \$ _____ |
| 0003AB | Plumbing/Pipefitting | !INSERT! | HR | \$ _____ | \$ _____ |
| 0003AC | HVAC | !INSERT! | HR | \$ _____ | \$ _____ |
| 0003AD | Machinist | !INSERT! | HR | \$ _____ | \$ _____ |
| 0003AE | Sheet Metal | !INSERT! | HR | \$ _____ | \$ _____ |
| 0003AF | Mooring/Rigging | !INSERT! | HR | \$ _____ | \$ _____ |
| 0003AG | Painting | !INSERT! | HR | \$ _____ | \$ _____ |
| 0003BA | Material and Equipment (Government Estimate) | | | | \$!INSERT! |
| | TOTAL PRICE FOR CONTRACT LINE ITEM 0003 | | | | \$ _____ |
| 0004 | FIRM FIXED-PRICE WORK: Price for the FIRST OPTION PERIOD for all work specified in the contract, except for work specifically identified as being included in the indefinite quantity portion of the contract. | | 12 | MONTH | \$ _____ |

SCHEDULE

| Item No. | Supplies/Services | Maximum Quantity | * Unit | Unit Price | Amount |
|----------|-------------------|------------------|--------|------------|--------|
|----------|-------------------|------------------|--------|------------|--------|

0005 INDEFINITE QUANTITY WORK - UNIT PRICED TASKS: Price for the FIRST OPTION PERIOD to perform the unit priced tasks listed in the Schedule of Indefinite Quantity Work below. The quantities shown are realistic estimates provided solely for the purpose of bid evaluation and establishing penal sums of bonds (if required). The price for this bid item is the total of the subline items listed in the Schedule of Indefinite Quantity Work - Unit Priced Tasks.

SCHEDULE OF INDEFINITE QUANTITY WORK - UNIT PRICED TASKS

| | | | | | |
|--------|---|----------|----|----------|----------|
| 0005AA | Replace 12-inch steam mains per paragraph C.! | !INSERT! | LF | \$ _____ | \$ _____ |
|--------|---|----------|----|----------|----------|

| | | | | | |
|--------|---|----------|----|----------|----------|
| 0005AB | Replace 12-inch Pressure Relief Valve per paragraph C.! | !INSERT! | EA | \$ _____ | \$ _____ |
|--------|---|----------|----|----------|----------|

TOTAL PRICE FOR CONTRACT LINE ITEM 0005 \$ _____

0006 INDEFINITE QUANTITY WORK - EPS HOUR LABOR: Price for labor in the FIRST OPTION PERIOD to perform maintenance, repair, and alteration work requirements that cannot be identified in sufficient detail to be included in Contract Line Items 0004 and 0005. This work is defined in paragraphs C.22 and C.23. The quantities listed below are realistic estimates provided solely for the purpose of bid evaluation and for establishing penal sums of bonds (if required). The price for this bid item is the total of the subline items listed in the Schedule of Indefinite Quantity Work - EPS Hour Labor, Material, and Equipment below.

SCHEDULE OF INDEFINITE QUANTITY WORK - EPS HOUR LABOR, MATERIAL, AND EQUIPMENT

| | | | | | |
|--------|------------|----------|----|----------|----------|
| 0006AA | Electrical | !INSERT! | HR | \$ _____ | \$ _____ |
|--------|------------|----------|----|----------|----------|

| | | | | | |
|--------|----------------------|----------|----|----------|----------|
| 0006AB | Plumbing/Pipefitting | !INSERT! | HR | \$ _____ | \$ _____ |
|--------|----------------------|----------|----|----------|----------|

SCHEDULE

| Item No. | Supplies/Services | Maximum Quantity | * Unit | Unit Price | Amount |
|----------|--|------------------|--------|------------|------------|
| 0006AC | HVAC | !INSERT! | HR | \$_____ | \$_____ |
| 0006AD | Machinist | !INSERT! | HR | \$_____ | \$_____ |
| 0006AE | Sheet Metal | !INSERT! | HR | \$_____ | \$_____ |
| 0006AF | Mooring/Rigging | !INSERT! | HR | \$_____ | \$_____ |
| 0006AG | Painting | !INSERT! | HR | \$_____ | \$_____ |
| 0006BA | Material and Equipment (Government Estimate) | | | | \$!INSERT! |
| | TOTAL PRICE FOR CONTRACT LINE ITEM 0006 | | | | \$_____ |

* HR = EPS Estimated Labor Hour. See definitions in Section C.

END OF SECTION B

PART I - THE SCHEDULE

SECTION C: DESCRIPTION/SPECIFICATION/WORK STATEMENT

TABLE OF CONTENTS

| <u>CLAUSE NO.</u> | <u>CLAUSE NAME</u> | <u>PAGE NO.</u> |
|-----------------------|--|---------------------|
| C.1 | GENERAL INTENTION | C-1 |
| C.2 | GENERAL REQUIREMENTS | C-1 |
| C.3 | DEFINITIONS - TECHNICAL | C-1 |
| C.4 | GOVERNMENT FURNISHED PROPERTY AND SERVICES | C-5 |
| C.5 | CONTRACTOR FURNISHED ITEMS | C-8 |
| C.6 | APPLICABLE PUBLICATIONS | C-9 |
| C.7 | WORK OUTSIDE REGULAR HOURS | C-9 |
| C.8 | MANAGEMENT | C-9 |
| C.9 | WATCHSTANDING | C-10 |
| C.10 | PLANNED SERVICE OUTAGE | C-10 |
| C.11 | PLANT LOGS | C-11 |
| C.12 | CALIBRATION | C-11 |
| C.13 | REPLACEMENT, MODERNIZATION, RENOVATION | C-11 |
| C.14 | AS BUILT DRAWINGS | C-11 |
| C.15 | TUNNELS AND MANHOLES | C-11 |
| C.16 | EXCAVATION | C-12 |
| C.17 | METER READINGS | C-12 |
| C.18 | CATHODIC PROTECTION | C-12 |
| C.19 | PREVENTIVE MAINTENANCE | C-12 |
| C.20 | CORRECTIVE MAINTENANCE | C-13 |
| C.21 | CORRECTIVE MAINTENANCE REPAIR LIMITATION | C-15 |
| C.22 | MINOR MAINTENANCE AND REPAIR | C-15 |
| C.23 | ESTIMATES | C-16 |
| C.24 | PLANT PROCEDURES | C-19 |
| C.25 | HEATING AND ELECTRICAL POWER GENERATING PLANT OPERATION AND MAINTENANCE | C-19 |
| C.26 | STEAM DISTRIBUTION SYSTEM | C-24 |

PART I - THE SCHEDULE

SECTION C: DESCRIPTION/SPECIFICATION/WORK STATEMENT

!*****
NOTE TO SPECIFICATION WRITER: A "WORK EXCLUDED" clause in Section C is optional but should be used with extreme care in order to avoid giving bidders the impression that if work is not specifically excluded it is automatically included. A "WORK EXCLUDED" clause may be useful to clarify the scope of work if some electrical power generation, heating plant, and steam distribution systems functions are already being performed by contract.
*****!

C.1 GENERAL INTENTION. The intention of this solicitation to obtain operation, maintenance, and repair services for electrical power generation, heating plant, and steam distribution systems at !INSERT NAME OF ACTIVITY! by means of a combination fixed-price and indefinite quantity contract.

C.2 GENERAL REQUIREMENTS. The Contractor shall furnish all labor, supervision, tools, materials, equipment, incidental engineering, transportation, and management necessary to operate, maintain, repair, and perform minor construction on the central electrical power generation, steam production, and steam distribution systems 24 hours per day, seven days per week. (Attachment J-C1 describes the facilities to be maintained in this contract.) Work includes the performance of service work, preventive maintenance of equipment, and other services as described herein.

C.3 DEFINITIONS - TECHNICAL. As used throughout this contract, the following terms shall have the meaning set forth below. Additional definitions are in the "DEFINITIONS" clause in Section I.

!*****
NOTE TO SPECIFICATION WRITER: Unique terms should be added to the following list of definitions. Definitions not required should be deleted.
*****!

a. Where "as shown", "as indicated", "as detailed" or words of similar import are used, it shall be understood that reference is made to this specification and the drawings accompanying this specification unless stated otherwise.

b. Where "as directed", "as required", "as permitted", "approval", "acceptance", or words of similar import are used, it shall be understood that direction, requirement, permission, approval, or acceptance of the ACO is intended unless stated otherwise.

c. Additional Material Handling. Time expended for loading materials from storage to truck, unloading materials to work area, moving materials to work area, moving materials from storage to job site, removing debris, and handling of materials during the job that is not included in the craft time standard. The above definition is a summary of the definition of "Additional Material Handling" as used in development of Engineered Performance Standards.

d. Administrative Contracting Officer (ACO). The individual designated by the Contracting Officer to administer the contract. Throughout this contract, the term ACO will be used to refer to the individual designated to administer

the contract or his/her designated representative. See the "DEFINITIONS" clause, Section I.

e. Contractor. The term Contractor as used herein refers to both the prime Contractor and any subcontractors. The Contractor shall ensure that subcontractors comply with the provisions of this contract.

f. Contractor Representative. A foreman or superintendent assigned in accordance with the "CONTRACTOR EMPLOYEES" clause, Section H.

g. Corrective Maintenance. Corrective maintenance is maintenance and repair work that is required to return a system or component to proper operating condition. Corrective maintenance shall be required on a routine basis (operator maintenance), as a result of preventive maintenance inspections, or as a result of service calls. Corrective maintenance is limited in total cost to the Contractor, as specified in the "CORRECTIVE MAINTENANCE REPAIR LIMITATION" clause, Section C.

h. Craft Phase. The numbered chronological sequence in which a specific craft performs a job phase.

EXAMPLE

| <u>Job Phase</u> | <u>Craft Phase</u> | <u>Craft</u> | <u>Description</u> |
|------------------|--------------------|--------------|--|
| 1 | 1 | Carpenter | Fabricate and install frame for new wall |
| 2 | 1 | Electrician | Rough in electrical |
| 3 | 2 | Carpenter | Install sheet rock |
| 4 | 2 | Electrician | Trim out electrical |
| 5 | 1 | Painter | Paint new wall |

i. Delay Allowances. Time expended for planning the work in the shop and at the job site; personal needs; balancing delays waiting for other craftsmen; unavoidable delays; partial day influence; waiting for tools or material that should have been at the job site. The above definition is a summary of the definition of "Delay Allowances" as used in development of Engineered Performance Standards.

j. Direct Material Costs. The actual vendor invoice charges for materials used for performance of work under this contract. Direct material costs shall include transportation charges when such charges are included on the invoice by the vendor, as well as any discounts allowed for prompt payment and discounts or rebates for core value or salvage value that accrue to the Contractor. When questions arise concerning the cost of materials, material costs will be based on the lowest of quotes provided by the Contractor from at least three different commercial vendors for the direct material cost. The Government retains the right to obtain additional quotes in questionable situations. The lowest price will be used.

k. Engineered Performance Standards (EPS). A job estimating system developed for the Department of Defense. EPS is the average time necessary for

a qualified craftsman working at a normal pace, following acceptable trade methods, receiving capable supervision, and experiencing normal delays to perform defined amounts of work of a specified quality. EPS manuals are published under the following numbers by each military branch:

Navy: NAVFAC P 700 Series
Army: TB 420 Series
Air Force: AFM 85 series

Attachment J-E1 contains a list of NAVFAC P-700 series publications.

l. Facility. An establishment, structure, or assembly of units of equipment designated for a specific function.

m. Frequency of Service

(1) Annual (A) - Services performed once during each 12-month period of the contract.

(2) Semi-Annual (SA) - Services performed twice during each 12-month period of the contract at intervals of 160 to 200 calendar days.

(3) Quarterly (Q) - Services performed 4 times during each 12-month period of the contract at intervals of 80 to 100 calendar days.

(4) Monthly (M) - Services performed 12 times during each 12-month period of the contract at intervals of 28 to 31 calendar days.

(5) Semi-Monthly (SM) - Services performed 24 times during each 12-month period of the contract at intervals of 14 to 16 calendar days.

(6) Weekly (W) - Services performed 52 times during each 12-month period of the contract at intervals of 6 to 8 calendar days.

(7) Daily (D5) - Services performed once each day, Monday through Friday, including holidays unless otherwise noted.

(8) Daily (D7) - Services performed once each day, seven days per week, including weekends and holidays.

n. Government Representative. The person(s) whom the ACO will designate by name and/or position title to conduct liaison between the Contractor and the ACO on matters pertinent to this contract and be his/her authorized representative.

o. Job Phase. The numbered chronological sequence in which work is accomplished regardless of the craft(s) involved (see Craft Phase above).

p. Job Preparation. All work and costs associated with receiving and considering a job assignment and instructions; planning equipment and material requirements; obtaining proper tools; laying out tools, material, and equipment; setting up ready to begin work; cleaning and storing tools and equipment; and cleanup of job site.

!*****
NOTE TO SPECIFICATION WRITER: The following definition assumes that no Government furnished facilities (which are located in EPS travel zone zero) are

to be provided for the Contractor's use. If such facilities are to be provided the user should consider deleting the words "for travel" in the third sentence.
*****!

q. Labor Hour Unit Price. A labor hour unit price is the unit price bid by the Contractor to provide one EPS hour of work-in-place. The unit price bid includes all direct and indirect costs associated with performing an EPS hour of work. The unit price would typically include the Contractor's hourly craft wage, adjusted to allow for the bidder's workforce productivity (i.e. the Contractor's estimate of how his/her workforce will perform in relation to Engineered Performance Standards); and all costs for travel, pre-expended bin materials and supplies, ordering and stockpiling job material, profit, tools, equipment, field and home office overhead, clerical support, supervision, inspection, fees, taxes, licenses, permits, insurance, etc. In short, all costs associated with providing a specific EPS hour of effort.

r. Latent Defects. Latent defects are defects that are present in a hidden or undeveloped state and are not visible or apparent at the time of inspection, but which become obvious or come into being at some future time.

s. Minor Maintenance and Repair. Minor maintenance and repair is work that is beyond the scope of corrective maintenance, but is less than \$2,000 in total cost of labor and materials.

t. Pre-Expended Bin Materials and Supplies. The minor materials and supplies, including those that are incidental to the job, for which the total direct cost of any one material line item shown on the material estimate is \$10.00 or less. Examples of pre-expended bin materials and supplies include, but are not limited to, solder, lead, flux, electrical connectors, electrical tape, fuses, nails, screws, bolts, nuts, washers, spacers, masking tape, sand paper, solvent, cleaners, lubricants, grease, oil, rags, mops, glue, epoxy, spackling compound, joint tape, gases, refrigerants, refrigeration fittings, plumbers tape and compound, clips, welding rods, heat sinks, electrical outlets, switches, cover plates, plumbing fixtures and fittings, touch up paint, and any other item for which the total line item direct cost is \$10.00 or less.

u. Preventive Maintenance. Preventive Maintenance (PM) is scheduled maintenance that consists primarily of inspection, cleaning, lubrication, adjustment, calibration, and minor component replacement (e.g. filters, belts, hoses, fluids, oil and grease) as required to minimize malfunctions, breakdown, and deterioration of equipment.

v. Quality Assurance (QA). A method used by the Government to provide some measure of control over the quality of purchased goods and services received.

w. Quality Assurance Evaluator (QAE). The Government employee responsible for the daily monitoring of Contractor performance.

x. Quality Control (QC). A method used by the Contractor to control the quality of goods and services produced.

y. Regular Working Hours. The Government's regular (normal) working hours are from !STARTING HOUR! to !ENDING HOUR!, Mondays through Fridays except (a) Federal Holidays and (b) other days specifically designated by the ACO.

z. Repair. Repair of the restoration of a piece of equipment, a system, or a facility to such condition that it may be effectively utilized for its designated purposes. Repair may be overhaul, reprocessing, or replacement of constituent parts or materials that have deteriorated by action of the elements or usage and have not been corrected through maintenance, or replacement of the entire unit or system if beyond economical repair.

aa. Response Time. Response time is defined as the time allowed the Contractor after initial notification of a work requirement to be physically on the premises at the work site ready with appropriate tools, equipment, and materials, ready to perform the work required. Response times are designated in the appropriate technical clauses in Section C.

ab. Service Call Work. Service call work is corrective maintenance and repair work requirements resulting from calls to the Contractor from the Government operated work reception center.

ac. Travel Time. Time expended between shop and the job site; waiting for vehicle; getting in and out of vehicle; loading and carrying a tool box; vehicle travel; unloading, walking from vehicle to job site; opening and closing door; walking up and down stairs; using elevators; and access to secure or controlled areas.

ad. Work Content Comparison. Work content comparison is a method of comparing a task that is not specifically defined in EPS Task Time Standards to a very similar task that is defined in the EPS Task Time Standards. This definition is a summary of a more detailed definition which appears on page 29 of the EPS Planner and Estimator's Deskguide (NAVFAC P-701.0)

!*****
NOTE TO SPECIFICATION WRITER: Government furnished property may include real property or personal property. The specification writer must clearly identify Government furnished facilities, Government furnished equipment (GFE), and Government furnished material (GFM). The following clauses should be modified as needed to fit the activity's specific situation and needs. Remember that if a CA program study is being conducted, decisions on whether or not to provide Government furnished facilities and equipment must be based on a economic analysis. Refer to OPNAVINST 4860.7B.
*****!

C.4 GOVERNMENT FURNISHED PROPERTY AND SERVICES. In accordance with the "GOVERNMENT PROPERTY (FIXED-PRICE CONTRACTS)" clause in Section I, the Government will provide the Contractor the use of certain Government owned !MODIFY AS REQUIRED! facilities, equipment, and materials. All such facilities, equipment, and materials will be provided in "as is" condition.

a. Government Furnished Facilities

!SELECT EITHER (1) OR (2)!

(1) The Government will furnish or make available to the Contractor the facilities described in Attachment J-C2. The Contractor shall assume responsibility and accountability of such facilities provided and shall take adequate precautions to prevent fire hazards, odors, and vermin. Janitorial services for Government furnished facilities shall be the responsibility of the Contractor. The Contractor shall obtain written approval from the ACO prior to

making any modifications or alterations to the facilities. Any such modifications or alterations approved by the Government will be made at the expense of the Contractor. At the completion of the contract, all facilities shall be returned to the Government in the same condition as received, except for reasonable wear and tear. The Contractor shall be held responsible for the cost of any repairs caused by negligence or abuse on his/her part, or on the part of his/her employees.

(2) The Government will not provide office space and operational facilities to the Contractor. The Contractor shall secure and maintain the necessary office space and other facilities required for the performance of this contract at his/her own expense.

!*****
NOTE TO SPECIFICATION WRITER: The specification writer must determine what equipment and material will be provided to the Contractor and select from the following paragraphs as appropriate. Equipment and material should normally not be provided to the Contractor unless economically justified under a CA program study. Extensive equipment and material listings should be placed in Attachments J-C3 and J-C4 respectively, including identification number, age, location, size, quantity, or capacity, etc. Specific maintenance requirements beyond the general requirements of this clause should also be detailed in the Attachments. If items are located at other Government furnished facilities, specify location and responsibility for transportation. If no equipment or material will be provided to the Contractor, the OPTIONAL clauses should be used.
*****!

b. Government Furnished Equipment

!SELECT EITHER (1) OR (2)!

(1) The Government will provide the Contractor the use of existing and available Government owned tools and equipment in the performance of the contract. Such Government furnished tools and equipment are listed in Attachment J-C3.

(a) The Contractor shall provide periodic servicing, maintenance, and repair of the equipment listed at no cost to the Government, and the total or partial break-down or failure of the Government furnished equipment shall not relieve the Contractor of the requirement to fully perform the work of the contract. Upon completion or termination of the contract, all Government owned equipment shall be returned to the Government in the same condition as received, except for normal wear and tear. Equipment which becomes worn out due to normal wear and tear shall be returned to the Government and its replacement shall be the responsibility of the Contractor at no cost to the Government. Equipment so acquired shall remain the property of the Contractor. The Contractor shall be responsible for the cost of any repairs or replacement caused by negligence or abuse by the Contractor or his/her employees.

(b) The Contractor and the Government Representative shall conduct a joint inventory before commencing work under this contract to determine the exact number and serviceability of Government furnished equipment. The Contractor shall then certify the findings of this inventory, assume accounting responsibility, and subsequently report inventory discrepancies to the

Government Representative. Government furnished equipment shall not be removed from the activity unless approved by the ACO in writing.

(2) The Contractor shall furnish all tools and equipment to required for the performance of this contract. The Government will not provide tools or equipment to the Contractor.

c. Government Furnished Material

!SELECT EITHER (1), (2), OR (3)!

(1) The Government will furnish the material described in Attachment J-C4 to the Contractor on a one time basis for use only in connection with this contract. The use of Government furnished material for any other purpose is prohibited. The Contractor and the Government Representative shall conduct a joint inventory before commencing work under this contract to determine the exact amount and serviceability of Government furnished materials. The Contractor shall then certify the findings of this inventory, assume accounting responsibility for all materials supplied, and shall provide documentation supporting issue/use of such material. Upon depletion of material provided to the Contractor by the Government, the Contractor shall furnish all material to perform the work of the contract, except as otherwise specified herein. Upon completing or termination of this contract a second joint inventory shall be conducted, if necessary, of all unused Government furnished materials. The Contractor shall be held liable for all materials which cannot be accounted for by issue/use documentation.

(2) The Government will not provide any materials to the Contractor.

(3) The Government will furnish the material described in Attachment J-C4 to the Contractor on a one time basis for use only in connection with this contract. The use of Government furnished material for any other purpose is prohibited. The Contractor and the Government Representative shall conduct a joint inventory before commencing work under this contract to determine the exact amount and serviceability of Government furnished materials. The Contractor shall then certify the findings of this inventory, assume accounting responsibility for all materials supplied, and shall provide documentation supporting issue/use of such material.

(a) Upon depletion of material provided to the Contractor by the Government, as listed in Part A of Attachment J-C4, the Contractor shall furnish all material to perform the work of the contract, except as otherwise specified herein. Upon completion or termination of this contract a second joint inventory shall be conducted, if necessary, of all unused Government furnished materials, as listed in Part A of Attachment J-C4. The Contractor shall be held liable for all materials missing which cannot be accounted for by issue/use documentation.

(b) Experience has shown that selected items of long lead time parts and materials must be stocked to insure repair of critical equipment in the event of failure. A list of these insurance items and minimum stocking levels are contained in Part B of Attachment J-C4. The Government will provide the Contractor an initial issue of all items in at least the minimum quantities listed in Part B of Attachment J-C4. The Contractor shall maintain at least the minimum quantity of all the items specified. These items will be used by the

Contractor in the maintenance and repair of the facilities/systems only as follows:

1. Insurance items shall be used on the systems, facilities, or GFE with which they are associated.

2. A replacement insurance item shall be ordered within three working days after the use of any insurance item which causes the total quantity on hand to fall below the minimum specified level. The Contractor shall bear the cost of replacement of all insurance items.

3. Upon completion or termination of the contract, all insurance items shall be returned to the Government in the minimum specified quantities.

d. Availability of Utilities. The Government will furnish the following utility services at existing outlets, for use in those facilities provided by the Government and as may be required for the work to be performed under the contract: electricity, steam, natural gas, fresh water, sewage service, and refuse collection (from existing collection points). Information concerning the location of existing outlets may be obtained from the Government Representative. The Contractor shall provide and maintain, at his/her expense, the necessary service lines from existing Government outlets to the site of work.

!SELECT EITHER (1) OR (2)!

(1) Utilities specified above will be furnished at no cost to the Contractor.

(2) The Contractor shall pay for utilities consumed and shall, at his/her expense, install meters as required by the ACO to measure consumption of utilities provided by the Government. Rates for reimbursement to the Government of metered utilities will be: !LIST THE RATES OF REIMBURSEMENT PER TYPE OF SERVICE PROVIDED!

A restricted telephone line (USOC Class RS4) for on base calls will be provided by the Government at no cost to the Contractor. The Contractor shall install commercial telephone service, and all service and toll charges will be paid for by the Contractor.

C.5 CONTRACTOR FURNISHED ITEMS. Except for the items listed in clause C.4, the Contractor shall provide all equipment, materials, and services to perform the requirements of this contract. The Contractor shall provide new or factory reconditioned parts and components when providing maintenance and repair services as described herein. All replacement units, parts, components and materials to be used in the maintenance, repair, and alteration of facilities and equipment shall be compatible with that existing equipment on which it is to be used; shall be of equal or better quality as original equipment specifications; shall conform to the applicable specifications listed in Attachment J-C5 and the technical specifications, Section C; and used in accordance with original design and manufacturer intent. Items not listed in Attachment J-C5 or technical specifications shall be of acceptable industrial grade and quality. If the original manufacturer has updated the quality of parts for current production, parts supplied under this contract shall equal or exceed the updated quality. The Contractor shall retain the parts replaced for at least 10 days after completion of the job and make these parts readily

available for inspection by the Government Representative upon request. When disputes arise concerning material, equipment, and components selected for work items already accomplished, the Contractor shall, at no cost to the Government, remove, replace, and/or rework material, equipment, and components so that compliance with the Government's requirements are satisfied. The Contractor shall obtain and maintain manufacturer's operating instructions and maintenance manuals on all new equipment installed by the Contractor. The documents shall become property of the Government and shall be turned into the ACO within five days after completion or termination of the contract.

C.6 APPLICABLE PUBLICATIONS. Publications and other pertinent documents referenced in this specification are indicated in Attachment J-C6. All publications will be furnished by the Government at the start of the contract. All available heating and electrical system drawings, records, manufacturer's equipment manuals, equipment history files and other available pertinent data shall be turned over to the Contractor. The Contractor shall update these items to reflect all changes implemented during the contract period. Upon completion of the contract, the Contractor shall return all items in the same condition as received less normal wear and tear.

C.7 WORK OUTSIDE REGULAR HOURS. Except as may otherwise be specified, all work shall be performed during regular hours. If the Contractor desires to carry on work on Saturday, Sunday, holidays, or outside regular working hours, he/she must submit application to the ACO for approval.

C.8 MANAGEMENT. The Contractor shall manage the total work effort associated with the operations, maintenance, repair, and all other services required herein to assure fully adequate and timely completion of these services. Included in this function will be a full range of management duties including, but not limited to, planning, scheduling, establishing and maintaining records, warranty enforcement, and quality control. The Contractor shall provide an adequate staff of personnel with the necessary management expertise to assure the performance of the work in accordance with sound and efficient management practices.

a. Work Control. The Contractor shall implement all necessary work control procedures to ensure timely accomplishment of work requirements, as well as to permit tracking of work in progress. The Contractor shall plan and schedule work to assure material, labor, and equipment are available to complete work requirements within the specified time limits and in conformance with the quality standards established herein. Verbal scheduling and status reports shall be provided when requested by the ACO. The status of any item of work must be provided within !INSERT! hours of the inquiry during regular working hours, and within !INSERT! hours after regular working hours.

b. Work Schedule. The Contractor shall schedule and arrange work so as to cause the least interference with the normal occurrence of Government business and mission. In those cases where some interference may be essentially unavoidable, the Contractor shall make every effort to minimize the impact of the interference, inconvenience, equipment downtime, interrupted service, customer discomfort, etc.

!*****
NOTE TO SPECIFICATION WRITER: Reports and information which the Government periodically needs from the Contractor, as well as any required cost accounting reports, should be listed in Attachment J-C7. Report formats, required

information, etc. should be discussed in detail in this attachment. Generally, facility history files should be maintained by the Government, not the Contractor. Should that be the case, the writer should delete subparagraph (2) below.

*****!

c. Records and Reports

(1) The Contractor shall maintain management and maintenance records and prepare management and maintenance reports as set forth in Attachment J-C7, "LIST OF REQUIRED RECORDS AND REPORTS". This Attachment delineates which records and reports are the Contractor's responsibility and those for which the Contractor must provide data to be used by the Government Representative in preparation of Government reports. All records and copies of reports shall be turned over to the ACO within five calendar days after contract completion.

(2) A completed work file for each structure (identified by structure number) shall be maintained by the Contractor. Each file shall contain a listing of all equipment in the structure by nomenclature and manufacturer's model number, as well as all manufacturer's literature, brochures, and pamphlets; maintenance, operator's, and parts lists manuals; warranty information; and a copy of all completed Emergency/Service Authorization Forms, minor job orders, preventive maintenance inspection reports, and other information pertaining to the facility and/or installed equipment and systems. The Government will have access to these files upon request. All documents shall be filed within 10 calendar days of the completed transaction. The entire file shall be turned over to the Government upon completion of the contract.

(3) Records shall be maintained on each item of equipment and system listed in Attachment J-C8 on which preventive maintenance (PM) is required and equipment which may be installed by the Contractor. The PM records shall reflect all periodic maintenance performed, including scheduled and accomplished dates, and any repairs made.

d. Cost Accounting Reports. The Contractor shall maintain and provide cost accounting information in compliance with the specific requirements set forth in Attachment J-C7. This report will be submitted with, and is considered part of, the monthly payment invoice.

e. Staffing. The Contractor shall continuously maintain an adequate staff with management expertise to assure work is scheduled and completed in accordance with these specifications. The Contractor shall maintain an adequate craft workforce to complete work in accordance with the time and quality standards specified. The Contractor shall meet the minimum staffing requirements for safe boiler operation as specified in the current issue of NAVFACINST 11300.36.

C.9 WATCHSTANDING. The Contractor shall ensure that all stations and equipment requiring an operator attendant are staffed by qualified personnel at all times. Watchstanding requirements shall comply with NAVFACINST 11300.36.

C.10 PLANNED SERVICE OUTAGE. Except in emergency situations (see paragraph C.25.j), the Contractor shall request the ACO's approval at least !INSERT! calendar days prior to any discontinuation or reduction in production/distribution services. The Contractor must coordinate the shutdown or reduction with the Building Custodian or other designated representative of

the affected building(s) prior to requesting the ACO's approval. Notification shall also include the date and time of the outage and an estimate of when normal service will resume.

C.11 PLANT LOGS. The Contractor shall maintain operating logs on all operating equipment which shall note operator checks and adjustments, and a record file noting normal or abnormal operating conditions, deficiencies or malfunctions, and corrective action taken. All recording charts and required logs shall be filed chronologically and kept in the location(s) as designated by the ACO. This information shall be readily available for inspection at all times. A copy of the logs shall be submitted to the ACO !SPECIFY FREQUENCY!. Format and specific data required for logs and reports are indicated in "PLANT LOGS, RECORDS, AND REPORT FORMATS", Attachment J-C9.

C.12 CALIBRATION. The Contractor shall calibrate all electrical instruments and pressure and temperature gauges annually and attach a self-adhesive label on each instrument and gauge certifying that it has been calibrated. The date of the calibration and the initials of the person performing the calibration shall be noted on the label. The gauges/instruments shall be calibrated using a standard dead weight tester or a calibrated master gauge or instrument standard. In addition to the normal annual calibration, the Contractor shall recalibrate any gauge or instrument which is suspected of being in error.

C.13 REPLACEMENT, MODERNIZATION, RENOVATION. During the term of the contract, the Government may replace, renovate, or improve equipment, systems, facilities, and components at the Government's expense and by means not associated with this contract. All replaced, improved, updated, modernized or renovated equipment, facilities, components, and systems shall be maintained, operated, and/or repaired by the Contractor at no additional cost to the Government unless such changes result in an increase or decrease in contract requirements. Equipment changes, replacements, or deletions which result in an increase or decrease in contract requirements will result in adjustments to the contract price in accordance with the "CHANGES" clause, Section I.

C.14 AS BUILT DRAWINGS

a. Drawings related to the operation and maintenance of electrical power generation, heating plant, and steam distribution systems will be made available for the Contractor's review at !INSERT LOCATION! during the solicitation period, and made available for the Contractor's use during the term of the contract. The Government makes no representation as to the completeness or accuracy of these drawings.

b. All changes to the utility plants or distribution systems made by the Contractor shall be incorporated by the Contractor on the applicable records and drawings (after consultation with the ACO) within !INSERT! calendar days after completion of the changes.

C.15 TUNNELS AND MANHOLES. Tunnels, manholes, vaults, and pits shall be maintained free of debris, cracks, breaks, and water. If sump pumps are required to prevent water damage to the utility distribution systems, the installation and maintenance of such pumps is the responsibility of the Contractor. Contractor personnel shall work in a minimum of two man teams while accomplishing work in tunnels, manholes, and pits. The Contractor shall replace manhole covers which are cracked, rusted, or damaged beyond repair.

C.16 EXCAVATION. Upon completion of work in trenches, backfill shall be thoroughly compacted and surfaces shall be restored to their original condition.

C.17 METER READINGS. The Contractor shall read all water, steam, condensate return, gas, and electric meters on the date of each month designated by the ACO. Meter readings shall be recorded in the meter books provided by the Government and shall be forwarded to the ACO no later than the next working day. There are currently !INSERT! water meters, !INSERT! steam meters, !INSERT! gas meters, !INSERT! condensate return meters, and !INSERT! electric meters in service.

C.18 CATHODIC PROTECTION. At least once each !SPECIFY FREQUENCY!, the Contractor shall inspect, test, and repair all cathodic protection apparatus and circuitry. Work shall be accomplished in accordance with NAVFAC MO-306 and MO-307.

C.19 PREVENTIVE MAINTENANCE

a. The Contractor shall perform preventive maintenance (PM) on the equipment and systems listed in "PREVENTIVE MAINTENANCE", Attachment J-C8. PM consists primarily of inspection, cleaning, lubrication, adjustment, calibration, minor parts replacement (e.g. filters, belts, hoses, fluids, hardware), and repairs as required to minimize malfunction, breakdown, and deterioration, and to keep systems and equipment in optimum operating condition. PM shall be performed at least as frequently as, and to the levels indicated in Attachment J-C8. The Contractor may, at his option and at no additional cost to the Government, increase the level and/or frequency of PM in an effort to minimize repair requirements.

b. The number and size of repair jobs and the cost of material are directly proportionate to the quality and timeliness of PM, and the timeliness of identifying repairs required. The historical data in this contract (see Attachment J-C10) for the number and scope of repair jobs is based on an aggressive PM program, and timely identification and execution of repair work. The Contractor should recognize that untimely response to repair requirements and lower levels of PM will result in increased repair frequencies and additional material costs.

NOTE TO SPECIFICATION WRITER: As an alternate, the user may require the Contractor to provide the entire PM program in addition to the schedule required above; however, this is not recommended. Any plan provided by the Contractor would be based on equipment manufacturer's recommended PM schedules, as available, and other available manuals, pamphlets, etc.
*****!

c. Within 30 days after award of the contract the Contractor shall submit a detailed PM schedule for the entire term of the contract for the ACO's approval. It shall include, for each specific piece of equipment listed in Attachment J-C8, the date, location, and work to be performed. Once approved by the ACO the Contractor shall strictly adhere to the scheduled PM dates to facilitate Government verification of work. If at any time a schedule change is required by the Government, the ACO will notify the Contractor at least five working days prior to the change. If the Contractor finds it necessary to reschedule PM, a written request shall be made to the ACO detailing the reasons for the proposed change at least five working days prior to the originally scheduled PM date. No

scheduled PM dates shall be changed without the prior written approval of the ACO.

!*****
NOTE TO SPECIFICATION WRITER: The intent of the following paragraph is to set the maximum limit for corrective maintenance under the fixed-price portion of the contract. As it is impossible to predict the frequency and nature of major repairs that may be required during the contract period, it is unreasonable to place complete financial responsibility and risk on the Contractor. Additionally, individual repairs in excess of \$2,000 require the Contractor to pay Davis-Bacon wage rates, which are normally not included in non-CA program maintenance service contract.
*****!

C.20 CORRECTIVE MAINTENANCE. Corrective maintenance is maintenance and repair work that is required to return a system or component to proper operating condition. Corrective maintenance shall be required on a routine basis (operator maintenance), as a result of preventive maintenance inspections, or as a result of service calls. All corrective maintenance work is included in the fixed-price portion of the contract, and is limited in total cost to the Contractor, as specified in the "CORRECTIVE MAINTENANCE REPAIR LIMITATION" clause, Section C.

a. Operator Maintenance. Corrective maintenance shall be performed as required during the course of routine operations, in accordance with the Contractor's approved Plant Procedures (clause C.24).

b. PM Inspections. Equipment deficiencies detected during PM inspections shall be corrected, as specified in Clause C.19, as part of the PM. Service calls shall not be issued for these repairs.

c. Service Calls. Service calls are defined as maintenance and repair requirements which are called into the Government operated work reception center or generated by authorized Government Representatives.

(1) Service Call Reception

(a) Normal Working Hours. The Government's work reception center will receive service call requests during normal working hours and classify each call in accordance with the definitions provided below. A description of the problem or requested work, date and time received, location, and other appropriate information will be placed on an Emergency/Service Work Authorization form and made available for pickup by the Contractor at the Government's work reception center. If the call is classified as emergency the Government's work receptionist will notify the Contractor by phone that a call has been received and that a work authorization form is available for pickup. Emergency calls shall be considered as received by the Contractor at the time and date that this telephone call is made.

(b) After Normal Working Hours. The Contractor shall receive and respond to emergency service call requests directly from authorized Government Representatives after normal working hours, on weekends, and holidays.

(2) Service Call Classification

!*****
NOTE TO SPECIFICATION WRITER: This paragraph must be carefully tailored to fit
the activity's needs.
*****!

(a) Emergency Calls. Service calls will be classified as an emergency call when the work consists of correcting failures which constitute an immediate danger to personnel or threaten to damage property. The Contractor shall respond immediately and must be on the job site and working within 30 minutes after receipt of an emergency service call. The Contractor shall work continuously without interruption and shall arrest the emergency condition before departing the job site. If further labor and material is required to complete the repair, the work shall be completed within the time requirements of a routine service call. No more than !INSERT PERCENTAGE! of the service calls issued to the Contractor will be classified as emergency.

(b) Routine Calls. Service calls will be classified as routine when the work does not qualify as an emergency. Routine calls shall be considered as received by the Contractor at the time and date the work reception center makes the work authorization form available for pickup. All routine calls must be completed within !INSERT! working days after receipt, and once begun, the work shall be prosecuted to completion. Routine calls shall normally be accomplished during normal work hours, Monday through Friday.

(3) The Contractor shall have adequate procedures for picking up service call work authorizations from the Government's work reception center during normal working hours, and for receiving and responding to emergency service calls 24 hours per day, including weekends and holidays. A single local telephone number shall be provided by the Contractor for receiving emergency calls.

4) Within one working day after completion of each service call the Contractor shall add the following information to the work authorization form and return one copy to the work reception center:

(a) Description of work actually completed (if different from original work description).

(b) Brief description of material and parts used, including quantities.

(c) Date and time work began.

(d) Date and time work was completed.

(e) Signature or initials of the Contractor's craftsman performing the work (or supervisor), indicating that the work has been completed.

(5) If the Contractor responds to a routine service call and believes that the work required is beyond the scope of corrective maintenance, as defined in clause C.21, the work authorization form shall be returned to the work control center not later than !INSERT TIME! the following workday. The Contractor shall attach a summary of the work needed and a detailed EPS estimate showing labor hour and material requirements. The ACO may waive the requirement to submit estimates in cases where the scope of work is clearly beyond that of a service call.

(a) If the ACO agrees that the work required is beyond the scope of a service call, the scope of the work will be reduced and a new service call work authorization issued by the Government, or the original work authorization will be canceled. If the original work authorization is canceled, a minor job order will be issued to the Contractor, or the work will be accomplished by means other than this contract.

(b) If the ACO determines that the work falls within the scope of a service call, the original work authorization will be returned to the Contractor and the work shall be completed. Work on such calls must still be completed within !INSERT! working days from the original receipt date/time, plus the amount of time the work authorization was held by the ACO for determination.

(6) Data on the numbers and types of service calls of each classification that have historically been performed are included in Attachment J-C10.

d. The Contractor shall maintain sufficient off-the-shelf materials and equipment on hand to support corrective maintenance requirements. Lack of availability of materials or equipment will not relieve the Contractor from the requirement to complete corrective maintenance within the time limits specified. Records shall be maintained by the Contractor on the status of all corrective maintenance and such status shall be provided upon request from authorized Government representatives within !INSERT NUMBER! hours during normal working hours and within !INSERT NUMBER! hours after normal working hours.

C.21 CORRECTIVE MAINTENANCE REPAIR LIMITATION. The Contractor's liability under the fixed-price portion of the contract for corrective maintenance and repair shall be limited to not more than !INSERT! estimated total labor hours for accomplishment and not more than !\$INSERT! in total direct material costs, to include parts or entire unit replacement. When questions arise concerning the labor hours required for a particular job, labor hour requirements will be based on EPS Manuals (NAVFAC P-700 Series) or, if not applicable, other estimating sources. When questions arise concerning the cost of materials, material costs will be based on the lowest of quotes provided by the Contractor from at least two different commercial vendors for the actual direct cost of the material. The Government retains the right to obtain additional quotes in questionable situations. The lowest price will be used. For maintenance and repair requirements above the limits specified above, see the "MINOR MAINTENANCE AND REPAIR" and "ESTIMATES" clauses, Section C.

!*****
NOTE TO SPECIFICATION WRITER: The \$2,000 limit specified in the following paragraph assumes that Davis-Bacon wage provisions have not been included in the contract. See the User's Guide for a more detailed discussion of the \$2,000 limit.
*****!

C.22 MINOR MAINTENANCE AND REPAIR. Minor work is defined as maintenance and repair work requirements which are beyond the scope of corrective maintenance and repair work (as defined in clause C.21). The cost of any single instance of minor maintenance or repair is limited to a total cost of (labor and material) \$2,000. All minor work is included in the indefinite quantity portion of the contract. The Contractor will be paid a negotiated fixed-price for each delivery order for minor work as specified in the following procedures. Labor,

material, and equipment required for the unit priced tasks listed in the Schedule of Indefinite Quantity Work-Unit Priced Tasks is included in the bid prices. Material and equipment required for work based on the Schedule of Indefinite Quantity Work-EPS Hour Labor, will be reimbursed in accordance with the "ESTIMATES" clause below.

a. Urgent Minor Work. The Government will classify up to !INSERT! % of the delivery orders for minor work as urgent. The Contractor shall complete all urgent minor delivery orders within !INSERT! calendar days of receipt. Urgent minor work shall normally be performed only during regular working hours, except that after hours and/or weekend work may be authorized by the ACO if required to complete work within the time requirement specified above.

b. Routine Minor Work. All non urgent minor work will be classified as routine minor work. Routine minor work will be further classified by the Government as one of two different "Types". Delivery orders for Type I routine minor work shall be completed within !INSERT! calendar days of receipt and Type II delivery orders within !INSERT! calendar days of receipt. No more than !INSERT!% of the delivery orders for routine minor work will be classified as Type I.

c. Establishing Final Cost for Minor Maintenance and Repair Work. On receipt of a proposed delivery order from the ACO, the Contractor shall prepare an estimate following the procedures outlined in the "ESTIMATES" clause elsewhere in this Section. The Contractor's estimate will be evaluated to determine if: (1) the scope has been clearly and accurately identified, (2) the EPS standards (including work content comparison) have been accurately applied, (3) work which is not covered by EPS has been properly estimated with supporting data presented, (4) equipment and material estimates are reasonable and properly documented, and (5) unit priced work has been estimated using the unit prices that were bid. After the estimate has been reviewed and there are no mathematical, typographical, scope or estimating errors, the ACO will approve the estimate. The approved estimate then shall be a fixed-price for the work described in the delivery order.

d. Ordering Minor Maintenance and Repair Work. The ACO will order minor maintenance and repair work by issuing to the Contractor a copy of the approved estimate and a delivery order for the work covered by the approved estimate in accordance with the "ORDERING OF WORK" clause in Section G.

e. Changes to Scope of Work in Delivery Orders. If during the course of work the Contractor encounters unforeseen conditions which impact the work and which could not be evaluated during the initial estimating procedures, the Contractor shall not proceed without ACO authorization. The ACO will direct the Contractor to (1) estimate the change of scope for the unforeseen condition only, or (2) prepare a new estimate for the total job as revised. The ACO will, after review and approval of the estimate, (1) issue a delivery order for the change of scope only, or (2) cancel the original delivery order and issue a new delivery order for the total job as revised.

C.23 ESTIMATES. Detailed estimates for proposed minor work orders shall be prepared when requested in writing by the ACO. Completed detailed estimates shall be provided to the Government's work control center within !INSERT! calendar days after receipt of the proposed work order for urgent minor work, and within !INSERT! calendar days after receipt for routine minor work. After approval by the ACO, the detailed estimate will form the basis of payment for

the work. The cost of preparation of estimates is included in the firm fixed-price portion of the contract.

a. EPS Manuals. EPS manuals will be made available for examination at !INSERT LOCATION AT THE ACTIVITY WHERE THE WORK WILL BE PERFORMED AND THE CONTRACTS OFFICE AT WHICH THE BIDS WILL BE RECEIVED! and at Naval Facilities Engineering Command Engineering Field Divisions during the bidding period of this contract. !INSERT NUMBER! copies of the EPS manuals will be provided to the successful bidder upon award.

b. Travel Zone Maps. The Travel Zone map for !ACTIVITY! is provided as Attachment J-C11 and is to be used in conjunction with historical data to evaluate travel time impact.

c. Preparation of Estimates. The Government will provide the Contractor a detailed scope of work for which the Contractor shall prepare an independent estimate of the labor, equipment, and material required to complete the work ordered under the "MINOR MAINTENANCE AND REPAIR" clause. The detailed scope of work will be provided by the Government on DD Form 2167, Job Phase Calculation Sheet, and will identify the overall work scope for each craft phase and the specific task descriptions. The Contractor shall complete the total estimate by entering the EPS craft time for each task description and applying the EPS nomograph to arrive at the total EPS time for each job phase. If required, the Contractor shall identify on the DD Form 2167 additional task descriptions that are necessary to satisfactorily accomplish the overall work scope for the particular craft phases and provide appropriate EPS task references and estimated EPS hours. Any portions of delivery orders that have been bid as unit priced tasks shall be priced using the unit prices bid instead of EPS. EPS does not cover every task that might be accomplished by specific crafts. For tasks not exactly identified in EPS manuals, work content comparison shall be performed prior to a determination that EPS does not apply to a job. Estimates and all supporting information, documentation, and calculations shall be submitted to the ACO.

!*****
NOTE TO SPECIFICATION WRITER: The following paragraph assumes that no Government furnished facilities (which are located in EPS travel zone zero) are to be provided for the Contractor's use. If such facilities are to be provided, the user should consider deleting the sentence "The standard allowance for travel. . . the EPS nomograph."

(1) Labor Estimates. Labor estimates shall be expressed in EPS hours. Craft time shall be taken from the EPS task time standards or the craft spread sheets either directly or by work content comparison, applicable additional task times (additional material handling, additional travel, and additional preparation) shall be added, the total craft time applied to the EPS nomograph to add standard allowances for job preparation, craft delays, and partial day influence. The standard allowance for travel time will **not** be added, travel zone 0 (shop) will be used when applying total craft time to the EPS Nomograph. **No other** allowances, mark-ups, or add-ons for work time associated with union agreements, overhead, profit, material markups, supervision, or clerical support shall be added to the labor hour estimate. The estimate shall include job phasing and craft phasing, and the task time standard(s) or spread sheet used in the estimate shall be identified. For multiple craft jobs, a phasing summary sheet shall be prepared. DD Form 2167 shall be completed as required.

(a) Estimating Work Not Covered by EPS. The Contractor shall clearly identify work that cannot be estimated either directly from EPS or using EPS work content comparison procedures. Such conventional labor hour estimates shall be based on the total labor hours required for the specific task(s). The Contractor shall submit all back up sheets with the estimate including a listing of all operations and supporting data for all estimates based on historical information. Estimates will be for labor hours only and shall not include any mark-ups, allowances, or add-ons for work time associated with union agreements, overhead, profit, material markups, supervision, or clerical support.

(b) Total Labor Cost Estimates. The total labor cost estimate will be determined by totaling the number of EPS estimated labor hours for each craft (trade) and then multiplying by the appropriate hourly unit price from the Schedule of Indefinite Quantity - EPS Hour Labor. This procedure shall be followed for each craft required to perform the job. The total for all crafts is the total labor cost estimate.

(2) Material Estimates. Material estimates shall include a detailed bill of materials establishing the size, quality, number of units, and unit prices. Material prices shall be the lowest price available considering the availability of materials and the time constraints of the job. The direct material price shall be reduced by all discounts and rebates for core value or salvage value that accrue to the Contractor. Pre-expended bin supplies and materials shall not be included in the material estimate unless the total cost of the pre-expended bin items exceeds \$!INSERT! per delivery order. Contractor administrative and handling costs for acquiring material, and any Contractor material markups should be included in the prices bid for an EPS estimated labor hour.

(3) Construction and Weight Handling Equipment Estimates. Estimates for construction and weight handling equipment may be added for an individual job if not included in other portions of the contract or not provided by the Government. Estimates shall include a detailed price list stating size, capacities, quality, number of units, and unit prices.

(a) Rental equipment shall be based on the lowest price available considering the availability and time constraints on the job.

(b) When the equipment to be used is owned by the Contractor, the cost shall be based on the U.S. Army Corps of Engineers Construction Equipment Ownership and Operating Expense Schedule EP 1110-1-8.

(c) Cost for equipment operators, when separate operators are required, shall be estimated on an EPS unit hour basis, unless operator cost is included in equipment rental price or operator has been provided by the Government. Any overhead expense associated with equipment usage shall be included in the Contractor's bid for the applicable EPS labor hour unit price.

!*****
NOTE TO SPECIFICATION WRITER: If operating and maintenance instructions, plans, etc. are in existence/current use, these should be summarized and included in the contract, then made available to the Contractor during solicitation and after contract award.
*****!

C.24 PLANT PROCEDURES. The Contractor shall be responsible for maintaining complete control of the electrical power generating and heating plant operation by preparation and adherence to written operating procedures. The operating procedures shall be prepared by the Contractor in accordance with the following, in order of precedence: (1) manufacturer's instructions, (2) industry standards and national codes, (3) procedures outlined in NAVFAC publications MO-205, MO-321 and MO-322, and (4) the requirements of this specification.

a. As a minimum, the procedures shall include:

(1) Plant systems' (boilers, turbine generators, etc.) operating instructions, including a detailed description in correct sequence of the observations and adjustments to be made, the minimum frequency of the observations, and adjustments, and who will perform them.

(2) Plant equipment operating schedule.

(3) Boiler water treatment plan.

(4) Systems maintenance, inspection, repairs, overhaul, and testing.

(5) Emergency procedures for electrical generation and steam production/distribution disruptions.

(6) Safety/accident procedures.

b. These procedures shall be submitted to the ACO for approval within 15 days after contract award. The approved procedures shall be instituted upon commencement of contract operations. The Contractor shall be responsible for updating and revising all plant operation, distribution, and maintenance procedures on a continuing basis as required by physical or operational changes.

C.25 HEATING AND ELECTRICAL POWER GENERATING PLANT OPERATION AND MAINTENANCE.

The Contractor shall be responsible for the effective and efficient operation and maintenance of the central !SPECIFY SIZE! MBtu/hr heating and !SPECIFY SIZE! megawatt electrical power generating systems. These systems include boilers and electrical power generating equipment, fuel handling and water treatment equipment, associated pumps, components, controls, and other equipment identified in Attachment J-C1.

a. Procedures. The Contractor shall administer, operate and maintain the plant systems on a 24 hour per day basis in compliance with the approved operating procedures. The Contractor shall pursue a maintenance approach that provides for the continued safe, efficient operation and the clean, orderly, efficient appearance of the plant.

b. Steam Generation. The central heating system shall be operated continuously to meet industrial/production and heating demand requirements. The steam pressure shall be maintained at a minimum of !SPECIFY PRESSURE (PSIG)/TEMPERATURE (°F)!. The Contractor shall operate, maintain, and monitor the heating system in accordance with the approved operating procedures.

!*****
NOTE TO SPECIFICATION WRITER: In the following paragraph indicate the power factor that the system is capable of maintaining when existing power factor correction equipment is properly utilized. This paragraph will have to be

modified if the local power company bills the activity on a KVA basis. In this case, it is recommended that a system power factor of 0.9 or greater be maintained.

*****!

c. Electrical Power Generation. The electrical power generating system shall be efficiently operated to generate electricity at !SPECIFY RATED VOLTAGE, PLUS, OR MINUS TOLERANCE! volts, 60 hertz plus or minus 0.2 hertz (except when the system is paralleled with a commercial power system), with a system power factor greater than !SPECIFY VALUE!. The Contractor shall determine the most optimum make/buy ratio of electrical power to limit or reduce the activity's electrical demand and operate the electrical power generating plant, within the system capabilities, to minimize the cost of electricity while meeting the activity steam demand load. The Contractor shall operate, maintain, and monitor the electrical power generating system in accordance with the approved operating procedures. The Contractor shall periodically review and update the operating procedures of the electrical power generating plant to ensure continued economical plant operation. All revised operating procedures shall be approved by the ACO. The Contractor shall provide supporting calculations for determination of the optimum make/buy ratio of electric power.

d. Plant Operation

(1) Operation of the central heating and electrical power generating plant includes, but is not limited to: start-up and shutdown of heating equipment, turbine generators (both single machine and parallel operation), and diesel generators; operation of the plant electrical substation which includes synchronizing with the local commercial power company; operator maintenance and inspection (that maintenance required to operate the boilers, turbine generators, or diesel engines on a daily basis); efficient and economical steam and electrical power production, as specified in the "Steam Generation" and "Electrical Power Generation" paragraphs of this clause, to assure its availability at the lowest possible cost to the Government. This work also includes record keeping of operations and conditions, analysis of records to correct non-optimal practices, water treatment, monitoring warranties, testing operations and capabilities of the central heating and electrical power generating plant, periodic operation and inspection of idle equipment, purchasing of supplies other than fuel, and cleaning, preservation, lubrication, and adjustment of plant equipment. The Contractor shall provide an operating scheme for auxiliary plant equipment during summer and winter load periods.

!*****!

NOTE TO SPECIFICATION WRITER: Modify the following paragraphs to suit if diesel engines or gas turbines are installed instead of boilers. Also, if coal is used as a fuel, an additional paragraph should be added detailing the Contractor's responsibilities for coal receiving, storage and handling. Ash removal and disposal should also be addressed. The following paragraph may be modified to require the Contractor to furnish fuel oil. In this event, the Contractor should be required to have a specified number of days supply on hand at all times.

*****!

(2) Fuel Oil. The Government will furnish fuel for heating and steam operations. The Contractor shall report !SPECIFY FREQUENCY! to the ACO the amount of usable fuel available for the plant. The Contractor shall initiate fuel orders as directed by the ACO, receive fuel from tanker trucks, transfer to

and among storage tanks, and make all operational fuel transfers. The Contractor shall maintain an accurate record of the amount of fuel received in each delivery. Tank soundings shall be taken and recorded before and after fuel delivery to verify quantities received. The Contractor shall maintain all fuel oil handling equipment including storage tanks, pumps, piping, and heaters and shall comply with all federal regulations pertaining to fuel operations.

NOTE TO SPECIFICATION WRITER: The specific action to be required of the Contractor in the following paragraph during an operational emergency will depend on what action is being taken by in-house forces.
*****!

(3) Operational Emergencies. Operational emergencies such as ruptured mains, loss of boilers or turbine generators, etc., which reduce boiler pressure or generator capacity below 80 percent of normal or which result in a change in the plant's capacity shall be reported within 15 minutes of occurrence to the ACO. The Contractor shall identify the probable cause for the reduction and the estimated time to restore full electrical and/or steam capacity. If full capability cannot be restored within !INSERT! hours, the Contractor shall !SPECIFY ACTION TO BE TAKEN BY THE CONTRACTOR!. Historical data for operational emergencies is shown in Attachment J-C10.

e. Plant Maintenance. The maintenance of the central heating and electrical power generating plant shall include steam heating sources; electrical generating equipment; fuel storage and handling, water treatment, feedwater, condensing, flue gas and air system equipment; miscellaneous pumps and plant instrumentation, electrical equipment and components; as well as associated appurtenances necessary to generate and deliver steam and electricity to facilities external to the plant. During boiler safety inspections and/or certifications conducted/required by the Government, the Contractor shall provide a qualified operator on standby.

!*****
NOTE TO SPECIFICATION WRITER: In the following paragraph show ranges for pH, phosphate, sulfite, and causticity and max/min values for other parameters. Specify any internal treatment compounds and concentration limits. If amines are to be used, specify the compound and method of monitoring its concentration.
*****!

f. Water Testing and Treatment. At least once during each day that the plant is in operation, the Contractor shall collect feedwater, boiler water, and condensate samples from each operating boiler for testing. The Contractor shall perform or have performed the necessary tests to meet applicable manufacturer requirements and/or local requirements on hardness, phosphate, sulfite, causticity (as OH), pH, and total dissolved solids. !SPECIFY PERIOD, e.g., MONTHLY!, a water analysis report shall be forwarded to the ACO. The Contractor shall provide all water treatment chemicals required for plant operations. Boiler water shall be maintained within the following limits: phosphate !INSERT!, sulfite !INSERT!, pH !INSERT! to !INSERT!, hardness (as CaCO₃) !INSERT!, causticity (as OH) !INSERT!, conductivity !INSERT!. Changes in the existing water treatment plan must be approved by the ACO and the NAVFAC Engineering Field Division. At no additional cost to the Government, the ACO has the option of requiring sampling and testing once per shift, specifying the time(s) the samples are taken, observing the sample taking, and directing that the samples be analyzed by an independent laboratory. The Contractor shall

ensure that the minimum blowdown rates required to meet water standards are used to maximize energy conservation.

g. Operation Efficiency Standards. The Contractor shall meet the present operating standard of the heating plant. This standard is based on present efficiency of the boilers. Boiler efficiency shall be calculated by the ASME input/output method. For boilers not equipped with instrumentation that permits the determination of thermal efficiency by the input/output method, exit flue gas temperatures and combustion efficiency shall be used as indicators of boiler efficiency. Efficiency tests shall be taken every eight hours of operation. Each monthly average 50°F increment increase in exit gas temperature above the base temperature shall be equated to a one percent decrease in boiler efficiency for the month. The procedure for determining the efficiency used in the calculation shall be consistent throughout the term of the contract. The input energy calculation shall be based on standard fuel heating values contained in Attachment J-C1. The minimum acceptable boiler efficiency shall be !INSERT! % or the maximum exit gas temperature shall be !INSERT! °F. These standards are subject to revision based on changes in future operational conditions of the boiler plant. For example, improvements in the boiler plant that are accomplished at Government expense may require an increase in minimum acceptable efficiency.

h. Boiler Performance Report. A boiler performance report shall be prepared for each operating boiler on a weekly basis. The boiler performance report shall include:

- A plot of boiler combustion efficiency versus boiler load.
- A plot of the temperature before and after the economizer.
- A plot of temperature difference between the boiler feedwater and exit stack gas temperature versus load for hot water generators.
- A plot of the temperature before and after the economizer.

(1) Plots of combustion efficiency, and temperature difference versus load should be reported for the full range of operating loads each week.

(2) Combustion efficiency can be obtained by direct measurement using a combustion analyzer. Combustion efficiency can also be obtained by measuring boiler intake air temperature, exhaust gas temperature, and CO₂ or O₂, and finding the combustion efficiency on charts for the particular fuel being fired. If measured combustion efficiencies are more than three percent below the present combustion efficiencies, corrective action is required.

(3) Water and flue gas temperature difference is an indicator of the cleanliness of the boiler watersides and firesides. A plot of this temperature difference should be made after the boiler watersides and firesides have been cleaned. If the temperature difference rises by more than 80°F at several load points, deposits have probably formed and should be removed. As a check, combustion efficiency should drop as the temperature difference rises.

i. Contractor's Failure to Meet Minimum Heating Plant Efficiency Standard

(1) If the Contractor fails to meet the minimum efficiency standard on a monthly basis as established by the "Operation Efficiency Standards" paragraph of this section, the Government shall deduct an amount equal to the cost of additional fuel required as a result of inefficient operations. The cost of additional fuel will be based on the Navy Stock Fuel Price. Also, the Government will deduct liquidated damages as specified in the "CONSEQUENCES OF CONTRACTOR'S FAILURE TO PERFORM REQUIRED SERVICES" clause of Section E.

(2) The formula used to derive the additional fuel cost is as follows:

!*****
 NOTE TO SPECIFICATION WRITER: The base efficiency (BE) in the following formula is the minimum acceptable boiler efficiency. It is established by utilizing past aggregate plant boiler performance data over the past three to five years. Determination of actual monthly efficiency (AE) during the contract period will be as defined in the "Operation Efficiency Standards" paragraph.
 *****!

$$\frac{(BE - AE)}{BE \times AE} \times TMS \times \frac{SP}{HHV} = \text{Additional Fuel Cost}$$

Where:

- BE - base efficiency !INSERT!%
- AE - actual monthly efficiency (%)
- TMS - total monthly steam production (million Btu)
- HHV - higher heating value (million Btu/unit volume)
- SP - Navy fuel stock price (dollars/unit volume)

!*****
 NOTE TO SPECIFICATION WRITER: Indicate power factor (PF) that the system is capable of maintaining when existing power factor correction equipment is properly utilized. If this does not coincide with the power factor required by the local commercial power company, the following paragraph should be modified accordingly.

The following paragraph should be omitted if the local commercial power company does not penalize the activity for a low power factor and bills strictly on a KWH basis.

The following paragraph will have to be modified if the local power company bills the activity on a KVA basis. In this case it is recommended that a system power factor of 0.9 or greater be maintained. The Government would then deduct the additional costs as computed by the following formula:

| | | | | |
|---------|-------------|------------|----------|------------|
| Total | KVA at | KVA at | Cost | Liquidated |
| Penalty | = Actual PF | - 0.9 PF | X of KVA | + Damages |
| Charge | (From Power | (computed) | | |
| | Co. Bill) | | | |

*****!

j. Contractor's Failure to Operate the Electrical Power Generating Plant Efficiently.

(1) If the Contractor fails to maintain the system power factor at !SPECIFY POWER FACTOR VALUE!, as specified in the "Electrical Power Generation"

paragraph of this section, the Government will deduct an amount equal to the penalty cost and/or other charges by the local commercial power company plus liquidated damages, as specified in "CONSEQUENCES OF CONTRACTOR'S FAILURE TO PERFORM REQUIRED SERVICES" clause of Section E.

!*****
NOTE TO SPECIFICATION WRITER: It may be necessary to add additional penalty clauses to the following paragraph depending on the type of contract the activity has with the local commercial power company.
*****!

(2) If the Contractor fails to operate the electrical generators within system capabilities, to minimize the activity's purchased electrical demand in accordance with the "Electrical Power Generation" paragraph of this section, the Government will deduct an amount equal to the increased demand charged by the local commercial power company plus liquidated damages as specified in "CONSEQUENCES OF CONTRACTOR'S FAILURE TO PERFORM REQUIRED SERVICES" clause of Section E.

!*****
NOTE TO SPECIFICATION WRITER: At most activities the certification of boilers and unfired pressure vessels is provided by Government boiler inspectors available either within the activity or from the Engineering Field Division. If a Government boiler inspector is not available or the activity does not choose to utilize a Government employee, the activity will have to obtain this service under separate contract from an independent source. In no case shall this function be obtained from the same Contractor who operates/maintains the steam generating plant and steam distribution systems. Suggested source would be a casualty insurance company.
*****!

k. Certification

(1) The Contractor shall clean and prepare heating system boilers and unfired pressure vessels in the system for certification. Each unit shall be prepared for certification in accordance with NAVFAC MO-324. The Contractor shall operate the boilers and perform hydrostatic pressure testing during the certification as directed by the Government inspector.

(2) All boilers and unfired pressure vessels will be inspected and certified by the Government in accordance with NAVFAC MO-324. Units for which certification has been withheld shall not be operated without the written concurrence of the ACO. Boiler inspection safety certificates shall be voided immediately upon the discovery of a safety deficiency regardless of the expiration date on the certificate. The certificate shall again be valid only after the deficiency has been corrected by the Contractor and checked by the Government.

C.26 STEAM DISTRIBUTION SYSTEM. The Contractor shall operate, maintain, and repair the steam distribution system described in Attachment J-C1, including approximately !INSERT! linear feet of steam distribution lines and supporting equipment and components. The steam distribution system originates at the central plant and extends throughout the activity to and including the pressure reducing valve (PRV) or the building shut off valve where there is no PRV. The system includes expansion joints, expansion loops, pipe anchors, valves, traps, insulation, conduit and manholes, structural supports, steam piping (aboveground

and underground), condensate return piping, radiators, heat exchangers, and heating/re-heat coils. Seasonal start-ups and shut-downs of the heating distribution system shall be performed in accordance with NAVFAC MO-209.

a. Insulation Repair or Replacement. When repairing or replacing insulation, the type and thickness shall be governed by !INSERT APPLICABLE REQUIREMENTS!.

b. Testing of System After Repairs. After completing repairs to an area which affects the integrity of the steam system, the Contractor shall pressurize the system and check for leaks. If the repair is made to a buried section of the system, a pressure test shall be accomplished prior to covering the repaired area.

c. Maintaining Steam Trap Data-Base. The Contractor shall update the existing data-base of all steam traps as system changes are made.

END OF SECTION C

PART III - LIST OF DOCUMENTS, EXHIBITS, AND OTHER ATTACHMENTS

SECTION J: LIST OF ATTACHMENTS

!*****
NOTE TO SPECIFICATION WRITER: The numbering system used below is designed so that the number of the Attachment refers back to the Section that it supports. Attachment J-C1 supports Section C and is the first Attachment referenced in that Section. The user should include those Attachments marked "*", as required.
*****!

TABLE OF CONTENTS

| <u>ATTACHMENT</u> <u>NUMBER</u> | <u>TITLE</u> |
|------------------------------------|---|
| J-1 | Wage Determination !INSERT NUMBER! |
| J-C1 | Description of Electrical Power Generation, Heating Plant, and Steam Distribution Systems |
| J-C2 | Government Furnished Facilities |
| J-C3 | Government Furnished Equipment |
| J-C4 | Government Furnished Material |
| J-C5 | Contractor Furnished Items |
| J-C6 | Applicable Publications |
| J-C7 | List of Required Records and Reports |
| J-C8 | Preventive Maintenance |
| J-C9 | Plant Logs, Records, and Report Formats |
| J-C10 | Historical Data |
| J-C11 | Activity Travel Zone Map |
| J-E1 | List of Engineered Performance Standards Handbooks |
| J-E2 | Performance Requirements Summary (PRS) and Payment Analysis |
| J-G1 * | Delivery Order Sample, DD Form 1155 |
| J-G2 * | Invoicing Instructions |
| J-H1 * | Station Regulations |
| J-H2 * | Energy Conservation |
| J-H3 * | Fire Protection |
| J-H4 * | Environmental Protection |
| J-H5 * | Safety Requirements |

ATTACHMENT J-1

WAGE DETERMINATION !INSERT NUMBER!

Attached is Wage Determination !INSERT NUMBER!. This determination specifies the minimum wages and fringe benefits to be paid under this contract.

ATTACHMENT J-C1

DESCRIPTION OF ELECTRICAL POWER GENERATION, HEATING PLANT,
AND STEAM DISTRIBUTION SYSTEMS

!*****
NOTE TO SPECIFICATION WRITER: Identify and describe by rating, capacity, type, size, etc., all plant systems and equipment to be operated and maintained by the Contractor. Describe in detail the combustion control system for boilers. The fuel higher heating value (HHV) may be attained from the geographical EFD for the particular type fuel used.
*****!

1. **BOILERS**

| <u>TYPE</u> | <u>FUEL</u> | | | <u>DESIGN</u> | <u>DESIGN</u> |
|-------------|-------------|------------|--------------|-----------------|-----------------|
| <u>FUEL</u> | <u>HHV</u> | <u>MFG</u> | <u>MODEL</u> | <u>CAPACITY</u> | <u>PRESSURE</u> |

2. **TURBINE GENERATORS**

| | <u>MFG</u> | <u>MODEL</u> | <u>DESIGN</u> | <u>DESIGN</u> |
|--|------------|--------------|---------------|----------------|
| | | | <u>SPEED</u> | <u>VOLTAGE</u> |

!*****
NOTE TO SPECIFICATION WRITER: Major components should be listed here to give the Contractor some idea of equipment type, system complexity, and capability. (Include equipment as appropriate, i.e. pumps, feedwater deaerator, tanks, fans, precipitators, baghouse, economizers, etc.)
*****!

3. **MAJOR COMPONENTS**

| <u>EQUIPMENT</u> | <u>SIZE</u> | <u>NUMBER</u> | <u>MANUFACTURER</u> | <u>MODEL</u> |
|------------------|-------------|---------------|---------------------|--------------|
|------------------|-------------|---------------|---------------------|--------------|

4. OPERATIONAL DATA

| <u>MONTH/YR</u> | <u>TOTAL STEAM PRODUCED (LBS)</u> | <u>TOTAL STEAM EXPORTED (LBS)</u> | <u>FUEL USED (GAL)</u> | <u>MAKE-UP WATER (GAL)</u> | <u>MAX STEAM DEMAND (LBS/HR)</u> |
|-----------------|---------------------------------------|---------------------------------------|----------------------------|--------------------------------|--|
|-----------------|---------------------------------------|---------------------------------------|----------------------------|--------------------------------|--|

| <u>MONTH/YR</u> | <u>TOTAL ELECTRICITY GENERATED (KWH)</u> | <u>MAXIMUM ELECTRICAL DEMAND (KWH)</u> | <u>TOTAL ELECTRICITY PURCHASED (KWH)</u> |
|-----------------|--|--|--|
|-----------------|--|--|--|

!*****
 NOTE TO SPECIFICATION WRITER: Describe length of various pipe sizes, type of
 steam traps and expansion joints, above ground conduit or direct burial,
 tunnels, trenches, number of facilities served, and any special problems, i.e.
 flooding, etc.
 *****!

5. STEAM DISTRIBUTION SYSTEM

| <u>MAJOR COMPONENTS DESCRIPTION & SIZE</u> | <u>LOCATION</u> |
|--|-----------------|
|--|-----------------|

ATTACHMENT J-C2

GOVERNMENT FURNISHED FACILITIES

!*****
NOTE TO SPECIFICATION WRITER: List all facilities that are to be provided to the Contractor. Provide descriptive characteristics and provide simple drawings of each facility showing Contractor areas, areas retained for use by the Government, etc. The following is for example only.
*****!

The following facilities will be made available for use by the Contractor, as specified in the "GOVERNMENT FURNISHED PROPERTY AND SERVICES" clause, Section C.

| <u>Building #/Location</u> | <u>Square Feet</u> | <u>Description</u> | |
|----------------------------|--------------------|-----------------------|-----------------|
| 5/Naval Station | 2400 | Maintenance Shop (1) | 1000 SF |
| | | Office Space (2) | 900 SF |
| | | Lounge Area (1) | 150 SF |
| | | Rest Rooms (2) | 200 SF |
| | | Hallway, Stairs, etc. | <u>150 SF</u> |
| | | | TOTAL = 2400 SF |

| | | | |
|-------------------|-----|--------------------------|--|
| 212/Naval Station | 250 | Flammable Storage Locker | |
|-------------------|-----|--------------------------|--|

ATTACHMENT J-C3

GOVERNMENT FURNISHED EQUIPMENT

!*****

NOTE TO SPECIFICATION WRITER: List all equipment that will be provided to the Contractor. Provide descriptive characteristics including manufacturer, model type, age, location, etc. The following is for example only.

*****!

The following items of equipment will be made available for use by the Contractor, as specified in the "GOVERNMENT FURNISHED PROPERTY AND SERVICES" clause, Section C.

| <u>Item</u> | <u>Model Number</u> | <u>Brand Name</u> | <u>Age</u> | <u>Location</u> |
|---------------|---------------------|-------------------|------------|-----------------|
| 10-in Grinder | 011702 | Schaver | 15 years | Bldg. 5 |
| Pipe Cutter | PS11080 | Rigid | 10 years | Bldg. 5 |
| Drill Press | 382528 | Milwaukee | 12 years | Bldg. 5 |

!ETC.!

ATTACHMENT J-C4

GOVERNMENT FURNISHED MATERIAL

!*****
NOTE TO SPECIFICATION WRITER: List all materials that are to be provided to the Contractor. Provide descriptive characteristics including generic name, federal or commercial specifications, and quantities of issue. Indicate how it is to be provided to the Contractor, does he/she pick it up (where and when) or will the Government deliver it?
*****!

The following material will be made available for use by the Contractor, as specified in the "GOVERNMENT FURNISHED PROPERTY AND SERVICES" clause, Section C.

PART A - ONE TIME ISSUE

| <u>Description</u> | <u>Quantity</u> |
|--------------------|-----------------|
|--------------------|-----------------|

PART B - INSURANCE ITEMS

| <u>Description</u> | <u>Minimum Quantity</u> |
|--------------------|-------------------------|
|--------------------|-------------------------|

ATTACHMENT J-C5

CONTRACTOR FURNISHED ITEMS

!*****
NOTE TO SPECIFICATION WRITER: Include only materials which must conform to federal or commercial specifications. Cite specifications. Materials not specifically included in this attachment shall be of acceptable grade and quality as specified in clause C.5.
*****!

ATTACHMENT J-C6

APPLICABLE PUBLICATIONS

!*****
NOTE TO SPECIFICATION WRITER: List all directives, instructions, manuals,
references, etc. referred by this specification.
*****!

1. **NAVY REGULATIONS AND MANUALS**

NAVFACINST 11300.36, Operation and Maintenance Guidelines for Shore Activity
Power Generation and Heating Equipment

NAVFAC MO-205, Central Heating and Steam Electric Generating Plants

NAVFAC MO-209, Maintenance of Steam, Hot Water, and Compressed Air
Distribution System

NAVFAC MO-306, Corrosion Prevention and Control

NAVFAC MO-307, Cathodic Protection Systems Maintenance

NAVFAC MO-321, Facilities Management

NAVFAC MO-322, Inspection of Shore Facilities

NAVFAC MO-324, Inspection and Certification of Boilers and Unfired Pressure
Vessels

2. **NON-GOVERNMENT STANDARDS**

Manufacturer's Instructions, Operational and Maintenance Manuals

Local Standard Operating Procedures for Heating, Steam Distribution, and
Electrical Power Generating Systems

Other Equipment Manufacturer's Literature !MODIFY TO MATCH EXISTING LOCAL
AVAILABILITY!

ATTACHMENT J-C7

LIST OF REQUIRED RECORDS AND REPORTS

!*****!
NOTE TO SPECIFICATION WRITER: Identify applicable records and reports that pertain to management of systems and equipment. Periodic (daily, weekly, etc.) operating logs and reports are to be identified in Attachment J-C9.
*****!

1. **RECORDS (CONTRACTOR RESPONSIBILITY)**

- a.
- b.
- c.
- d.
- e.
- f.

2. **REPORTS (CONTRACTOR RESPONSIBILITY)**

| <u>Report</u> | <u>When Submitted</u> |
|------------------|-----------------------|
| a. NAVCOMPT 2126 | Monthly |
| b. | |
| c. | |
| d. | |
| e. | |
| f. | |

3. **REPORTS (GOVERNMENT RESPONSIBILITY, INPUT PROVIDED BY CONTRACTOR)**

| <u>Report</u> | <u>When Submitted</u> |
|---------------|-----------------------|
| a. | |
| b. | |
| c. | |
| d. | |
| e. | |
| f. | |

ATTACHMENT J-C8

PREVENTIVE MAINTENANCE

!*****
NOTE TO SPECIFICATION WRITER: All equipment on which preventive maintenance is required should be listed on this attachment. The following column headings are recommended:

1. Equipment Identification
2. Location
3. Quantity
4. Capacity/Size
5. Manufacturer
6. Model Number
7. Approximate Age
8. Serial Number
9. PM Frequency
10. PM Requirement (See Note 1)
11. Material Dollar Limitation (See Note 2)

PM requirements should be expressed in some type of code, which refers to enclosures to this attachment. The enclosures should provide specific PM requirements (checks, inspections, adjustments) for each type of equipment. Users should list only those items for which PM is considered critical, and only those services which can be inspected.

The limit of the Contractor's responsibility should be specified either for each piece of equipment or for groups of similar equipment. These limits must agree with the limits specified in the "CORRECTIVE REPAIR LIMITATION" clause in Section C.

*****!

ATTACHMENT J-C9

PLANT LOGS, RECORDS, AND REPORT FORMATS

!*****

NOTE TO SPECIFICATION WRITER: The format, frequency and specific data to be reported and/or logged should be tailored by each activity in order to obtain the information it considers pertinent for the facilities, and to enable the activity to periodically monitor that the Contractor's operations are within acceptable limits. Keep in mind that numerous reports and/or high frequency requirements cost more money. Reports should be minimized and formats designed to consolidate and provide the necessary information with minimal effort. The activity will have to receive sufficient data to allow preparation of the Utilities Cost Analysis Report, NAVCOMPT Form 2127. As a minimum, it is recommended the Contractor maintain a daily log for boiler operations, turbine generator operations, and other auxiliary equipment/systems if part of the contract; and a boiler water treatment log, maintenance log, and a fuel consumption and availability log. The minimum reports recommended would cover boiler operations including efficiencies, turbine generator operations including system power factor log, auxiliary equipment/systems if appropriate, utility inspections, fuel consumption/availability, boiler water tests/treatment, and maintenance/repair work. Attach the following typical data report forms as appropriate:

- . Temperature and Pressure Record Forms
- . Plant Boiler Logs
- . Fuel Oil and/or Coal Receipt and Record Forms
- . Plant Turbine Generator Operating Logs
- . Plant Auxiliaries Logs
- . Plant Emergency Generator Operating Logs
- . Daily Operating Log, Demineralizer Plant
- . Daily Water Test Work Record

*****!

ATTACHMENT J-C10

HISTORICAL DATA

The data in this attachment is taken from the activity's records, and is provided to indicate the types and an approximate order of magnitude of the work to be accomplished under the contract. It is not, however, by itself, considered sufficiently accurate for bidding purposes.

The following tables depict the number of jobs performed during FY !INSERT! and !INSERT! with the associated material costs.

EMERGENCY SERVICE CALLS

Number of emergency service calls, FY-!INSERT!:

OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP

Electrical Systems
Heating Plant Systems
Steam Distribution Systems

The average material cost per call was \$!INSERT!.

Number of emergency service calls, FY-!INSERT!:

OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP

Electrical Systems
Heating Plant Systems
Steam Distribution Systems

The average material cost per call was \$!INSERT!.

ROUTINE SERVICE CALLS

Number of routine service calls, FY-!INSERT!:

OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP

Electrical Systems
Heating Plant Systems
Steam Distribution Systems

The average material cost per call was \$!INSERT!.

Number of routine service calls, FY-!INSERT!:

OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP

Electrical Systems
Heating Plant Systems
Steam Distribution Systems

The average material cost per call was \$!INSERT!.

MINOR MAINTENANCE AND REPAIR

| <u>System</u> | <u>Number of Jobs</u> |
|------------------------------|-----------------------|
| Electrical Systems | !INSERT! |
| Heating Plant Systems | !INSERT! |
| Heating Distribution Systems | !INSERT! |

TRAVEL ZONE

1 2 3 4 5 6 7 TOTAL

of jobs performed
EPS hours

Job Size (EPS hours)

(0-16) (17-40) (41-80) (81-120) (121-160)

No. of jobs, FY-!INSERT!
No. of jobs, FY-!INSERT!

OPERATIONAL EMERGENCIES

!*****
NOTE TO SPECIFICATION WRITER: List the number of occurrences and the total minutes of reduced service reliability or capacity for each month.
*****!

The following table shows the number of occurrences by month for electrical power generation and steam production, that service reliability or capacity was reduced, and the duration of the reduction expressed in minutes.

Electrical power generation:

OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP

Occurrences
Total Duration

Steam production:

OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP

Occurrences

Total Duration

ATTACHMENT J-C11

ACTIVITY TRAVEL ZONE MAP

!*****
NOTE TO SPECIFICATION WRITER: Attach a legible copy of the activity's EPS
travel zone map.
*****!

ATTACHMENT J-E1

LIST OF ENGINEERED PERFORMANCE STANDARDS HANDBOOKS

| <u>HANDBOOK NUMBER</u> | <u>CRAFT</u> |
|------------------------|---|
| 01 | General |
| 02 | Carpentry |
| 03 | Electric, Electronic |
| 04 | Heating, Cooling, Ventilation |
| 05 | Janitorial |
| 06 | Machine Shop, Machine Repairs |
| 07 | Masonry |
| 08 | Moving, Rigging |
| 09 | Paint |
| 10 | Pipefitting, Plumbing |
| 11 | Roads, Grounds, Pest Control, and Refuse Collection |
| 12 | Sheet Metal, Structural Iron & Welding |
| 13 | Trackage |
| 14 | Wharfbuilding |
| - | Preventive Maintenance/Recurring Maintenance |
| - | Service |
| - | Work Estimating Desk Guide |

EPS handbooks are available in electronic format from the following Naval Facilities Engineering Command Engineering Field Divisions.

Commander
Atlantic Division, Naval Facilities Engineering Command
1510 Gilbert Street
Norfolk, VA 23511-2699
Phone: (804)445-8825

Commander
Pacific Division, Naval Facilities Engineering Command
Building 258 Makalapa
Pearl Harbor, HI 96860-7300
Phone: (808)474-5124

Commanding Officer
Southwestern Division, Naval Facilities Engineering Command
1220 Pacific Highway
San Diego, CA 92132-5182
Phone: (619)532-2937

Commanding Officer
Southern Division, Naval Facilities Engineering Command
2155 Eagle Drive
P.O. Box 190010
North Charleston, SC 29419-9010
Phone: (803)743-0505

ATTACHMENT J-E2

PERFORMANCE REQUIREMENTS SUMMARY (PRS) TABLE

!*****
NOTE TO SPECIFICATION WRITER: A PRS table is included in this attachment to comply with the requirements of NAVFAC MO-327 and to facilitate the use of random sampling for extrapolated deductions (RSED), should the user choose this method of surveillance. See the NAVFAC RSED (V3.2) implementation guide for further guidance.
*****!

1. The purpose of this attachment is to:

a. List the contract requirements and performance indicators considered most critical to satisfactory contract performance (See PRS Column 1).

b. Summarize the standards of performance in the specification for each specified performance indicator (See PRS Column 2).

c. Provide maximum allowable defect rates (MADRs) for each performance indicator (See PRS Column 3). The MADR is the percentage of the work that, if found unacceptable over a period of time, reflects the point where the Contractor's quality control program becomes unsatisfactory to the Government.

d. Specify the percentage of contract requirement attributable to each listed performance indicator. (See PRS Column 4). This is a percentage of the applicable line item in the Schedule of Deductions.

!*****
NOTE TO SPECIFICATION WRITER: The percentages in the COST OF REQUIRED SERVICES column of the PRS table are used in conjunction with the Schedule of Deductions to calculate payment deductions for partially performed work. The user should verify that the percentages shown are representative of the activity's requirements, and modify as required. The MADRs shown are suggested rates only.
*****!

PERFORMANCE REQUIREMENTS SUMMARY TABLE

| PERFORMANCE INDICATOR (Column 1) | STANDARD OF PERFORMANCE (Column 2) | MAX ALLOW DEFECT RATE (Column 3) | COST OF REQUIRED SERVICES (Column 4) |
|--|---|-------------------------------------|---|
| 1. CONTRACT REQUIREMENT: OPERATE CENTRAL PLANT | | | |
| A. Watchstanding | Qualified personnel at their stations (Clause C.9) | 5% | 20% |
| B. Plant Logs | Logs properly maintained (Clause C.11) | 5% | 25% |
| C. Plant Procedures | Approved operating procedures followed (Paragraph C.24.a) | 5% | 25% |
| D. Water Quality | (Paragraph C.25.f) | 5% | 30% |
| 1. Phosphate | !INSERT! | | |
| 2. Sulfate | !INSERT! | | |
| 3. pH | !INSERT! to !INSERT! | | |
| 4. Hardness (as CaCO ₃) | !INSERT! | | |
| 5. Causticity (as OH) | !INSERT! | | |
| 6. Conductivity | !INSERT! | | |
| 2. CONTRACT REQUIREMENT: MAINTAIN CENTRAL PLANT | | | |
| A. Timeliness | Perform routine maintenance per approved operating procedures (Clause C.25) | 5% | 40% |
| B. Quality maintenance as indicated by plant parameters such as: | | 5% | 60% |
| 1. Stack temperature | Increase indicates tubes not blown | | |
| 2. Feedwater makeup | Increase indicates condensate return problems | | |
| 3. Condensate temperature | Increase indicates traps not properly maintained | | |
| 4. Manual operation of fully automatic plant | Increase in frequency indicates controls not maintained | | |

| PERFORMANCE INDICATOR (Column 1) | STANDARD OF PERFORMANCE (Column 2) | MAX ALLOW DEFECT RATE (Column 3) | COST OF REQUIRED SERVICES (Column 4) |
|--|--|-------------------------------------|---|
| 5. Economizer temperature difference | !INSERT! degrees | | |
| 6. Air preheater temperature | Air temperature to boilers !INSERT! degrees | | |
| 7. Fuel strainer pressure drop | !INSERT! psi | | |
| 8. TDS of boiler water | Increase indicates need for more frequent blow-downs | | |
| 9. High turbine/generator bearing temperature | Increase in bearing temperature indicates improper lubrication or bearing failure | | |
| 10. High generator winding temperature | Increase in generator winding temperature indicates insufficient cooling air or generator overload | | |
| 11. Turbine generator vibration or unusual noise | Vibration or unusual noise indicates rotor imbalance | | |

3. CONTRACT REQUIREMENT: PREVENTIVE MAINTENANCE

| | | | |
|-----------------|--|-----|-----|
| A. Timeliness | Work performed on schedule (Clause C.19 and Attachment J-C8) | 10% | 35% |
| B. Quality Work | Conformance with quality standards, Section C | 10% | 50% |
| C. Document | Work is documented accurately (Paragraph C.8.c) | 10% | 15% |

4. CONTRACT REQUIREMENT: SERVICE CALLS

| | | | |
|----------------------------------|--|----|-----|
| A. Response within allotted time | Contractor responds within (Paragraph C.21.b) | 5% | 30% |
| B. Document | Work is documented accurately (Paragraph C.21.a) | 5% | 10% |

| PERFORMANCE INDICATOR (Column 1) | STANDARD OF PERFORMANCE (Column 2) | MAX ALLOW DEFECT RATE (Column 3) | COST OF REQUIRED SERVICES (Column 4) |
|--|---|--|---|
| C. Quality Work | Conformance with quality standards, Section C | 5% | 60% |
| 5. CONTRACT REQUIREMENT: RECORDS AND REPORTS | | | |
| A. Timeliness | Submitted on time (Clauses C.8 and C.11) | 5% | 10% |
| B. Completeness | Appropriate information supplied (Clauses C.8 and C.11) | 5% | 35% |
| C. Accuracy | No more than 1% errors (Clauses C.8 and C.11) | 5% | 55% |

END OF SECTION J

QUALITY ASSURANCE GUIDE
FOR
ELECTRICAL POWER GENERATION, HEATING PLANT, AND STEAM
DISTRIBUTION SYSTEMS OPERATION, MAINTENANCE, AND REPAIR

QUALITY ASSURANCE GUIDE
ELECTRICAL POWER GENERATION, HEATING PLANT, AND STEAM
DISTRIBUTION SYSTEMS OPERATION, MAINTENANCE, AND REPAIR

TABLE OF CONTENTS

| | PAGE NO. |
|--|-------------|
| I. INTRODUCTION..... | QA-1 |
| A. Overview..... | QA-1 |
| B. QAE Training..... | QA-1 |
| C. QAE Staffing..... | QA-2 |
| II. QUALITY ASSURANCE PLAN DEVELOPMENT..... | QA-2 |
| A. Functional Considerations..... | QA-2 |
| B. Selection of Methods of Surveillance..... | QA-3 |
| C. Performance Requirements Summary..... | QA-4 |
| III. SAMPLE QUALITY ASSURANCE PLANS..... | QA-5 |
| #1 Operation of Central Plant..... | QA-9 |
| #2 Maintenance of Central Plant..... | QA-14 |
| #3 Preventive Maintenance..... | QA-19 |
| #4 Service Calls..... | QA-23 |
| #5 Minor Maintenance and Repair..... | QA-27 |
| #6 Records and Reports..... | QA-30 |
| IV. CONTRACTOR'S OVERALL PERFORMANCE EVALUATION..... | QA-33 |

QUALITY ASSURANCE GUIDE
ELECTRICAL POWER GENERATION, HEATING PLANT, AND STEAM
DISTRIBUTION SYSTEMS OPERATION, MAINTENANCE, AND REPAIR

I. INTRODUCTION. Quality assurance (QA) is a program undertaken by the Government to provide some measure of the quality of goods and services purchased from a Contractor. To accomplish this the Government, in this case the naval shore activity contracting for electrical power generation, heating plant, and steam distribution services, must develop and implement a system that will ensure that the quantity and quality of the goods and services received comply with the requirements of the contract. This QA Guide is designed to assist the Facilities Support Contract Manager (FSCM) or other user in setting up the activity's QA program. The user is advised to refer to the NAVFAC manual MO-327, *Service Contracts: Specifications and Surveillance* and the NAVFAC *Random Sampling for Extrapolated Deductions (RSED V3.2)* implementation guide for more detailed information on the development and implementation of a QA Program.

A. Overview. This Guide suggests specific methods for monitoring electrical power generation, heating plant, and steam distribution services and provides sample QA Plans. These sample plans must be tailored concurrently with the tailoring of the GPWS to develop a unique QA program that fits the needs of the activity. The Guide is divided into four parts:

1. The Introduction presents an overview and gives information on Quality Assurance Evaluator (QAE) staffing and training.

2. QA Plan Development discusses special considerations that affect the way in which electrical power generation, heating plant, and steam distribution services may be monitored and suggests evaluation methods for each service included in this GPWS.

3. The sample QA plans include suggested evaluation worksheets, and sample Payment Analysis Forms. The Payment Analysis Forms illustrate how to use the Performance Requirements Summary (PRS) Table and inspection results to calculate payment deductions. The sample plans provided must be tailored by the user to conform with the tailored PWS.

4. Contractor's Overall Performance discusses how to use the QAE's inspection results to make an overall evaluation of Contractor performance, and provides a sample monthly summary report format.

B. QAE Training. Personnel tasked with monitoring the electrical power generation, heating plant, and steam distribution Contractor's performance must be experienced in electrical power generation and steam production and adequately trained in order to effectively implement the activity's QA program.

1. NAVFAC P-68, *Contracting Manual*, requires all individuals assigned QAE duties to attend the QAE training course provided by each of the NAVFAC geographical Engineering Field Divisions (EFDs) within six months of their assignment. If this training has not been received, the activity should take steps to have the QAE(s) attend the next available course and in the meantime should develop a local training program. EFD Code 10s (Facilities Division) should be contacted for QAE training scheduling or assistance. Additional training may also be required to ensure that appropriate technical expertise is available to inspect maintenance and repair to electrical generation systems, boilers, distribution systems, etc.

2. In addition to being intimately familiar with the requirements of the electrical power generation, heating plant, and steam distribution systems operation, maintenance, and repair specification, QAEs must also familiarize themselves with the procedures which will be used to order work, how the QAE will be notified when work has been completed and is ready for inspection, how customer complaints will be handled, etc.

C. QAE Staffing. Obviously the most well developed QA program will not be effective if QAE staffing is inadequate. Ideally QAE staffing should be based on a pre-determined number of contract inspections (QA plans) and related work requirements rather than the availability of QAEs. Once adequate QA plans have been developed, determining accurate QAE staffing levels to implement the plans is a relatively simple task involving an analysis of each plan's requirements. This analysis involves determining the average time needed to complete each of the inspections required (sample size or quantity of work) by each plan including travel time requirements, time required to prepare monthly reports and perform other administrative duties, time to perform any non-surveillance duties, etc. The NAVFAC EFDs have experience in conducting these staffing analyses and should be contacted if assistance is needed.

II. QUALITY ASSURANCE PLAN DEVELOPMENT. Ideally, QA plan development should be accomplished concurrently with development of the PWS, and viewed as a single process. The two are closely interrelated since one (the PWS) defines required work outputs and quality standards while the other defines how work outputs will be observed and measured. Many of the inspection problems which tend to turn up after contract award can be avoided by careful coordination between the specification and QA plan writers. Chapters 5 and 6 of NAVFAC MO-327 discuss methods of surveillance, inspection documentation, development of QAE schedules, and other issues related to the development of QA plans. The following discussion provides information relating specifically to surveillance of electrical power generation, heating plant, and steam distribution system services.

A. Functional Considerations. The following considerations in preparing QA plans for surveillance of electrical power generation, heating plant, and steam distribution system services are offered for user information.

1. Concept of Substantially Complete. Substantial completeness is a key concept of surveillance of work. Unfortunately this concept is difficult to explain in such a way as to achieve consistent application. The application of the concept rests on subjective judgment. It is therefore important that QA Plans provide sufficient guidance to make consistent application possible. The general determination of substantial completeness will be addressed here.

a. Definition. Substantially complete performance exists when there has been no willful departure from the terms of the contract and no omission of essential work. The Contractor has honestly and faithfully performed the required work and the only variance consists of minor omissions or defects. In general, work is substantially completed when 90%-95%-99% of the total work requirement is satisfactorily completed. The percentage selected is dependent upon the type of work performed. But, keep in mind that this is a subjective judgment and that there are no clear guidelines established. Substantially complete guidelines must be established for each work item.

b. Application. The concept of substantially complete is used for determination of Contractor overall performance. Each work occurrence evaluated will be classified as satisfactory (S) or unsatisfactory (U) based on QAE determination of substantial completion of work. At the end of the month, evaluated performance of each subfunction will be analyzed and the ODR computed. Payment deductions for work performance judged to be not substantially complete will not be applied to the entire unit of work. Deductions are made for only the work items documented as being defective.

2. Rework. As specified in the "CONSEQUENCES OF CONTRACTOR'S FAILURE TO PERFORM REQUIRED SERVICES" clause, the Government may require the Contractor to reperform work that has been identified as being poorly performed or not performed, provided a reasonable amount of time is allowed for the rework to be completed. The following should be considered.

a. The QAE will be too busy performing surveillance during most of the day to stop and call the Contractor every time a deficiency is found or a complaint is received. Therefore, the Contractor should be notified of customer complaints and discrepancies found by the QAE only at the end of the working day, unless the deficiency could affect the safety of the customers and cannot wait until the next scheduled work day for correction. The easiest way to make the Contractor aware of all noted deficiencies in writing, as required by the "CONSEQUENCES" clause, is to provide copies of completed "EVALUATION WORKSHEETS" daily. As documentation that worksheets were received the Contractor should sign and return each form.

b. Rework should normally be allowed for defects in quality of work; however, defects in some performance indicators, such as timely response and timely completion, obviously cannot be reworked.

c. Invoice payment deductions should always be made when a documented deficiency is not satisfactorily reworked. Liquidated damages should be deducted for all documented deficiencies, whether or not rework is accomplished.

B. Selection of Methods of Surveillance. Chapter 5 of NAVFAC MO-327 provides a general discussion of the five methods of surveillance available and the factors which influence which method(s) should be selected for use. The factors influencing the selection of a method of surveillance for a given service include the number (population) of items to be inspected; the importance, characteristics, and location of the service; and the availability of QAE resources. Specific factors which influence the selection of evaluation methods are discussed below.

1. 100% Inspection. One hundred percent inspection is generally used for those services which are considered very important, those which have relatively small monthly populations, and those included in the indefinite quantity portion of the contract. Generally, NAVFAC policy requires that every delivery order for indefinite quantity work be inspected and certified as being satisfactorily completed. Therefore, 100% inspection is recommended for all indefinite quantity work items.

2. Random Sampling. Surveillance based on random sampling evaluates a portion of the work, accurately estimating Contractor performance with statistical theory. Random sampling is most useful on large homogeneous populations where 100% inspection is not required or feasible. Also, if

appropriate provisions are included in the specification and the random sampling is properly conducted, the percentage of defective work items found in the sample (less a small adjustment for inaccuracies) may be deducted (extrapolated) from the Contractor's payment invoice. Details on the use of random sampling for extrapolated deductions (RSED) may be found in the NAVFAC RSED (V3.2) implementation guide.

a. Preventive Maintenance Inspections. If the population is both large enough and homogeneous, random sampling may be appropriate for the surveillance of preventive maintenance inspections. The key here is that different items of equipment should not be included in the same population if extrapolated deductions are being considered.

b. Random sampling may also be appropriate for the inspection of facility history files or other records if the number of records is large enough. Each of the files could be numbered sequentially for purposes of identification and the appropriate sample size randomly selected.

3. Planned Sampling. Planned sampling is similar to random sampling in that it is based on evaluating a portion of the work as the basis for estimating the Contractor's performance. Samples are selected based on a subjective rationale and the sample size is arbitrarily determined. Planned sampling is useful when population sizes are not large enough or homogeneous enough to make random sampling practical. Planned sampling is also useful when the services in one location are more important than those at other locations.

4. Unscheduled Inspections. An unscheduled inspection is what the name implies. Since it does not provide any measure of the Contractor's performance it should be used only to support other methods and never as a primary method of surveillance.

C. Performance Requirements Summary. As discussed previously in the User's Guide (paragraph III.F), the PRS table will be used primarily by the ACO in conjunction with the "CONSEQUENCES OF CONTRACTOR'S FAILURE TO PERFORM REQUIRED SERVICES" and "SCHEDULE OF DEDUCTIONS" clauses, in making payment deductions for unsatisfactory performance or non-performance of firm fixed-price contract requirements. The table is also very useful in the preparation of QA plans since it summarizes the performance indicators, standards of performance, methods of surveillance, and maximum allowable defect rates (MADR) for each firm fixed-price contract requirement. A sample PRS table, which reflects the contract requirements and performance indicators of this GPWS, is provided in Table 1 on the next page and in Attachment J-E2 of the GPWS. Note that the table in Attachment J-E2 does not include the "METHOD OF SURVEILLANCE" column, in compliance with NAVFAC's policy of not making this information available to the Contractor. NAVFAC MO-327 and the NAVFAC RSED (V3.2) implementation guide provide guidance on the development of PRS tables, and should be referred to by the user.

1. Chapters 3 and 4 of NAVFAC MO-327 and the RSED implementation guide discuss the development of performance indicators and standards of performance. Table 1 reflects the performance indicators and standards of this GPWS. Of course they must be modified to reflect the requirements of the tailored PWS.

2. MADRs are defect rates above which the Contractor's quality control is considered unsatisfactory for any particular performance indicator. The MADR selected for any particular performance indicator should reflect that

indicator's importance. Note that MADRs do not affect sample sizes or the method of calculating payment deductions in any way. Suggested values are included in Table 1.

3. Criteria for the selection of methods of surveillance is discussed in paragraph II.B of this QA Guide.

4. In the "% OF COST" column the price of each performance indicator is specified as a percentage of the price of the contract requirement with which it is associated. Careful consideration must be given to objectively assigning these percentages since they will be used in making payment deductions. One method which may be used is to calculate the cost of each work requirement using Engineered Performance Standards (EPS) and then use these costs to determine the percentage to be assigned to each performance indicator. Values for the timeliness performance indicators will be the most difficult to determine since they are by nature subjective. The percentages suggested in Table 1 should be carefully reviewed and tailored by the user.

III. SAMPLE QUALITY ASSURANCE PLANS. There are six sample QA plans provided in this GPWS. They are:

- QA Plan #1 - Operation of Central Plant
- QA Plan #2 - Maintenance of Central Plant
- QA Plan #3 - Preventive Maintenance
- QA Plan #4 - Service Calls
- QA Plan #5 - Minor Maintenance and Repair
- QA Plan #6 - Records and Reports

A. Each sample QA plan must be tailored by the user to reflect changes made by the user to Section C of the GPWS and the PRS table, and changes in methods of surveillance, evaluation worksheets, etc.

B. Tailored QA plans should be self contained documents written in sufficient detail to preclude extensive reference to other documents or manuals. Tailored plans should contain samples of all evaluation worksheets, summary reports, and other forms which will be used for documenting Contractor performance. Sample selection, evaluation, analysis of results, and other procedures should be as detailed as possible.

C. Sample size determinations, sampling procedures, and payment analysis calculations in the sample QA plans are based on manual methods. The user should be aware that numerous computerized methods of performing these functions have been developed which greatly reduce the time and number of manual calculations required, especially when random sampling is selected as the method of surveillance. One such computer program recently developed by NAVFAC will determine the sample size required for a given population of services to be random sampled, select the appropriate number of random numbers within a given range, perform payment calculations based on inspection results, and perform random sampling confidence calculations. Interested users should contact their geographical EFD for copies of this and other programs which may be available.

TABLE 1
PERFORMANCE REQUIREMENTS SUMMARY TABLE

| <u>PERFORMANCE INDICATOR</u> | <u>STANDARD OF PERFORMANCE</u> | <u>MADR</u> | <u>METHOD OF SURVEILLANCE</u> | <u>% OF COST</u> |
|--|---|-------------|-------------------------------|------------------|
| 1. CONTRACT REQUIREMENT: OPERATE CENTRAL PLANT | | | | |
| A. Watchstanding | Qualified personnel at at their stations (Clause C.9) | 5% | 100% Inspection | 20% |
| B. Plant Logs | Logs properly maintained (Clause C.11) | 5% | 100% Inspection | 25% |
| C. Plant Procedures | Approved operating procedures followed (Paragraph C.24.a) | 5% | 100% Inspection | 25% |
| D. Water Quality | (Paragraph C.25.f) | 5% | 100% Inspection | 30% |
| 1. Phosphate | !INSERT! | | | |
| 2. Sulfate | !INSERT! | | | |
| 3. pH | !INSERT! to !INSERT! | | | |
| 4. Hardness (as CaCO ₃) | !INSERT! | | | |
| 5. Causticity (as OH) | !INSERT! | | | |
| 6. Conductivity | !INSERT! | | | |
| 2. CONTRACT REQUIREMENT: MAINTAIN CENTRAL PLANT | | | | |
| A. Timeliness | Perform routine maintenance per approved procedures (Clause C.25) | 5% | 100% Inspection | 40% |
| B. Quality maintenance as indicated by plant parameters such as: | | 5% | 100% Inspection | 60% |
| 1. Stack temperature | Increase indicates tubes not blown | | | |
| 2. Feedwater makeup | Increase indicates condensate return problems | | | |
| 3. Condensate temperature | Increase indicates traps not properly maintained | | | |

| <u>PERFORMANCE INDICATOR</u> | <u>STANDARD OF PERFORMANCE</u> | <u>MADR</u> | <u>METHOD OF SURVEILLANCE</u> | <u>% OF COST</u> |
|--|--|-------------|-------------------------------|------------------|
| 4. Manual operation of fully automatic plant | Increase in frequency indicates controls not maintained | | | |
| 5. Economizer temperature difference | !INSERT! degrees | | | |
| 6. Air preheater temperature | Air temperature to boilers !INSERT! degrees | | | |
| 7. Fuel strainer pressure drop | !INSERT! psi | | | |
| 8. TDS of boiler water | Increase indicates need for more frequent blow-downs | | | |
| 9. High turbine/generator bearing temperature | Increase in bearing temperature indicates improper lubrication or bearing failure | | | |
| 10. High generator winding temperature | Increase in generator winding temperature indicates insufficient cooling air or generator overload | | | |
| 11. Turbine generator vibration or unusual noise | Vibration or unusual noise indicates rotor imbalance | | | |

3. CONTRACT REQUIREMENT: PREVENTIVE MAINTENANCE

| | | | | |
|-----------------|--|-----|------------------|-----|
| A. Timeliness | Work performed on schedule (Clause C.19 and Attachment J-C8) | 10% | Planned Sampling | 35% |
| B. Quality Work | Conformance with quality standards, Section C | 10% | Planned Sampling | 50% |
| C. Document | Work is documented accurately (Paragraph C.8.c) | 10% | Planned Sampling | 15% |

4. CONTRACT REQUIREMENT: SERVICE CALLS

| | | | | |
|----------------------------------|---|----|--------------------------|-----|
| A. Response within allotted time | Contractor responds within (Paragraph C.21.b) | 5% | 100% or Planned Sampling | 30% |
|----------------------------------|---|----|--------------------------|-----|

| <u>PERFORMANCE INDICATOR</u> | <u>STANDARD OF PERFORMANCE</u> | <u>MADR</u> | <u>METHOD OF SURVEILLANCE</u> | <u>% OF COST</u> |
|------------------------------|--|-------------|-------------------------------|------------------|
| B. Document | Work is documented accurately (Paragraph C.21.a) | 5% | 100% or Planned Sampling | 10% |
| C. Quality Work | Conformance with quality standards, Section C | 5% | 100% or Planned Sampling | 60% |

5. CONTRACT REQUIREMENT: RECORDS AND REPORTS

| | | | | |
|-----------------|---|----|-----------------|-----|
| A. Timeliness | Submitted on time (Clauses C.8 and C.11) | 5% | 100% Inspection | 10% |
| B. Completeness | Appropriate information supplied (Clauses C.8 and C.11) | 5% | 100% Inspection | 35% |
| C. Accuracy | No more than 1% errors (Clauses C.8 and C.11) | 5% | 100% Inspection | 55% |

QUALITY ASSURANCE PLAN #1
OPERATION OF CENTRAL PLANT

1. Contract Requirement. Operation of the Central Heating and Electrical Power Generating Plant.

| <u>Performance Indicators</u> | <u>Performance Standards</u> |
|-------------------------------|------------------------------|
| a. Watchstanding | Clause C.9 |
| b. Plant Logs | Clause C.11 |
| c. Plant Procedures | Paragraph C.24.a |
| d. Water Quality | Paragraph C.25.f |

2. Primary Method of Surveillance. 100% inspection of daily operation submittals.

3. Maximum Allowable Defect Rate (MADR)

| | |
|---------------------|----|
| a. Watchstanding | 5% |
| b. Plant Logs | 5% |
| c. Plant Procedures | 5% |
| d. Water Quality | 5% |

4. Quantity of Work. The quantity of work is the number of days of operation per month.

5. Level of Surveillance. N/A

6. Sample Size. N/A

7. Sampling Procedure. N/A

8. Evaluation Procedure

a. Daily review the submittals for the previous day's operation. Fill out an Operation Evaluation Worksheet, recording all of the actual values for the operating standards. Compare the actual values with the standards, and determine whether that value is satisfactory (S) or unsatisfactory (U). Place the appropriate letter in the space with the recorded actual value. Total the unsatisfactory ratings for operation and enter in the appropriate block. Conduct an on-site investigation that day if the overall rating for the day is unsatisfactory. Document results of investigation in comment area of evaluation worksheet.

b. Prepare a checklist of daily submittals. Each day, review the reports, logs, and charts received against the checklist. Note in the "Comments" area of the Operation and Maintenance Evaluation Worksheet any submittals not received. NOTE: The checklist should be developed using the contract and approved operating procedures as guides.

9. Analysis of Results. At the end of the month, the QAE will summarize the results of the month's inspections and calculate ODRs and recommended payment deductions for each performance indicator on the attached PAYMENT ANALYSIS FORM. An example PAYMENT ANALYSIS FORM is attached.

a. If the ODR for a performance indicator (Item F of the PAYMENT ANALYSIS FORM) is less than its MADR, overall performance of that requirement is satisfactory. Payment deductions will be made for all documented defects, as calculated on the PAYMENT ANALYSIS FORM. If the ODR is less than $\frac{1}{2}$ of the MADR, the QAE should recommend to the FSCM to notify the Contractor that his performance is excellent and to keep up the good work.

b. If the ODR is greater than the MADR, overall performance is unsatisfactory and the QAE should recommend to the FSCM that a CDR be issued to the Contractor, or that stronger action be taken. Payment deductions will be made as calculated on the PAYMENT ANALYSIS FORM.

**BOILER OPERATION
EVALUATION WORKSHEET**

| INSPECTION DATE: | PERFORMANCE STANDARD | BOILER 1 | | BOILER 2 | | BOILER 3 | | BOILER 4 | |
|--|----------------------|--------------|-----|--------------|-----|--------------|-----|--------------|-----|
| | | ACTUAL VALUE | S/U |
| Boiler Efficiency | % | | | | | | | | |
| Boiler Water pH | to | | | | | | | | |
| TDS | ppm | | | | | | | | |
| Alkalinity | ppm | | | | | | | | |
| Hardness | ppm | | | | | | | | |
| Reports, logs, charts | | | | | | | | | |
| Total Unsatisfactory Ratings for Operation | | | | | | | | | |

COMMENTS:

CONTRACTOR'S SIGNATURE/DATE

QAE'S SIGNATURE/DATE

**TURBINE/DIESEL GENERATOR OPERATION
EVALUATION WORKSHEET**

| INSPECTION DATE: | PERFORMANCE STANDARD | GENERATOR 1 | | GENERATOR 2 | | GENERATOR 3 | | GENERATOR 4 | |
|--|----------------------|--------------|-----|--------------|-----|--------------|-----|--------------|-----|
| | | ACTUAL VALUE | S/U |
| Voltage | Volts | | | | | | | | |
| Frequency | Hertz | | | | | | | | |
| Power Factor | Lagging | | | | | | | | |
| Reports, logs, charts | | | | | | | | | |
| Total Unsatisfactory Ratings for Operation | | | | | | | | | |

COMMENTS:

CONTRACTOR'S SIGNATURE/DATE

QAE'S SIGNATURE/DATE

**MONTHLY PAYMENT ANALYSIS FORM
OPERATION OF CENTRAL PLANT**

| SUMMARY FOR THE PERIOD <u>1 MAY 1989 - 31 MAY 1989</u> | <u>WATCHSTANDING</u> | <u>PLANT LOGS</u> | <u>PLANT PROCEDURES</u> | <u>WATER QUALITY</u> |
|---|----------------------|--------------------|-----------------------------|--------------------------|
| A. Relative Value of Services | <u>20%</u> | <u>25%</u> | <u>25%</u> | <u>30%</u> |
| B. Cost of Services | <u>\$ 10213.60</u> | <u>\$ 12767.00</u> | <u>\$ 12767.00</u> | <u>\$ 15320.40</u> |
| C. Number of Operating Days | <u>31</u> | <u>31</u> | <u>31</u> | <u>31</u> |
| D. Cost per Operating Day (B ÷ C) | <u>\$ 329.47</u> | <u>\$ 411.84</u> | <u>\$ 411.84</u> | <u>\$ 494.21</u> |
| E. Number of Observed Unsat Operating Days | <u>2</u> | <u>1</u> | <u>0</u> | <u>3</u> |
| F. Observed Defect Rate (ODR) (E ÷ C x 100) | <u>6.5%</u> | <u>3.2%</u> | <u>0%</u> | <u>9.7%</u> |
| G. Value of Unsat Performed Work (D x E) | <u>\$ 658.94</u> | <u>\$ 411.84</u> | <u>\$ 0</u> | <u>\$ 1482.63</u> |
| H. Deduct for Liquidated Damages (G x .1) | <u>\$ 65.89</u> | <u>\$ 41.18</u> | <u>\$ 0</u> | <u>\$ 148.63</u> |
| I. Other Adjustments (" - " indicates a deduction) | <u>\$ 0</u> | <u>\$ 0</u> | <u>\$ 0</u> | <u>\$ 0</u> |
| J. Payment for Services (B - G - H + I) | <u>\$ 9488.77</u> | <u>\$ 12313.98</u> | <u>\$ 12767.00</u> | <u>\$ 13689.51</u> |
| | | TOTAL PAYMENT | = | <u>\$ 48259.26</u> |

AUTHORIZED SIGNATURE/DATE

QUALITY ASSURANCE PLAN #2
MAINTENANCE OF CENTRAL PLANT

1. Contract Requirement. Maintenance of the Central Heating and Electrical Power Generating Plant.

Performance Indicators

Performance Standards

- | | |
|------------------------|-------------|
| a. Timeliness | Clause C.25 |
| b. Quality Maintenance | Clause C.25 |

2. Primary Method of Surveillance. 100% inspection of daily maintenance submittals.

3. Maximum Allowable Defect Rate (MADR)

- | | |
|------------------------|----|
| a. Timeliness | 5% |
| b. Quality Maintenance | 5% |

4. Quantity of Work. The quantity of work is the number of days of operation per month.

5. Level of Surveillance. N/A

6. Sample Size. N/A

7. Sampling Procedure. N/A

8. Evaluation Procedure

a. Review operating logs daily to determine what work may be noted on the logs. Verify with the approved maintenance procedures. Detailed review of the timeliness of maintenance will be conducted during a review of the Facility History Files.

b. Develop a list of maintenance parameters to be monitored throughout the contract life from the approved operation and maintenance procedures. Suggested parameters are shown in the Performance Requirements Summary Table and should be supplemented in the tailored QA plan. Review the daily logs, charts, and records, and record actual parameter values in the appropriate block of the Evaluation Worksheet. Compare these values to the performance standards and determine if the actual value is satisfactory (S) or unsatisfactory (U). Place the appropriate letter in the block with the recorded value. Total all of the unsatisfactory ratings and enter the number in the appropriate block. If the overall maintenance rating is unsatisfactory, conduct a site investigation to determine the source of the problem. Document the results of the investigation in the comment section of the evaluation worksheet.

9. Analysis of Results. At the end of the month, the QAE will summarize the results of the month's inspections and calculate ODRs and recommended payment deductions for each performance indicator on the attached PAYMENT ANALYSIS FORM, and determine if any change in the level of surveillance is needed for the coming evaluation period (see paragraph 6 above). An example PAYMENT ANALYSIS FORM is attached.

a. If the ODR for a performance indicator (Item F of the PAYMENT ANALYSIS FORM) is less than its MADR, overall performance of that requirement is satisfactory. If the ODR is less than $\frac{1}{2}$ of the MADR, the QAE should recommend to the FSCM to notify the Contractor that his performance is excellent and to keep up the good work, and should consider whether or not reduced surveillance should be used for coming evaluation period. Payment deductions will be made for all documented defects, as calculated on the PAYMENT ANALYSIS FORM.

b. If the ODR for a work requirement is greater than the MADR, overall performance is unsatisfactory and the QAE should recommend to the FSCM that a CDR be issued to the Contractor, or that stronger action be taken. Consideration should be given as to whether or not increased surveillance should be used for the coming evaluation period. Payment deductions will be made as calculated on the PAYMENT ANALYSIS FORM.

**BOILER MAINTENANCE
EVALUATION WORKSHEET**

| INSPECTION DATE: | PERFORMANCE STANDARD | BOILER 1 | | BOILER 2 | | BOILER 3 | | BOILER 4 | |
|--|----------------------|--------------|-----|--------------|-----|--------------|-----|--------------|-----|
| | | ACTUAL VALUE | S/U |
| Stack Temperature | degrees | | | | | | | | |
| Condensate Temperature | degrees | | | | | | | | |
| Economizer Temperature | degrees | | | | | | | | |
| Air Preheater Temperature | degrees | | | | | | | | |
| Fuel Strainer Pressure | psi | | | | | | | | |
| Others as applicable | | | | | | | | | |
| Total Unsatisfactory Ratings for Maintenance | | | | | | | | | |

COMMENTS:

CONTRACTOR'S SIGNATURE/DATE

QAE'S SIGNATURE/DATE

**TURBINE/DIESEL GENERATOR MAINTENANCE
EVALUATION WORKSHEET**

| INSPECTION DATE: | PERFORMANCE STANDARD | GENERATOR 1 | | GENERATOR 2 | | GENERATOR 3 | | GENERATOR 4 | |
|--|----------------------|--------------|-----|--------------|-----|--------------|-----|--------------|-----|
| | | ACTUAL VALUE | S/U |
| Bearing Temperature | degrees | | | | | | | | |
| Winding Temperature | degrees | | | | | | | | |
| Unusual Noise | None allowed | | | | | | | | |
| Vibration | None allowed | | | | | | | | |
| Others as Applicable | | | | | | | | | |
| Total Unsatisfactory Ratings for Maintenance | | | | | | | | | |

COMMENTS:

CONTRACTOR'S SIGNATURE/DATE

QAE'S SIGNATURE/DATE

**MONTHLY PAYMENT ANALYSIS FORM
MAINTENANCE OF CENTRAL PLANT**

| SUMMARY FOR THE PERIOD <u>1 MAY 1989 - 31 MAY 1989</u> | <u>TIMELINESS</u> | <u>QUALITY MAINTENANCE</u> |
|---|-------------------|--------------------------------|
| A. Relative Value of Services (weight from PRS) | <u>40%</u> | <u>60%</u> |
| B. Cost of Services | \$ <u>8200.00</u> | \$ <u>12300.00</u> |
| C. Number of Operating Days | <u>31</u> | <u>31</u> |
| D. Cost per Operating Day (B ÷ C) | \$ <u>264.52</u> | \$ <u>396.77</u> |
| E. Number of Observed Unsat Operating Days | <u>1</u> | <u>2</u> |
| F. Observed Defect Rate (ODR) (E ÷ C x 100) | <u>3.2%</u> | <u>6.5%</u> |
| G. Value of Unsat Performed Work (D x E) | \$ <u>264.52</u> | \$ <u>793.54</u> |
| H. Deduct for Liquidated Damages (G x .1) | \$ <u>26.45</u> | \$ <u>79.35</u> |
| I. Other Adjustments (" - " indicates a deduction) | <u>0</u> | <u>0</u> |
| J. Payment for Services (B - G - H + I) | \$ <u>7909.03</u> | \$ <u>11427.11</u> |
| | TOTAL PAYMENT = | \$ <u>19336.14</u> |

AUTHORIZED SIGNATURE

QUALITY ASSURANCE PLAN #3
PREVENTIVE MAINTENANCE

1. Contract Requirement. Preventive Maintenance (PM)

Performance Indicators

Performance Standards

- | | |
|-----------------|---------------------------------|
| a. Timeliness | Clause C.19 and Attachment J-C8 |
| b. Quality Work | Quality Standards of Section C |
| c. Document | Paragraph C.8.c |

2. Primary Method of Surveillance. Planned sampling supported by unscheduled inspections.

3. Maximum Allowable Defect Rate (MADR)

- | | |
|-----------------|-----|
| a. Timeliness | 10% |
| b. Quality Work | 10% |
| c. Document | 10% |

4. Quantity of Work. The quantity of work per month will equal the number of PM inspections per month.

5. Level of Surveillance

a. Normal Surveillance (Level II). The normal level of surveillance will be used at the beginning of the contract and continue until such time as the ODR indicates that a different level is necessary.

b. Reduced Surveillance (Level I). The reduced surveillance will be used when the ODR has been observed to be less than $\frac{1}{2}$ the MADR for two months under normal surveillance (Level II). The sample sizes will remain at this level as long as the ODR is less than the MADR.

c. Increased Surveillance (Level III). If at normal surveillance the ODR is greater than or equal to the MADR, then change the level of surveillance to increased (Level III). If at Level III the ODR is less than the MADR, return to Level II surveillance.

6. Sample Size

- | | |
|------------------------|-------------------------------------|
| Normal Surveillance | - !INSERT! PM inspections per month |
| Reduced Surveillance | - !INSERT! PM inspections per month |
| Increased Surveillance | - !INSERT! PM inspections per month |

7. Sampling Procedure. The PM inspections for each month can be identified from the Contractor's approved PM schedule. Any PM location may be chosen, but the selection should be arbitrary, such as selection of every fourth location.

8. Evaluation Procedure. PM work (including associated corrective maintenance) will be inspected and PM records will be evaluated for timeliness and proper documentation, including entry in the Facility History Files. Using an Evaluation Worksheet for PM (suggested worksheet follows), indicate the date of report, if the PM was performed as scheduled and properly documented, and the quality of any work performed. Use the comment area to explain or discuss any unsatisfactory rating.

9. Analysis of Results. At the end of the month the QAE will summarize the results of the month's inspections and calculate ODRs and recommended payment deductions for each performance indicator on the attached PAYMENT ANALYSIS FORM, and determine if any change in the level of surveillance is needed for the coming evaluation period (see paragraph 6 above). An example PAYMENT ANALYSIS FORM is attached.

a. If the ODR for a performance indicator (Item F of the PAYMENT ANALYSIS FORM) is less than its MADR, overall performance of that requirement is satisfactory. If the ODR is less than $\frac{1}{2}$ of the MADR the QAE should recommend to the FSCM to notify the Contractor that his performance is excellent and to keep up the good work, and should consider whether or not reduced surveillance should be used for coming evaluation period. Payment deductions will be made for all documented defects, as calculated on the PAYMENT ANALYSIS FORM.

b. If the ODR for a performance indicator is greater than the MADR, overall performance is unsatisfactory and the QAE should recommend to the FSCM that a CDR be issued to the Contractor, or that stronger action be taken. Consideration should be given as to whether or not increased surveillance should be used for the coming evaluation period. Payment deductions will be made as calculated on the PAYMENT ANALYSIS FORM.

**MONTHLY PAYMENT ANALYSIS FORM
PREVENTIVE MAINTENANCE**

| SUMMARY FOR THE PERIOD <u>1 MAY 1989 - 31 MAY 1989</u> | <u>TIMELINESS</u> | <u>QUALITY WORK</u> | <u>DOCUMENT</u> |
|---|-------------------|-------------------------|-------------------|
| A. Relative Value of Services (weight from PRS) | <u>35%</u> | <u>50%</u> | <u>15%</u> |
| B. Cost Services | <u>\$ 2467.50</u> | <u>\$ 3525.00</u> | <u>\$ 1057.50</u> |
| C. Actual Number of PMs Completed | <u>141</u> | <u>141</u> | <u>141</u> |
| D. Cost Per PM | <u>\$ 17.50</u> | <u>\$ 25.00</u> | <u>\$ 7.50</u> |
| E. Sample Size (SS) | <u>36</u> | <u>36</u> | <u>36</u> |
| F. Number of Observed Sampled Unsat PMs | <u>3</u> | <u>2</u> | <u>3</u> |
| G. Observed Defect Rate (ODR) (F ÷ E X 100) | <u>8.3%</u> | <u>5.6%</u> | <u>8.3%</u> |
| H. Unplanned Inspections (# Unsat) | <u>1</u> | <u>1</u> | <u>2</u> |
| I. Value of Unsat Performed Work (F + H) x D | <u>\$ 70.00</u> | <u>\$ 75.00</u> | <u>\$ 37.50</u> |
| J. Deduct for Liquidated Damages (I x .1) | <u>\$ 7.00</u> | <u>\$ 7.50</u> | <u>\$ 3.75</u> |
| K. Number of PMs Reworked | | | |
| (1) Sampled Calls | <u>N/A</u> | <u>1</u> | <u>1</u> |
| (2) Unplanned Inspections | <u>N/A</u> | <u>0</u> | <u>1</u> |
| L. Payment for Rework [K(1) + K(2)] x D | <u>N/A</u> | <u>\$ 25.00</u> | <u>\$ 15.00</u> |
| M. Other Adjustments (" - " indicates a deduction) | <u>\$ 0</u> | <u>\$ 0</u> | <u>\$ 0</u> |
| N. Payment for Services (B - I - J + L + M) | <u>\$ 2390.50</u> | <u>\$ 3467.50</u> | <u>\$ 1031.25</u> |
| | TOTAL PAYMENT | = | <u>\$ 6889.25</u> |

AUTHORIZED SIGNATURE

QA PLAN #4
SERVICE CALLS

1. Contract Requirement. Service Calls (Emergency and Routine).

Performance Indicators

Performance Standards

- | | |
|-----------------|--------------------------------|
| a. Response | Paragraph C.20.c |
| b. Document | Paragraph C.20.c |
| c. Quality Work | Quality Standards of Section C |

2. Primary Method of Surveillance

- a. 100% inspection for emergency service calls.
- b. Planned sampling for routine service calls.

3. Maximum Allowable Defect Rate (MADR)

- | | |
|-----------------|----|
| a. Response | 5% |
| b. Document | 5% |
| c. Quality Work | 5% |

4. Quantity of Work. The number of service calls completed per month.

5. Level of Surveillance

- a. 100% inspection - N/A
- b. Planned Sampling:

(1) Normal Surveillance (Level II). The normal level of surveillance will be utilized at the beginning of the contract and continue until such time as the ODR indicates that a different level is necessary.

(2) Reduced Surveillance (Level I). The reduced surveillance will be utilized when the ODR has been observed to be less than 1/2 the MADR for two months under normal surveillance (Level II). The sample sizes will remain at this level as long as the ODR is less than the MADR.

(3) Increased Surveillance (Level III). If at normal surveillance the ODR is greater than or equal to the MADR, then change the level of surveillance to increased (Level III). If at Level III the ODR is less than the MADR, return to Level II surveillance.

6. Sample Size

- a. 100% inspection - N/A
- b. Planned sampling:

Normal Surveillance - !INSERT! service calls per month
Reduced Surveillance - !INSERT! service calls per month
Increased Surveillance - !INSERT! service calls per month

7. Sampling Procedure. Each and every emergency call will be inspected. Any routine service call may be chosen, but the selection should be arbitrary, such as selection of every fourth call completed.

8. Evaluation Procedure. Check each service call selected for inspection for response time, documentation and quality of work. Review records and inspect with on-site visit. Site visits should be conducted while evidence of work is still apparent. Document all evaluations. Suggested Evaluation Worksheet follows.

9. Analysis of Results. At the end of the month the QAE will summarize the results of the month's inspections, calculate ODRs and recommended payment deductions for each performance indicator for both emergency and routine service calls on the attached PAYMENT ANALYSIS FORMS, and determine if any change in the level of surveillance is needed for the coming evaluation period (see paragraph 5 above). An example PAYMENT ANALYSIS FORM is attached. Separate forms should be used for emergency and urgent calls.

a. If the ODR for a performance indicator (Item G of the PAYMENT ANALYSIS FORM) is less than its MADR, overall performance of that requirement satisfactory. If the ODR is less than $\frac{1}{2}$ of the MADR the QAE should recommend to the FSCM to notify the Contractor that his performance is excellent and to keep up the good work, and should consider whether or not reduced surveillance should be used for the coming evaluation period. Payment deductions will be made for all documented defects, as calculated on the PAYMENT ANALYSIS FORM.

b. If the ODR for a work requirement is greater than the MADR, overall performance is unsatisfactory and the QAE should recommend to the FSCM that a CDR be issued to the Contractor, or that stronger action be taken. Consideration should be given as to whether or not increased surveillance should be used for the coming evaluation period. Payment deductions will be made as calculated on the PAYMENT ANALYSIS FORM.

**MONTHLY PAYMENT ANALYSIS FORM
SERVICE CALLS**

| SUMMARY FOR THE PERIOD <u>1 MAY 1989 - 31 MAY 1989</u> | | | |
|---|-------------------|------------------|---------------------|
| | <u>RESPONSE</u> | <u>DOCUMENT</u> | <u>QUALITY WORK</u> |
| A. Relative Value of Services (weight from PRS) | <u>30%</u> | <u>10%</u> | <u>60%</u> |
| B. Cost of Services | <u>\$ 1647.00</u> | <u>\$ 549.00</u> | <u>\$ 3294.00</u> |
| C. Actual Number of Calls Completed | <u>122</u> | <u>122</u> | <u>122</u> |
| D. Cost Per Call (B ÷ C) | <u>\$ 13.50</u> | <u>\$ 4.50</u> | <u>\$ 27.00</u> |
| E. Sample Size (SS) | <u>31</u> | <u>31</u> | <u>31</u> |
| F. Number of Observed Sampled Unsat Calls | <u>4</u> | <u>2</u> | <u>2</u> |
| G. Observed Defect Rate (ODR) (F ÷ E x 100) | <u>12.9%</u> | <u>6.5%</u> | <u>6.5%</u> |
| H. Value of Unsat Performed Work (F x D) | <u>\$ 54.00</u> | <u>\$ 9.00</u> | <u>\$ 54.00</u> |
| I. Deduct for Liquidated Damages (H x .1) | <u>\$ 5.40</u> | <u>\$.90</u> | <u>\$ 5.40</u> |
| J. Number of Calls Reworked | <u>N/A</u> | <u>0</u> | <u>1</u> |
| K. Payment for Rework (J x D) | <u>N/A</u> | <u>\$ 0</u> | <u>\$ 27.00</u> |
| L. Other Adjustments (" - " indicates a deduction) | <u>\$ 0</u> | <u>\$ 0</u> | <u>\$ 0</u> |
| M. Payment for Services (B - H - I + K + L) | <u>\$ 1587.60</u> | <u>\$ 539.10</u> | <u>\$ 3261.60</u> |
| | TOTAL PAYMENT | = | <u>\$ 5388.30</u> |

AUTHORIZED SIGNATURE

QA PLAN #5
MINOR MAINTENANCE AND REPAIR

1. Contract Requirement. Minor Maintenance and Repair Work.

Performance Indicators

Performance Standards

- a. Timely Completion
- b. Quality Work

Paragraphs C.22.a and C.22.b
Quality Standards of Section C

2. Primary Method of Surveillance. Since this work is ordered on a DD Form 1155, 100% inspection of the final product is required.

3. Maximum Allowable Defect Rate (MADR)

- a. Timely Completion 5%
- b. Quality Work 5%

4. Quantity of Work. The total number of completed delivery orders for the month.

5. Level of Surveillance. N/A

6. Sample Size. N/A

7. Sampling Procedure. N/A

8. Evaluation Procedure. During the month, the QAE will visit the various job sites while the work is in progress. The visits will be coordinated with the Contractor to insure that each key phase of the project is inspected before it is covered over, thus making inspection at a later time impossible. An evaluation worksheet will be prepared for each phase of the project and the QAE will grade the performance on a list of checkpoints which cover the standards set forth in the technical section of the specifications. The following information will also be included on the inspection report: date, location, type of inspection, QAE's signature, and a brief description of any observed defects. If a defect is noted, the QAE will inform the Contractor's on-site representatives of the problem and record the following information on the evaluation worksheet; time and date Contractor's on site representative informed of defect; action Contractor took to correct the defect, if rework is ordered; and the date the work was finally accepted. Assign overall grades of satisfactory or unsatisfactory for timeliness and quality of work. This report will be completed on-site and will be signed by the QAE.

9. Analysis of Results. At the end of the month the QAE will summarize the number of unsatisfactory overall grades for timeliness and quality of work, and calculate ODRs for each using the following formula.

$$\text{ODR} = \frac{\text{Number of Unsatisfactory Grades}}{\text{Total Number of Delivery Orders Inspected}} \times 100$$

For Example:

Number of unsatisfactory overall quality grades = 2
Number of delivery orders completed = 23

ODR for quality of work = $2 \div 23 \times 100 = 8.7\%$

a. If the ODR for a performance indicator is less than its MADR, overall performance of that indicator is satisfactory for the month. If the ODR is less than $\frac{1}{2}$ of the MADR the QAE should recommend to the FSCM to notify the Contractor that performance is excellent and to keep up the good work.

b. If the ODR is greater than the MADR, overall performance is unsatisfactory and the QAE should recommend to the FSCM that a CDR be issued to the Contractor, or that stronger action be taken.

c. Payment deductions, if any, will be subtracted from each delivery order invoiced by the Contractor.

**MINOR MAINTENANCE AND REPAIR
EVALUATION WORKSHEET**

TYPE OF INSPECTION: Repair Steam Line

LOCATION: Central Plant

DATE OF INSPECTION: 21 June 1989

| PERFORMANCE INDICATORS | RATING | | REMARKS |
|---------------------------------|--------|-------|---------------------------------|
| | SAT | UNSAT | |
| 1. Quality Work | | | |
| a. Site Clean-Up | X | | |
| b. Pipe Properly Installed | X | | |
| c. Leak Tested | X | | |
| d. Insulation Reinstalled | | X | Insulation not properly lagged. |
| Overall Rating for Quality Work | X | | |
| 2. Timely Completion | X | | |

TOTAL UNSATISFACTORY OVERALL RATINGS: _____

COMMENTS:

Contractor corrected deficiency 1 July 1989.

CONTRACTOR'S SIGNATURE/DATE

QAE'S SIGNATURE/DATE

QA PLAN #6
RECORDS AND REPORTS

1. Contract Requirement. Preparation of facility history files, boiler performance reports, and all other required records and reports.

| <u>Performance Indicators</u> | <u>Performance Standards</u> |
|-------------------------------|------------------------------|
| a. Timeliness | Clauses C.8 and C.11 |
| b. Completeness | Clauses C.8 and C.11 |
| c. Accuracy | Clauses C.8 and C.11 |

2. Primary Method of Surveillance. 100% inspection of all records and reports.

3. Maximum Allowable Defect (MADR)

| | |
|-----------------|----|
| a. Timeliness | 5% |
| b. Completeness | 5% |
| c. Accuracy | 5% |

4. Quantity of Work. All records and reports required to be submitted during the monthly evaluation period.

5. Levels of Surveillance. N/A

6. Sample Size. N/A

7. Sampling Procedures. N/A

8. Evaluation Procedure. During the monthly evaluation period, the QAE will review all records and reports prepared by the Contractor, and assign a rating of satisfactory (S) or unsatisfactory for each performance indicator on the attached evaluation worksheet. A brief description of any noted defects will be provided and rework information will be recorded, if appropriate.

9. Analysis of Results. At the end of the month, the QAE will summarize the results of the month's inspections and calculate ODRs and recommended payment deductions for each performance indicator on the attached PAYMENT ANALYSIS FORMS. An example PAYMENT ANALYSIS FORM is attached.

a. If the ODR for a performance indicator (Item F of the PAYMENT ANALYSIS FORM) is less than its MADR, overall performance of that requirement is satisfactory. Payment deductions will be made for all documented defects, calculated on the PAYMENT ANALYSIS FORM. If the ODR is less than ½ of the MADR, the QAE should recommend to the FSCM to notify the Contractor that his performance is excellent and to keep up the good work.

b. If the ODR is greater than the MADR, overall performance is unsatisfactory and the QAE should recommend to the FSCM that a CDR be issued to the Contractor, or that stronger action be taken. Payment deductions will be made as calculated on the PAYMENT ANALYSIS FORM.

**RECORDS AND REPORTS
EVALUATION WORKSHEET**

| REPORT NUMBER OR TYPE | PERFORMANCE INDICATORS | | | REMARKS |
|------------------------------|-------------------------|---------------------------|-----------------------|---------|
| | TIMELINESS SAT/UNSAT | COMPLETENESS SAT/UNSAT | ACCURACY SAT/UNSAT | |
| Facility History Files | | | | |
| Boiler Performance Report | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| Total Unsatisfactory Ratings | | | | |

COMMENTS :

CONTRACTOR'S SIGNATURE/DATE

QAE'S SIGNATURE/DATE

**MONTHLY PAYMENT ANALYSIS FORM
RECORDS AND REPORTS**

| SUMMARY FOR THE PERIOD <u>1 MAY 1989 - 31 MAY 1989</u> | <u>TIMELINESS</u> | <u>COMPLETENESS</u> | <u>ACCURACY</u> |
|---|-------------------|---------------------|------------------|
| A. Relative Value of Services (weight from PRS) | <u>10%</u> | <u>35%</u> | <u>55%</u> |
| B. Cost of Services | <u>\$ 94.10</u> | <u>\$ 329.35</u> | <u>\$ 517.55</u> |
| C. Number of Documents Filed | <u>87</u> | <u>87</u> | <u>87</u> |
| D. Cost per Document (B ÷ C) | <u>\$ 1.08</u> | <u>\$ 3.79</u> | <u>\$ 5.95</u> |
| E. Number of Observed Unsat Documents | <u>3</u> | <u>4</u> | <u>3</u> |
| F. Observed Defect Rate (ODR) (E ÷ C x 100) | <u>3.4%</u> | <u>4.6%</u> | <u>3.4%</u> |
| G. Value of Unsat Performed Work (D x E) | <u>\$ 3.24</u> | <u>\$ 15.16</u> | <u>\$ 17.55</u> |
| H. Deduct for Liquidated Damages (G x .1) | <u>\$ 0.32</u> | <u>\$ 1.52</u> | <u>\$ 1.78</u> |
| I. Number of Documents Reworked | <u>N/A</u> | <u>2</u> | <u>0</u> |
| J. Payment for Rework (D x I) | <u>N/A</u> | <u>\$ 7.58</u> | <u>\$ 0</u> |
| K. Other Adjustments (" - " indicates a deduction) | <u>\$ 0</u> | <u>\$ 0</u> | <u>\$ 0</u> |
| L. Payment for Services (B - G - H + J + K) | <u>\$ 90.54</u> | <u>\$ 320.25</u> | <u>\$ 497.92</u> |
| | TOTAL PAYMENT | = | <u>\$ 908.71</u> |

AUTHORIZED SIGNATURE

IV. CONTRACTOR'S OVERALL PERFORMANCE EVALUATION. NAVFAC MO-327 and the NAVFAC RSED (V3.2) implementation guide provide guidance in determining the Contractor's overall monthly performance for each service; how to use the PRS table and the QAE's inspection results to calculate the total payment due for each service; and how to go about correcting problem areas of performance. This paragraph provides additional information on the completion of the PAYMENT ANALYSIS FORMS included in each sample QA plan, and includes a sample monthly summary report.

A. Payment Analysis Form. These forms are very useful for summarizing the results of each month's inspections and illustrate how the "CONSEQUENCES OF CONTRACTOR'S FAILURE TO PERFORM REQUIRED SERVICES" clause, the Schedule of Deductions, the PRS table, and the QAE's completed EVALUATION WORKSHEETS are all used in calculating the total payment due for each contract requirement. The format for these forms should be tailored by the user. Other sample formats may be found in the NAVFAC RSED implementation guide, and as mentioned previously, a computer program is available which will perform and document basically the same calculations.

B. Analysis of Results. The end result of the monthly inspection process is the overall evaluation of the Contractor's performance for each service inspected. Such an evaluation provides a summary of the Contractor's performance to the ACO, FSCM, QAE and the Contractor. Overall performance is important in determining whether to increase, decrease, or maintain surveillance at the same level; whether to issue one or more CDRs to the Contractor or take stronger administrative actions; and points out service areas which require greater QAE and Contractor QC emphasis during the coming evaluation period. Therefore, at the end of each month the QAE should complete and forward for the FSCM's approval a MONTHLY SUMMARY REPORT, in a format similar to that shown in Table 2 on the following page. Almost all of the information required to complete this summary can be taken directly from the PAYMENT ANALYSIS FORM included with each sample QA plan.

TABLE 2
MONTHLY SUMMARY REPORT
ELECTRICAL POWER GENERATION, HEATING PLANT, AND STEAM
DISTRIBUTION SYSTEMS OPERATION, MAINTENANCE, AND REPAIR

| | QUANTITY COMPLETED | MADR | ODR | CDR Y/N | PAYMENT DEDUCTIONS | RATING S/U |
|---|-----------------------|------|-----|------------|-----------------------|---------------|
| <hr/> | | | | | | |
| QA PLAN #1 - OPERATE CENTRAL PLANT | | | | | | |
| Watchstanding (20%) | | 5% | | | | |
| Plant Logs (25%) | | 5% | | | | |
| Plant Procedures (25%) | | 5% | | | | |
| Water Quality (30%) | | 5% | | | | |
| <hr/> | | | | | | |
| QA PLAN #2 - MAINTENANCE OF CENTRAL PLANT | | | | | | |
| Timeliness (40%) | | 5% | | | | |
| Quality Maintenance (60%) | | 5% | | | | |
| <hr/> | | | | | | |
| QA PLAN #3 - PREVENTIVE MAINTENANCE | | | | | | |
| Timeliness (35%) | | 10% | | | | |
| Quality Work (50%) | | 10% | | | | |
| Document (15%) | | 10% | | | | |
| <hr/> | | | | | | |
| QA PLAN #4 - SERVICE CALLS | | | | | | |
| Response (30%) | | 5% | | | | |
| Document (10%) | | 5% | | | | |
| Quality Work (60%) | | 5% | | | | |
| <hr/> | | | | | | |
| QA PLAN #5 - MINOR MAINTENANCE AND REPAIR | | | | | | |
| Completion Time (40%) | | 5% | | | | |
| Quality Work (60%) | | 5% | | | | |
| <hr/> | | | | | | |
| QA PLAN #6 - RECORDS AND REPORTS | | | | | | |
| Timeliness (10%) | | 5% | | | | |
| Completeness (35%) | | 5% | | | | |
| Accuracy (55%) | | 5% | | | | |
| <hr/> | | | | | | |

END OF QA GUIDE