



505 King Avenue  
Columbus, Ohio 43201-2693  
Telephone (614) 424-6424  
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June 30, 1993

Proposal No. CPO21119

State of North Dakota  
The Industrial Commission  
State Capitol  
Bismarck, North Dakota 58505

Attention: Lignite Research Program

Dear Members of the Commission:

Battelle Memorial Institute is submitting this proposal for your consideration to cosponsor an ongoing project entitled "Comprehensive Assessment of Air Toxic Emissions from a Lignite-Fired Power Plant Utilizing an ESP/Wet FGD System". This project will provide benchmark data on hazardous substances generated from lignite combustion and the removal efficiencies of two important systems: an electrostatic precipitator (ESP) and a wet flue gas desulfurization (FGD) system.

Should you have any contractual questions concerning this proposal, please direct them to me at (614) 424-7090. Questions of a technical nature should be addressed to Dr. George M. Sverdrup at (614) 424-5014. Battelle's application fee is also enclosed.

Sincerely,

H. Michael Sewell  
Contracting Officer

HMS:mar

Enc.

cc: Mr. Thomas D. Brown, U.S. Department of Energy

**CONTRACT PRICING PROPOSAL COVER SHEET**

1. SOLICITATION / CONTRACT / MODIFICATION NO.

FORM APPROVED

OMB NO.

9000-0013

NOTE: This form is used in contract actions if submission of cost or pricing data is required (See FAR 15.804-b(b))

2. NAME AND ADDRESS OF OFFEROR (include ZIP Code)

**Battelle Columbus Operations  
505 King Avenue  
Columbus, Ohio 43201-2693**

3A. NAME AND TITLE OF OFFEROR'S POINT OF CONTACT

**R. Henricks  
Contracting Officer**

3B. TELEPHONE NO.  
**(614) 424-5693**

4. TYPE OF CONTRACT ACTION (Check)

<input type="checkbox"/> A. NEW CONTRACT	<input type="checkbox"/> D. LETTER CONTRACT
<input checked="" type="checkbox"/> B. CHANGE ORDER	<input type="checkbox"/> E. UNPRICED ORDER
<input type="checkbox"/> C. PRICE REVISION/REDETERMINATION	<input type="checkbox"/> F. OTHER (SPECIFY)

5. TYPE OF CONTRACT (CHECK)  
 FFP  CPFF  CPIF  CPAF  
 FPI  OTHER (SPECIFY)

6. PROPOSED COST (A+B=C)  
 A. COST **\$51,276** B. PROFIT/FEE **\$3,724** C. TOTAL **\$55,000**

7. PLACE(S) AND PERIOD(S) OF PERFORMANCE  
**Columbus, Ohio July 01, 1993 through December 31, 1993**

8. List and reference the identification, quantity and total price proposed for each contract line item. A line item cost breakdown supporting this recap is required unless otherwise specified by the Contracting Officer. (Continue on reverse, and then a plain paper, if necessary. Use same headings.)

A. LINE ITEM NO	B. IDENTIFICATION	C. QUANTITY	D. TOTAL PRICE	E. REF.
	<b>Comprehensive Assessment of Toxic Emissions from Coal-Fired Power Plants</b>		<b>\$55,000</b>	See Attached

9. PROVIDE NAME, ADDRESS, AND TELEPHONE NUMBER FOR THE FOLLOWING: (if available)

A. CONTRACT ADMINISTRATION OFFICE  
**Mr. Leon Sulton, ACO  
DCMDM-GYAA-JK1  
Defense Contract Management Area Operations  
Gentile Station, 1001 Hamilton St.  
Dayton, Ohio 45444-5300  
phone:(513) 296-5120**

B. AUDIT OFFICE  
**Defense Contract Audit Agency  
505 King Avenue  
Columbus, Ohio 43201-2693  
phone:(614)424-7800**

10. WILL YOU REQUIRE THE USE OF ANY GOVERNMENT PROPERTY IN THE PERFORMANCE OF THIS WORK? (If \*Yes,\* identify)  
 YES  NO

11A. DO YOU REQUIRE GOVERNMENT CONTRACT FINANCING TO PERFORM THIS PROPOSED CONTRACT? (If \*Yes,\* Complete item 11B)  
 YES  NO

11B. TYPE OF FINANCING (if one)  
 ADVANCED PAYMENTS  PROGRESS PAYMENTS  
 GUARANTEED LOANS

12. HAVE YOU BEEN AWARDED ANY CONTRACTS OR SUBCONTRACTS FOR THE SAME OR SIMILAR ITEMS WITHIN THE PAST 3 YEARS? (If \*Yes,\* identify item(s) customer(s) and contract number(s))  
 YES  NO

13. IS THIS PROPOSAL CONSISTENT WITH YOUR ESTABLISHED ESTIMATING AND ACCOUNTING PRACTICE AND PROCEDURES AND FAR PART 31 COST PRINCIPLES?  
 YES  NO

14. COST ACCOUNTING STANDARDS BOARD(CASB)DATA (Public Law 91.379 as amended and FAR PART 30)

A. WILL THIS CONTRACT ACTION BE SUBJECT TO CASB REGULATIONS? (If \*No,\* explain in proposal)  
 YES  NO

B. HAVE YOU SUBMITTED A CASB DISCLOSURE STATEMENT (CASB DS 1 or 2)? (If \*Yes,\* specify in proposal the office which submitted and if determined to be adequate)  
 YES  NO **DCMAO, Dayton submitted but final determination not yet made**

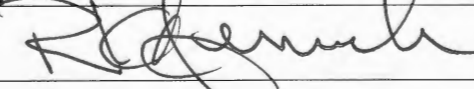
C. HAVE YOU BEEN NOTIFIED THAT YOU ARE OF MAY BE IN NON-COMPLIANCE WITH YOUR DISCLOSURE STATEMENT OR COST ACCOUNTING STANDARDS? (If \*Yes,\* explain in proposal)  
 YES  NO

D. IS ANY ASPECT OF THIS PROPOSAL INCONSISTENT WITH YOUR DISCLOSED PRACTICES OR APPLICABLE COST ACCOUNTING STANDARDS? (If \*Yes,\* explain in proposal)  
 YES  NO

This proposal is submitted in response to the RFP , contract, modification, etc. in Item 1 and reflects our best estimates and/or actual costs as of this date and conforms with the instructions in FAR 15.804-6(b) (2), Table 15-2. By submitting this proposal, the offeror, if selected for negotiation, grants the contracting officer or an authorized representative the right to examine at any time before award, those books, records, documents and other types of factual information, regardless of form or whether such supporting information is specifically referenced or included in the proposal as the basis for pricing, that will permit an adequate evaluation of the proposed price.

15. NAME AND TITLE (Type)  
**R. Henricks  
Contracting Officer**

16. NAME OF FIRM  
**Battelle Memorial Institute  
Columbus Operations**

17. SIGNATURE  


18. DATE OF SUBMISSION  
**6/29/93**

STANDARD FORM 1411 (REV 7-78)  
 Prescribed by GSA  
 FAR(48 CFR)53.215-2(c)

**BATTELLE**

USE OR DISCLOSURE OF PROPOSAL DATA IS SUBJECT TO THE RESTRICTION ON THE TITLE PAGE OF THIS PROPOSAL

ESTIMATED COST DETAIL  
FORM C-15

DATE 06/28/93

Title COMPREHENSIVE ASSESSMENT OF TOXIC EMISSIONS FROM COAL-FIRED POWER PLANTS

Solicitation No.

	Rate	Hours	Cost
	----	-----	----
DIRECT LABOR			
Program Manager	31.87	48.00	1,530
Support Management	17.04	24.00	409
Researcher	23.35	56.00	1,308
Research Scientist	28.87	8.00	231
Prin Research Scientist	29.56	16.00	473
Master Research Tech	25.11	220.00	5,526
Clerical	13.31	16.00	213
[Annual Inflation 4.0000 % ( 0.3310 % Applied)]			
	TOTAL HOURS	388.00	TOTAL DIRECT LABOR \$ 9,690
			=====

	Rate %	Base	Cost
	-----	----	----
FRINGE BENEFITS			
Salaried	41.0000	7,555	3,097
Overtime	9.0000	2,135	192
			TOTAL FRINGE BENEFITS \$ 3,289
			=====

	Rate %	Base	Cost
	-----	----	----
DIVISION OVERHEAD			
Onsite	87.0000	11,172	9,720
Onsite - Service Center	56.0000	1,807	1,012
			TOTAL DIVISION OVERHEAD \$ 10,732
			=====

OTHER DIRECT COSTS

General Support Facilities, Special Facilities and Services

Description	Basis for Estimate	Org	Use Rate No.	Rate	Base	Cost
-----	-----	-----	-----	----	----	----
GENL SUPPORT FACILITIES		CITD	GENSUPFAC	6.5000%	7,470	487
ATMOSPHERIC SCIENCES SPEC FAC		3190	SECLBFR1	27.0000%	3,125	843

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Use or disclosure of proposal data is subject to the restriction on the Title page of this Proposal

General Support Facilities, Special Facilities and Services

Description	Basis for Estimate	Org	Use Rate No.	Rate	Base	Cost
OFFICE COPIER			133333	0.0650\$	750	49
Total General Support Facilities, Special Facilities and Services \$						1,379

Service Center Burdens

Description	Org	Rate	Base	Cost
SERVICE CENTER BURDEN	1107	58.0000%	1,807	1,048
Total Service Center Burden \$				1,048
TOTAL OTHER DIRECT COSTS \$				2,427

TRAVEL

Destination	Origin	No. Trips	No. Pers	Days/ Trip	Total Subsistence	Total Airfare	Total Ground	Total Cost
UNDERWOOD ND	COLUMBUS OH	1	1	11.00	770	1,250	613	2,633
Subtotal					770	1,250	613	2,633
Annual Inflation 3.600 % ( 0.1500 % Applied)					1	2	1	4
Transportation \$		1,866	Subsistence \$		771	TOTAL TRAVEL \$		2,637
Rate %		Base		Cost				
General and Administrative	20.0000	28,775		5,756				
TOTAL GENERAL AND ADMINISTRATIVE \$								5,756

PURCHASED MATERIALS

Materials, Supplies, and Miscellaneous

Item Description	Vendor/Basis for Estimate	Quantity	Unit Desc	Unit Price	Cost
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Materials, Supplies, and Miscellaneous

Item Description	Vendor/Basis for Estimate	Quantity	Unit Desc	Unit Price	Cost
ADDITIONAL GLASSWARE	VENDOR	1.00	EACH	1,164.0000	1,164 *
FLEXIBLE TEFLON LINE	VENDOR	2.00	EACH	2,310.0000	4,620 *
MISC SUPPLIES	VARIOUS / PI ESTIMATE	95.00	ONE	1.0000	95
SAMPLING PROBES, 16 FT	VENDOR	2.00	EACH	4,000.0000	8,000 *
SO2 STANDARD, CERTIFIED	PI ESTIMATE	1.00	EACH	200.0000	200
SPARE PROBE LINERS	VENDOR	1.00	EACH	750.0000	750 *
* SALES TAX - MATL		14,534.00		0.0575	836
Subtotal \$					15,665
Annual Inflation 3.600 % ( 0.1400 % Applied) \$					23
TOTAL PURCHASED MATERIALS \$					15,688
ESTIMATED COST \$					50,219
FEE \$					3,724

COST OF FACILITIES CAPITAL	Factor	Base	Cost
Division Overhead	0.066130	12,979	858
General and Administrative	0.006820	28,775	199
TOTAL COST OF FACILITIES CAPITAL \$			1,057
TOTAL ESTIMATED COST AND FEE \$			55,000

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Title COMPREHENSIVE ASSESSMENT OF TOXIC EMISSIONS FROM COAL-FIRED POWER PLANTS

SCHEDULE OF APPLICABLE RATES AND EFFECTIVE DATES

All rates are current for the month in which the proposal cost was developed:

06/1993  
-----  
(Month/Year)

	Annual,% -----	Applied,% -----	
Salary Escalation	4.0000	0.3300	Lead Time 0000 Mos.
Materials Inflation	3.6000	0.1400	
Travel Inflation	3.6000	0.1500	Run Time 0002 Mos.

LABOR-BASED OVERHEADS

	Base,\$ -----	Rate,% -----	Amount,\$ -----
Division Overhead (Onsite)	11,172	87.0000 *	9,720
Division Overhead (Onsite SVC)	1,807	56.0000 *	1,012
General Overhead (Offsite)	0	62.0000 *	0

OTHER LABOR-BASED COST RECOVERY

	Base,\$ -----	Rate,% -----	Amount,\$ -----
General Support Facilities:			
Department CITD	7,470	6.5000	487
Special Facilities:			
Organization Unit 3190	3,125	27.0000	843
Service Centers:			
Organization Unit 1107	1,807	58.0000	1,048

COST OF FACILITIES CAPITAL AND GENERAL AND ADMINISTRATIVE

	Base,\$ -----	Rate,% -----	Amount,\$ -----
General and Administrative	28,775	20.0000 *	5,756
Cost of Fac Cap Division OH	12,979	6.6130 **	858
Cost of Fac Cap Gen & Admin	28,775	0.6820 **	199

\*Provisional billing rates submitted to DCAA.

\*\*Cost of Facilities Capital rate submitted to DCAA.

DESCRIPTION OF COST ELEMENTS  
FORM C-20 \*

DATE 06/28/93

BATTELLE COLUMBUS OPERATIONS  
505 KING AVENUE  
COLUMBUS, OHIO 43201-2693

Title COMPREHENSIVE ASSESSMENT OF TOXIC  
EMISSIONS FROM COAL-FIRED POWER  
PLANTS

Solicitation No.

	Hours -----	Total Estimated Cost -----
Direct Labor	388	\$ 9,690
Fringe Benefits		\$ 3,289
Division Overhead **		\$ 10,732
Other Direct Costs		\$ 2,427
Purchased Services		\$ 0
Travel		\$ 2,637
		-----
Subtotal (G&A Base) ***		\$ 28,775
General and Administrative		\$ 5,756
Interorganizational Transfers	0	\$ 0
Purchased Equipment		\$ 0
Purchased Materials		\$ 15,688
Subcontracts	0	\$ 0
	-----	-----
Total Hours	388	Total Cost \$ 50,219
Fee		\$ 3,724
Cost of Facilities Capital		\$ 1,057
		-----
Total Estimated Cost and Fee		\$ 55,000 =====

\* Itemized on attached form C-15

\*\* Base = Direct Labor and Fringe Benefits.

\*\*\* Represents value added base for General and Administrative expense pool.

## **BATTELLE COLUMBUS OPERATIONS**

### **BASIS FOR COST ESTIMATES**

#### **Introduction**

Battelle's method of preparing and reporting its cost estimates for the proposed program is consistent with its accounting system, which has been fully disclosed to the Defense Contract Management Area Operations in Dayton, Ohio, and the Defense Contract Audit Agency (DCAA). Questions may be referred to Battelle's cognizant Administrative Contracting Officer (ACO), Mr. Leon Sulton, at DCMAO, Dayton (513-294-5120).

#### **Approach**

Battelle realizes the importance of cost realism. To achieve it, we use catalogs, vendor quotations, and historical data to prepare estimates for certain line items in the cost volume, and we compare elements of cost with identical or similar actual work done in the past. We verify costs for completeness and accuracy by involving knowledgeable staff in the preparation and review of our cost volumes. The review and approval chain from top to bottom follows: (1) a Battelle contracting officer; (2) responsible line manager; (3) a business operations representative trained in the Battelle cost accounting system; and (4) the designated program manager and key personnel. Each review level serves as a check of lower levels.

#### **Forms That Support the SF 1411**

Battelle uses two forms to support the estimates shown on an SF 1411: Cost Elements, called Form C-20, and Estimated Cost Detail, called Form C-15. Form C-20 breaks out the major elements of cost according to our Disclosure Statement while Form C-15 provides additional detail for all elements of cost. In addition, special cost forms, tables, and formats may be included in our cost volume or used in place of Battelle's Forms C-20 and C-15, depending on the requirements in the RFP.



The remaining sections describe the bases and methodologies used by Battelle to estimate major elements of cost in this cost proposal. The elements are:

- Direct Labor
- Fringe Benefits
- Division Overhead
- Other Direct Costs
- Purchased Services
- Travel
- G&A
- Interorganizational Transfers
- Purchased Equipment
- Purchased Material
- Subcontracts
- Cost of Facilities Capital

In addition to our description of these cost elements, several other topics are covered later on including inflation factors, salary escalation, our fiscal year, and unresolved CAS issues.

#### **Direct Labor**

Battelle salaried staff members' labor rates are computed by dividing the staff member's annual salary by the total hours in a year (2080, 2088, or 2096 - depends on work hours in a year) or hourly pay rate if an hourly staff member.

#### **Fringe Benefits**

Battelle bids fringe benefits at current government approved provisional bidding rates. The projected fringe rates based on budget for 1993 are 41.0 percent for salaried staff and 9.3 percent for hourly staff. Fringe benefits includes a factor for vacation, sick, and holiday pay. Also included are medical and dental benefits and legally required benefits such as FICA, workers compensation, and unemployment.

Fringe benefit costs included in this proposal are determined by applying the approved provisional bidding rates to direct labor dollars of staff proposed.

Cost and pricing data in support of our budgeted fringe benefit rates are on file with our cognizant ACO.

### **Division Overhead**

Battelle bids division overhead costs at the current government approved provisional bidding rate. The projected rate based on budget for 1993 is 86.3 percent for division overhead. This indirect cost recovery pool includes management, staff development, planning, and other activities related specifically to technical operations. Also included are occupancy costs related to technical operations, and selling costs.

Division overhead costs included in this proposal are determined by applying the approved provisional bidding rate to direct labor dollars and fringe benefits of staff proposed.

Cost and pricing data in support of our budgeted division overhead rates are on file with our cognizant ACO.

### **Other Direct Costs**

Other direct costs include any dollar amounts specifically required by the RFP and cost recovery pools used by division of Battelle Columbus Operations such as the General Support Facility cost pool, one or more Special Facility cost pools, and Service Center cost pools. These costs are more fully explained as follows:

**General Support Facilities (GSF).** This account is used to recover costs associated with the acquisition and ownership of capital equipment and specific noncapital equipment for a designated division within Battelle. The GSF varies from division to division and is restricted to technical research equipment available for general use within the division. It includes the cost of depreciation, maintenance, repair of all capital equipment and noncapital equipment purchased for less than \$1,500. These costs are recovered by applying a percentage to the division direct labor dollars and fringe benefits. The division number, applicable percentage for that unit, basis, and cost are provided on Form C-15.

**Special Facilities (SF).** These costs relate to a pool of specialized technical services and/or equipment. Costs included in this proposal are based on predetermined rates applied to specific units of usage or related direct labor dollars and fringe benefits as appropriate.

**Service Center.** These costs relate to technical and/or administrative services that are used in direct conduct of research or in support of research and overhead functions. Costs for these services are based on direct labor dollars plus applicable labor dollar burdens, and/or specific rates based on usage.

### **Purchased Services**

This element of cost includes staff relocation costs, conference fees and charges, outside computer usage, external copying and printing costs, postage and shipping costs, and outside purchased temporary labor.

### **Travel**

Battelle uses the Federal Travel Regulations (FTR) to estimate the cost for subsistence. Subsistence includes hotel, meals, and tips. Air fares are based on quotations from Battelle's travel agency for actual coach rates. Battelle also estimates the cost of ground transportation, which includes travel to and from the airport at both flight origin and destination, car rentals, and cab fare, and is based on Battelle experience.

### **General and Administrative (G&A)**

Battelle bids G&A at the current government approved provisional bidding rate. The projected rate based on budget for 1993 is 21.7 percent. This indirect pool includes bid and proposal, internal research and development costs, and other general and administrative expenses.

G&A costs included in this proposal are determined by applying the approved provisional bidding rate to the value-added base. The value-added base includes direct labor, fringe benefits, division overhead, other direct costs, purchased services, and travel.

Cost and pricing data in support of our budgeted G&A rates are on file with our cognizant ACO.

### **Purchased Equipment**

This element of cost includes equipment purchased for the client as directed by the RFP, or as required for the performance of the proposed contract.

Battelle's quantity and cost estimate for equipment is prepared by the technical staff assigned to the proposal with input from a Battelle purchasing agent or business operations representative as needed. These estimates are based on catalogs, and/or, time permitting, vendor quotations.

### **Purchased Material**

This cost element consists of several categories of costs including but not limited to; materials, supplies, stores withdrawal, and miscellaneous items. Battelle's quantity and cost estimates for materials, supplies, and miscellaneous items are prepared by technical staff assigned to the proposal

with input from a Battelle purchasing agent or business operations representative as needed. These estimates are based on historical data, catalogs, and, time permitting, vendor quotations.

### **Interorganizational Transfers**

Other Battelle components (if required/necessary) prepare and forward a formal cost proposal to Battelle Columbus Operations when BCO requires the expertise of another Battelle component to fully address an RFP's statement of work.

### **Subcontracts**

This element of cost includes subcontracted activity. When Battelle proposes to use subcontractors, we require that each subcontractor support the work assigned to them with a separate cost proposal. If time permits during the proposal preparation period, we will perform a price analysis and make our findings known to the government in our cost proposal. If the contemplated subcontract is expected to be more than \$1 million or more than \$100,000 and over 10 percent of the prime contract price, a cost analysis will also be conducted. If the subcontractor refuses to provide the supporting detail necessary to accomplish a cost analysis, their refusal will be documented for the file.

### **Cost of Facilities Capital**

Battelle Columbus Operations bids Cost of Facilities Capital in accordance with Cost Accounting Standard 414 and at the current government approved provisional bidding rates. The rates are based on the current treasury interest rate and other factors. Two rates are used; one rate is applied to direct labor dollars and fringe benefits - the other rate is applied to the same value-added base as G&A.

Cost of Facilities Capital costs are determined by applying the approved provisional bidding rates to the respective bases.

Cost and pricing data in support of our budgeted cost of facilities capital rates are on file with our cognizant ACO.

### **Inflation Factor**

Battelle applies an inflation factor to base-year materials and travel costs. The inflation rate is based on the Data Resources Inc.(DRI) — All Urban Consumer Price Index All Items.

### Salary Escalation

Battelle applies a salary escalation factor to base-year labor costs. The escalation rate is based on the most recent Battelle salary plan, which includes both merit and external market factors. By considering both merit and external market influences, the proposed labor dollar estimates are more reflective of anticipated actual costs than would be obtained by using an inflation-based index. The actual labor escalation factor applied to total direct labor dollars is based on the following formula:

$$\frac{[(\text{Lead months}) \times (\text{Annual escalation } \%) \div 12] + [(\text{Run months}) \times (\text{Annual escalation } \%) \div 24]}{1} = \text{Total labor escalation factor}$$

where

- *lead months* are equal to the number of months from the next calendar month following submittal of the proposal until work begins (for example: if a proposal is submitted in May and work starts in July, the lead month is one),
- and *run months* are equal to the number of months required to perform the work.

The escalation factors used in each cost proposal are always stated in the body of the proposal or on special forms provided with the RFP.

### Battelle's Fiscal Year

Battelle's fiscal year follows a calendar year.

### Summary of Unresolved CAS Issues

There are no unresolved CAS issues at this time.