

**Corpus Christi Air Monitoring and Surveillance Camera  
Installation and Operation Project**

**Quarterly Report for the Period**

**October 2, 2003 to December 31, 2003**

**Submitted to**

**Judge Janis Graham Jack  
US District Court for the Southern District of Texas  
Corpus Christi, Texas**

**Mr. Robert Todd  
US Environmental Protection Agency, Region 6  
Dallas, Texas**

**Mr. C. Buddy Stanley  
Texas Commission on Environmental Quality, Region 14  
Corpus Christi, Texas**

**Submitted by**

**David Allen, Ph.D.  
Principal Investigator  
Center for Energy and Environmental Resources  
The University of Texas at Austin  
10100 Burnet Road, Bldg 133 (R7100)  
Austin, TX 78758  
512/475-7842  
[allen@che.utexas.edu](mailto:allen@che.utexas.edu)**

**February 23, 2004**

## **I. Introduction**

On October 1, 2003, the US District Court for the Southern District of Texas issued an order to the Clerk of the Court to distribute funds in the amount of \$6,700,000, plus interest accrued, to The University of Texas at Austin to implement the court ordered condition of probation (COCP) project *Corpus Christi Air Monitoring and Surveillance Camera Installation and Operation* (Project). This quarterly report has been prepared pursuant to the requirements of the project proposal and is being submitted to the US District Court, the US Environmental Protection Agency (EPA), and the Texas Commission on Environmental Quality (TCEQ).

## **II. Project Progress Report**

The focus of work during this first quarter of the project has been directed to the following three activities.

### **A. Establishment of a Volunteer Advisory Board**

Project staff in consultation with the TCEQ Region 14 (Corpus Christi) Director's office developed a list of categories of representation that should be included on the Advisory Board. Once this list was developed, the TCEQ was asked to submit nominations for each category. The nominees were contacted initially by phone and then by letter to invite them to serve on this Advisory Board and to inform them of the responsibilities of Board members. Each was asked to serve for an initial term of two years. All agreed to serve except for the EPA representative. This agency (Appendix A) regretted that they could not serve as official members of the Advisory Board as they believed it would be inappropriate to so. Therefore they serve on the Board as an *Ex-Officio* member. A list of the members of the Advisory Board and their areas of representation are included in Appendix B along with acceptance forms signed by each Board member. Templates to develop biosketches on each Board member were distributed to each Board member. A copy of the template is also included in Appendix B. Advisory Board members were also polled for their availability for the first meeting, which subsequently was scheduled for

January 16, 2004. Development of an agenda and other preparations for the first meeting of the Advisory Board were also initiated during this quarter.

**B. Preparation of Specifications for Selection of Phase I Contractor**

Project staff obtained from TCEQ Headquarters (Laboratory and Mobile Monitoring Division) specifications for all equipment and site preparation for the seven air monitoring sites in the project proposal. These specifications were assembled into a request for bid (RFB) that was sent to the two bidders pre-approved by the TCEQ for performing this work. Bids were received by December 24, 2003. A copy of the RFB is included in Appendix C.

**C. Project Management and Planning**

Project management and planning focused on development of a project schedule and development of the system for providing reports to stakeholders of this project. A copy of the project schedule is included in Appendix D. A monthly report prepared by project staff is prepared each month and distributed electronically to all Advisory Board members, the TCEQ and the EPA to keep stakeholders apprised of project activities. Development of a website for this project was also initiated during this quarter.

**III. Financial Report**

As required by the project proposal, the following financial summary information is provided. Details supporting this financial summary are included in Appendix E.

**A. Total Amount of COCP Funds and Other Funds Received Under the Project**

Total COCP funds received = \$6,778,267.98

This total includes interest earned during the quarter on the initial distribution of project funds by the court. No other funds were received by the project during this quarter.

**B. Detailed List of the Actual Expenditures Paid by COCP Funds for the Quarter**

Total of actual expenditures = \$38,567.93

The detailed breakdown of the actual expenditures is included in Appendix E. The activities for which these expenditures were used is included in Section II of this report.

**C. Total Interest Earned on COCP Funds During the Quarter**

Total interest earned = \$16,549.96.

A report providing detailed calculations of the interest earned on the COCP funds during each month of the quarter is included in Appendix E.

**D. Balance (12/31/03) in COCP Account, including Interest Earned During the Quarter**

Balance in COCP Account = \$6,739,700.05

**E. Expected Expenditures for the Funds Remaining in the COCP Account**

Expected Expenditures = \$6,739,700.05

**Quarterly Report Distribution List:**

U.S. District Court, Mr. Bill Cazalas, Assistant Deputy Chief

Texas Commission on Environmental Quality

Ms. Kate Hodgins, Litigation Division - Headquarters

Mr. David Brymer, Laboratory and Mobile Monitoring – Headquarters

Mr. C. Buddy Stanley, Director – Region 14

Mr. David Kennebeck, Field Operations – Region 14

Environmental Protection Agency

Mr. Robert Todd, Air Enforcement Officer – Dallas Regional Office

Volunteer Advisory Board

## **APPENDICES**

## **APPENDIX A**

**EPA Letter - Participation as an Ex-Officio Advisory Board Member**



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 6  
1445 ROSS AVENUE, SUITE 1200  
DALLAS, TX 75202-2733

DEC 17 2003

Dr. David Allen  
The University of Texas at Austin  
Center for Energy and Environmental Resources  
J. J. Pickle Research Campus  
10100 Burnet Road, Building 133, M/C R7100  
Austin, TX 78758

Re: Corpus Christi Air Monitoring and Surveillance Camera Installation and Operation  
Advisory Board Participation

Dear Dr. Allen:

We appreciate your invitation to EPA's Region 6 Office to join the Corpus Christi Air Monitoring and Surveillance Camera Installation and Operation (Project) advisory board. We do not believe it would be appropriate for us to participate as official members of the Project's board. However, we will attend the meetings, review documents related to the project, and provide advice or assistance as appropriate. We are committed to the successful implementation of the Project.

I look forward to meeting with you and the board at their first meeting this coming January. Please feel free to contact Robert M. Todd at (214) 665-2156 if you have any questions or require any assistance.

Sincerely yours,

A handwritten signature in black ink, appearing to read "W.K. Honker".

William K. Honker, P.E.  
Chief  
Air/Toxics & Inspection  
Coordination Branch

01-02-04 P02:34 IN *mtm*

## **APPENDIX B**

**List of Advisory Board Members  
Advisory Board Participation Acceptance Letters  
Advisory Board Biographical Sketch Form (template)**



# Corpus Christi Air Monitoring and Surveillance Camera Installation and Operation Project

## ADVISORY BOARD MEMBERS

<u>Last Name</u>	<u>First Name</u>	<u>Affiliation/Organization</u>	<u>Area of Representation on the Board</u>
Arnold	Gretchen (Ms.)	CC Pollution Prevention Partnership Texas A&M University – Corpus Christi	At-Large
Barnard	Ron (Mr.)	Environmental Specialist City of Corpus Christi	Near Non-Attainment Area Liaison
Billiot	Eugene (Dr.)	Asst. Prof. Analytical Chemistry Texas A&M University – Corpus Christi	Measurement Technologies Expertise
Boostrom	Ardys (M.D.)	Physician – Corpus Christi-Nueces County Public Health District	Local Public Health
Coleman	Lena (Ms.)	Community Advisory Council	Neighborhood Organization
Dulip	Vinay (Mr.)	Chemistry Teacher Moody High School	Local Educator
Kost	Glen (Dr.)	Public Health Awareness Group	At-Large
Suter	Pat (Ms.)	Costal Bend Sierra Club	Local Advocacy Group

### Ex-Officio Members

Brymer	David (Mr.)	Texas Commission on Environmental Quality - Headquarters	Manager, Laboratory and Mobile Monitoring Section
Kennebeck	David (Mr.)	Texas Commission on Environmental Quality – Region 14 - Field Operations	Air Section Work Leader
Stanley	C. Buddy (Mr.)	Texas Commission on Environmental Quality – Region 14 - Field Operations	Regional Director
Todd	Robert M. (Mr.)	Environmental Protection Agency Dallas Regional Office	Environmental Engineer

**ACCEPTANCE OF INVITATION  
TO SERVE ON THE ADVISORY BOARD**

*for*

**The Corpus Christi Air Monitoring and Surveillance Camera Installation and Operation  
Project (Project)**

This Acceptance of Invitation is entered into by Ms Gretchen Arnold of Pollution Prevention Partnership, Texas A&M University-Corpus Christi located at 6300 Ocean Dr., NRC #2200, Corpus Christi, Texas.

**Purpose:** This Acceptance of Invitation is entered into as a result of a Court Order by the U.S. District Court authorizing The University of Texas at Austin's Center for Energy and Environmental Resources (the University) to receive funds to implement the Project including the requirement of the Project to form a Voluntary Advisory Board as outlined in the attached Project Summary.

**Responsibilities:** As a member of the Advisory Board I will be charged with the responsibilities which shall include:

- Review of Project plans;
- Consultation on Project implementation;
- Consultation on the selection of subcontractors for site installation and operation;
- Consultation on the selection of monitoring sites;
- Consultation on the types of equipment purchased;
- Consultation on the site implementation schedules, and
- To act in an advisory capacity as requested by Project personnel.

**Term and Organization:** As a member of the panel I will serve on the Advisory Board at the pleasure of the appointing body for a minimum period of two (2) consecutive years from December 1, 2003. By written offer, in the form of written Amendment to this Acceptance of Invitation, the term of service may be extended beyond the initial term during Phase II of the Project.

I agree that upon formation of the Advisory Board the panel shall select from its membership a chair/spokes person and a recording secretary. The Advisory Board shall meet at least semi-annually and as frequently as quarterly, depending upon the activities, during Phase I and Phase II of the Project.

Air quality monitoring data collected under the Project will be made public and broadly disseminated. However, part of the discussions of the Advisory Board may involve confidential information such as contractor selection. For those discussion items which are deemed not to be for public dissemination I agree not to disclose or otherwise divulge any such discussion items without the prior review and approval of the University, unless disclosure is required by federal or state law.

By acceptance of this Invitation to serve, I certify that I am not an employee, officer or director of Koch Industries Inc. nor Flint Hills Resources, LP (formerly know as Koch Petroleum Group, L.P.) nor any affiliate of Koch Industries, Inc. and Flint Hill Resources, LP including those subsidiaries and affiliates listed on the attached Exhibit A.

**ACCEPTED:**

By: 

*Ms. Gretchen Arnold, Pollution Prevention Partnership*

Date: 11-25-03

**Flint Hills Resources LP's  
Subsidiaries and Affiliates**

**EXHIBIT A**

Brown Fintube Company, LP	Chemical Technology
Brown Fintube GP, LLC	Chemical Technology
Brown Fintube Holdings, LLC	Chemical Technology
Cardinal Pumps & Exchangers Inc.	Chemical Technology
Clark-Koch Indústria e Comércio Ltda.	Chemical Technology
Divmesh Separators, Ltd.	Chemical Technology
GFS Towertech Joint Venture Pte. Ltd.	Chemical Technology
GFS/Jalca Pty. Ltd.	Chemical Technology
GFS/NDE, a division of Tru-Tec Services, Inc.	Chemical Technology
Glitsch (Suzhou) Petrochemical Engineering Co., Ltd.	Chemical Technology
Infrared Surveys Division A Division Of Tru-Tec Services, Inc.	Chemical Technology
IOCO Koch-Glitsch NP	Chemical Technology
Iris Power Engineering Inc.	Chemical Technology
John Zink Asia-Pacific, a Division of Koch Asia-Pacific, Inc.	Chemical Technology
John Zink Benelux Division Of Koch International B.V.	Chemical Technology
John Zink Company a Division of Koch International S.a.r.l.	Chemical Technology
John Zink Company, LLC	Chemical Technology
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TrueNorth Energy L.P.	Flint Hills Resources
Including all companies containing "Koch" in their company name.	

**ACCEPTANCE OF INVITATION  
TO SERVE ON THE ADVISORY BOARD**

for

**The Corpus Christi Air Monitoring and Surveillance Camera Installation and Operation  
Project (Project)**

This Acceptance of Invitation is entered into by Mr. Ron Barnard of the City of Corpus Christi, located at 1900 N. Chaparral, Corpus Christi, Texas.

**Purpose:** This Acceptance of Invitation is entered into as a result of a Court Order by the U.S. District Court authorizing The University of Texas at Austin's Center for Energy and Environmental Resources (the University) to receive funds to implement the Project including the requirement of the Project to form a Voluntary Advisory Board as outlined in the attached Project Summary.

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By acceptance of this Invitation to serve, I certify that I am not an employee, officer or director of Koch Industries Inc. nor Flint Hills Resources, LP (formerly know as Koch Petroleum Group, L.P.) nor any affiliate of Koch Industries, Inc. and Flint Hill Resources, LP including those subsidiaries and affiliates listed on the attached Exhibit A.

**ACCEPTED:**

By:   
Mr. Ron Barnard, City of Corpus Christi

Date: November 26, 2003

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TO SERVE ON THE ADVISORY BOARD**

for

**The Corpus Christi Air Monitoring and Surveillance Camera Installation and Operation  
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**ACCEPTED:**

By: Eugene Billiot  
Dr. Eugene Billiot / Texas A&M University-Corpus Christi

Date: 12-11-03



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Including all companies containing "Koch" in their company name.	

**ACCEPTANCE OF INVITATION  
TO SERVE ON THE ADVISORY BOARD**

for

**The Corpus Christi Air Monitoring and Surveillance Camera Installation and Operation  
Project (Project)**

This Acceptance of Invitation is entered into by Dr. Ardys Boostrom, Corpus Christi – Nueces County Public Health District located at 1702 Horne Road, Corpus Christi, Texas.

**Purpose:** This Acceptance of Invitation is entered into as a result of a Court Order by the U.S. District Court authorizing The University of Texas at Austin's Center for Energy and Environmental Resources (the University) to receive funds to implement the Project including the requirement of the Project to form a Voluntary Advisory Board as outlined in the attached Project Summary.

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**ACCEPTED:**

By: Ardys Boostrom MD Date: 12-1-03  
*Dr. Ardys Boostrom, Corpus Christi-Nueces County Public Health District*

**Flint Hills Resources LP's  
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**Flint Hills Resources LP's  
Subsidiaries and Affiliates**

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Including all companies containing "Koch" in their company name.	

**ACCEPTANCE OF INVITATION  
TO SERVE ON THE ADVISORY BOARD**

for

**The Corpus Christi Air Monitoring and Surveillance Camera Installation and Operation  
Project (Project)**

This Acceptance of Invitation is entered into by Ms. Lena Coleman of Corpus Christi, Texas.

**Purpose:** This Acceptance of Invitation is entered into as a result of a Court Order by the U.S. District Court authorizing The University of Texas at Austin's Center for Energy and Environmental Resources (the University) to receive funds to implement the Project including the requirement of the Project to form a Voluntary Advisory Board as outlined in the attached Project Summary.

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By acceptance of this Invitation to serve, I certify that I am not an employee, officer or director of Koch Industries Inc. nor Flint Hills Resources, LP (formerly know as Koch Petroleum Group, L.P.) nor any affiliate of Koch Industries, Inc. and Flint Hill Resources, LP including those subsidiaries and affiliates listed on the attached Exhibit A.

**ACCEPTED:**

By:   
Ms. Lena Coleman

Date: 11/21/03

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**ACCEPTANCE OF INVITATION  
TO SERVE ON THE ADVISORY BOARD**

for

**The Corpus Christi Air Monitoring and Surveillance Camera Installation and Operation  
Project (Project)**

This Acceptance of Invitation is entered into by Mr. Vinay Dulip of Moody High School located at 1818 Trojan Drive, Corpus Christi, Texas.

**Purpose:** This Acceptance of Invitation is entered into as a result of a Court Order by the U.S. District Court authorizing The University of Texas at Austin's Center for Energy and Environmental Resources (the University) to receive funds to implement the Project including the requirement of the Project to form a Voluntary Advisory Board as outlined in the attached Project Summary.

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**ACCEPTED:**

By:   
Mr. Vinay Dulip *Moody High School*

Date: 11-30-03

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**ACCEPTANCE OF INVITATION  
TO SERVE ON THE ADVISORY BOARD**

for

**The Corpus Christi Air Monitoring and Surveillance Camera Installation and Operation  
Project (Project)**

This Acceptance of Invitation is entered into by Dr. Glen Kost of Corpus Christi, Texas.

**Purpose:** This Acceptance of Invitation is entered into as a result of a Court Order by the U.S. District Court authorizing The University of Texas at Austin's Center for Energy and Environmental Resources (the University) to receive funds to implement the Project including the requirement of the Project to form a Voluntary Advisory Board as outlined in the attached Project Summary.

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**ACCEPTED:**

By: Dr. Glen Edward Kost  
Dr. Glen Kost

Date: 11/24/2003

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**ACCEPTANCE OF INVITATION  
TO SERVE ON THE ADVISORY BOARD**

*for*

**The Corpus Christi Air Monitoring and Surveillance Camera Installation and Operation  
Project (Project)**

This Acceptance of Invitation is entered into by Ms. Pat Suter of Corpus Christi, Texas.

**Purpose:** This Acceptance of Invitation is entered into as a result of a Court Order by the U.S. District Court authorizing The University of Texas at Austin's Center for Energy and Environmental Resources (the University) to receive funds to implement the Project including the requirement of the Project to form a Voluntary Advisory Board as outlined in the attached Project Summary.

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**ACCEPTED:**

By: Pat Suter  
Ms. Pat Suter

Date: 11-24-03

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# **Advisory Board of the Corpus Christi Air Monitoring and Surveillance Camera Installation and Operation Project**

## **Advisory Board Member - BIOGRAPHICAL INFORMATION FORM**

Name: \_\_\_\_\_

Organization/Affiliation: \_\_\_\_\_

Area of representation on the Board: \_\_\_\_\_

*Include a brief biographical sketch below. The biographical sketch should include information about your involvement in other air quality monitoring programs in the Corpus Christi area. If you are involved in other programs include the name of the program, the nature of your involvement and the length of time you have been or will be involved with that program.*

*The biographical sketch should be appropriate for including in the Corpus Christi Air Monitoring and Surveillance Camera Installation and Operation Project reports that will be submitted to the US District Court. Any information submitted with Project reports including your biographical sketch will be subject to the Texas Public Information Act.*

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## **APPENDIX C**

**The University of Texas at Austin - Request for Bid  
Selection of the Phase I Contractor**



CENTER FOR ENERGY AND ENVIRONMENTAL RESOURCES

THE UNIVERSITY OF TEXAS AT AUSTIN

J.J. Pickle Research Campus • 10100 Burnet Road • MS R7100 • Austin, Texas 78758  
512/471-7792 • FAX: 512/471-1720

November 24, 2003

URS Corporation  
9801 Westheimer, Suite 500  
Houston, TX 77042

Attention: Mr. Al Hendler

Subject: Corpus Christi Air Monitoring and Surveillance Camera Installation Project (Project)  
Subcontract for Installation of Monitoring Stations

Dear Mr. Hendler:

Thank you for your interest in collaborating with the University of Texas at Austin (the University) in the subject air quality monitoring project. The University has entered into a contract to conduct the subject project and is seeking your finalized bid for preparing sampling sites and installing equipment in seven (7) monitoring stations. The Project requires that the subcontractor selected have all sites operational within ten (10) months of receipt of a subcontract from The University of Texas at Austin.

You must submit a written finalized bid and fixed price budget on or before the close of business on Wednesday, December 17, 2003. Your finalized bid must be valid for ninety (90) days from 12/17/03 and should include costs associated with the following:

A total of seven (7) sites in the Corpus Christi area are a part of the Project. The sites are listed in the attachment to this memo. Six (6) of the seven (7) sites identified will either require site preparation at locations that do not currently have sampling equipment or the expansion of existing sites. One (1) of the seven (7) sites is currently an operational TCEQ site and you may assume no site preparation is required for this site. Your final bid shall include costs and activity which meet the attached Bid Specifications prepared by the University and TCEQ.

As applicable, all equipment must be bid new, of current production and must include the manufacturer's standard parts and accessories. As part of the delivery of the equipment, two(2) sets of manuals (styled: Instruction Manual, Operator's Manual, Operation and Service Manual etc.) shall accompany each piece of equipment purchased. The warranty period for each piece of equipment must be clearly identified in your bid.

Your final bid should include precise equipment specifications which have been officially quoted by the vendor you have selected for the purchase of equipment. The process for obtaining all equipment for installation shall be coordinated through and with assistance from the University of Texas at Austin. Your equipment specifications, firm bid and vendor selection will be obtained on behalf of the University which the vendor must honor when the equipment is purchased by the University. The University shall retain title to all equipment purchased under your subcontract. The final bid should include your costs associated with obtaining the above equipment specifications and bids, assisting the

University in developing sole source justifications, if applicable, and the installation of the equipment described in the attached Bid Specifications.

You should assume that two (2) of the sites will have auto-GCs, six (6) of the sites will have H<sub>2</sub>S and SO<sub>2</sub> measurements, seven (7) of the sites will have VOC triggered canister measurements and two (2) of the sites will have video cameras. Equipment for automatic, on-site calibration of the sulfur monitors should be included, as should equipment required for transmission of the data to the TCEQ monitoring network. In obtaining equipment specifications include one (1) complete set of spare equipment for the sulfur monitors and the VOC triggered canister measurements and forty (40) canisters (400 ml) with valves for the canister autosampler. Final canister design and selection shall be approved by TCEQ prior to purchase.

For all equipment with a purchase price of \$5,000 or greater and all computer hardware regardless of price, a complete inventory must be prepared and given to the University as part of the requirements for completion of the installation of the seven (7) monitoring sites. For each piece of equipment and for all computer hardware purchased for this project a catalog which contains the following information must be prepared:

- Name of equipment/hardware
- Manufacturer
- Model Number
- Serial Number
- Identify site location
- Location of equipment/hardware at the site
- Purchase price
- Date of purchase
- Date installed at the site
- Condition of equipment after installation
- Maintenance schedules

In your final bid, prepare a detailed list of equipment to be purchased in coordination with the University. The cost of the equipment to be purchased will be paid by the University and should not be part of your final budgeted costs. However, the cost associated with your coordinating the equipment purchases with the University and obtaining precise equipment specifications from your selected vendor can be included in your final budgeted costs.

As mentioned in the first paragraph, all sites must be operational within ten (10) months of receipt of the subcontract. In your bid, specify the time required from the date you have access to the sites until the sites are completed and operational. We anticipate you should have site access by January 2004. Assume no site license costs. Completion will be demonstrated through one week of operation with an 80% data capture rate on all continuously operated equipment and demonstrated operation of the event triggered canister analyses. Thirty (30) days prior to a site being completely operational and ready for acceptance testing, you must notify the University in writing of the start of operation to demonstrate completion of the sites.

Your final bid should include separate and identifiable costs associated with orientation and training of personnel necessary to transition the sites from the installation phase of the Project to the full operation phase of the Project. Your bid should contain sufficient detail to evaluate what will be done during this transition period and the time needed to complete orientation and training of the operators at each site. The budget for this transition period should detail expenses by line item and convert to a daily rate for the task of transitioning into full operation of the sites.

Once constructed, the monitoring sites will be operated under a separate contract. The operator will be responsible for all activities required to keep the sites operational. In your final bid include questions about the operation of the monitoring phase of the Project. If you find there is a need for more specificity to allow for more accurate bid preparation for the monitoring phase of the Project include those discussions in your final bid. Raise any concerns you may have about the operation of the sites for up to six (6) years after the sites are complete and operational.

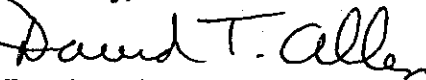
As an additional option item to your final bid, in the event it is necessary for you to operate the sites after completion of one week of successful acceptance testing, include the costs associated with operating each site for one week.

You should include all assumptions made in preparing your bid.

It is anticipated that a subcontractor will be selected in January 2004 with a subcontract issued by the University in February 2004. Please do not hesitate to contact Vince Torres at (512) 471-5803 or by email at [vmtorres@mail.utexas.edu](mailto:vmtorres@mail.utexas.edu) if you have any questions concerning the preparation and submission of your bid.

Thank you for your interest in collaborating with the University of Texas at Austin on this very important project.

Sincerely,



David T. Allen,

Attachments



CENTER FOR ENERGY AND ENVIRONMENTAL RESOURCES

THE UNIVERSITY OF TEXAS AT AUSTIN

J.J. Pickle Research Campus • 10100 Burnet Road • MS R7100 • Austin, Texas 78758  
512/471-7792 • FAX: 512/471-1720

November 24, 2003

*Picked up 11-25-03*

Air Quality Solutions, Inc.  
1301 So. IH-35, Suite 107  
Austin, TX 78741-1169

Attention: Mr. Rogelio C. Ramon, President

Subject:: Corpus Christi Air Monitoring and Surveillance Camera Installation Project (Project)  
Subcontract for Installation of Monitoring Stations

Dear Mr. Ramon:

Thank you for your interest in collaborating with the University of Texas at Austin (the University) in the subject air quality monitoring project. The University has entered into a contract to conduct the subject project and is seeking your finalized bid for preparing sampling sites and installing equipment in seven (7) monitoring stations. The Project requires that the subcontractor selected have all sites operational within ten (10) months of receipt of a subcontract from The University of Texas at Austin.

You must submit a written finalized bid and fixed price budget on or before the close of business on Wednesday, December 17, 2003. Your finalized bid must be valid for ninety (90) days from 12/17/03 and should include costs associated with the following:

A total of seven (7) sites in the Corpus Christi area are a part of the Project. The sites are listed in the attachment to this memo. Six (6) of the seven (7) sites identified will either require site preparation at locations that do not currently have sampling equipment or the expansion of existing sites. One (1) of the seven (7) sites is currently an operational TCEQ site and you may assume no site preparation is required for this site. Your final bid shall include costs and activity which meet the attached Bid Specifications prepared by the University and TCEQ.

As applicable, all equipment must be bid new, of current production and must include the manufacturer's standard parts and accessories. As part of the delivery of the equipment, two(2) sets of manuals (styled: Instruction Manual, Operator's Manual, Operation and Service Manual etc.) shall accompany each piece of equipment purchased. The warranty period for each piece of equipment must be clearly identified in your bid.

Your final bid should include precise equipment specifications which have been officially quoted by the vendor you have selected for the purchase of equipment. The process for obtaining all equipment for installation shall be coordinated through and with assistance from the University of Texas at Austin. Your equipment specifications, firm bid and vendor selection will be obtained on behalf of the University which the vendor must honor when the equipment is purchased by the University. The University shall retain title to all equipment purchased under your subcontract. The final bid should include your costs associated with obtaining the above equipment specifications and bids, assisting the

University in developing sole source justifications, if applicable, and the installation of the equipment described in the attached Bid Specifications.

You should assume that two (2) of the sites will have auto-GCs, six (6) of the sites will have H<sub>2</sub>S and SO<sub>2</sub> measurements, seven (7) of the sites will have VOC triggered canister measurements and two (2) of the sites will have video cameras. Equipment for automatic, on-site calibration of the sulfur monitors should be included, as should equipment required for transmission of the data to the TCEQ monitoring network. In obtaining equipment specifications include one (1) complete set of spare equipment for the sulfur monitors and the VOC triggered canister measurements and forty (40) canisters (400 ml) with valves for the canister autosampler. Final canister design and selection shall be approved by TCEQ prior to purchase.

For all equipment with a purchase price of \$5,000 or greater and all computer hardware regardless of price, a complete inventory must be prepared and given to the University as part of the requirements for completion of the installation of the seven (7) monitoring sites. For each piece of equipment and for all computer hardware purchased for this project a catalog which contains the following information must be prepared:

- Name of equipment/hardware
- Manufacturer
- Model Number
- Serial Number
- Identify site location
- Location of equipment/hardware at the site
- Purchase price
- Date of purchase
- Date installed at the site
- Condition of equipment after installation
- Maintenance schedules

In your final bid, prepare a detailed list of equipment to be purchased in coordination with the University. The cost of the equipment to be purchased will be paid by the University and should not be part of your final budgeted costs. However, the cost associated with your coordinating the equipment purchases with the University and obtaining precise equipment specifications from your selected vendor can be included in your final budgeted costs.

As mentioned in the first paragraph, all sites must be operational within ten (10) months of receipt of the subcontract. In your bid, specify the time required from the date you have access to the sites until the sites are completed and operational. We anticipate you should have site access by January 2004. Assume no site license costs. Completion will be demonstrated through one week of operation with an 80% data capture rate on all continuously operated equipment and demonstrated operation of the event triggered canister analyses. Thirty (30) days prior to a site being completely operational and ready for acceptance testing, you must notify the University in writing of the start of operation to demonstrate completion of the sites.

Your final bid should include separate and identifiable costs associated with orientation and training of personnel necessary to transition the sites from the installation phase of the Project to the full operation phase of the Project. Your bid should contain sufficient detail to evaluate what will be done during this transition period and the time needed to complete orientation and training of the operators at each site. The budget for this transition period should detail expenses by line item and convert to a daily rate for the task of transitioning into full operation of the sites.



Once constructed, the monitoring sites will be operated under a separate contract. The operator will be responsible for all activities required to keep the sites operational. In your final bid include questions about the operation of the monitoring phase of the Project. If you find there is a need for more specificity to allow for more accurate bid preparation for the monitoring phase of the Project include those discussions in your final bid. Raise any concerns you may have about the operation of the sites for up to six (6) years after the sites are complete and operational.

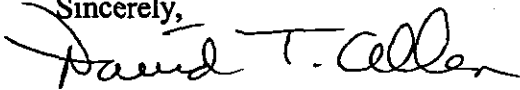
As an additional option item to your final bid, in the event it is necessary for you to operate the sites after completion of one week of successful acceptance testing, include the costs associated with operating each site for one week.

You should include all assumptions made in preparing your bid.

It is anticipated that a subcontractor will be selected in January 2004 with a subcontract issued by the University in February 2004. Please do not hesitate to contact Vince Torres at (512) 471-5803 or by email at [vmtorres@mail.utexas.edu](mailto:vmtorres@mail.utexas.edu) if you have any questions concerning the preparation and submission of your bid.

Thank you for your interest in collaborating with the University of Texas at Austin on this very important project.

Sincerely,



David T. Allen,

Attachments

## **ATTACHMENTS**

**Schedule of Air Monitoring Sites  
and  
Monitoring Equipment at each Site**

**Corpus Christi COCP Project  
Air Monitoring Station Schedule and Equipment**

Contract Ref	Latitude	Longitude	Description of Site Location	Monitoring Equipment				
				Auto GC	Event Mon	Sulfur Com	Met Station	Camera
1.a	27.79861° North	97.43394° West	Oak Park Recreation Center	Yes	Yes		Yes	
1.b	27.81837° North	97.42130° West	Grain Elevator @ Port of Corpus Christi		Yes	Yes	Yes	
1.c	27.82485° North	97.43227° West	J. I. Halley Site @ Port of Corpus Christi		Yes	Yes	Yes	
1.d	27.81165° North	97.46561° West	TCEQ Monitoring Site C199 @ Donna Park		Yes	Yes		Maybe
1.e	27.84418° North	97.52525° West	Port of Corpus Christi building on west end of CC Inner Harbor		Yes	Yes	Yes	
1.f	27.82769° North	97.52952° West	Off Up River Road on Flint Hills Resources easement		Yes	Yes	Yes	Maybe
1.g	27.82906° North	97.54322° West	Solar Estates Park at end of Sunshine Road	Yes	Yes	Yes	Yes	Maybe
Cam 1	TBD	TBD	One location from 1.d, 1.f, or 1.g					
Cam 2	TBD	TBD	One location from 1.d, 1.f, or 1.g					

**Schedule of Specifications for Establishing  
the Monitoring Sites**

**Schedule of Specifications for Establishing Monitoring Sites  
and  
Adding Equipment to Existing Sites**

Applicable Specifications		1.a	1.b	1.c	1.d C199	1.e	1.f	1.g
Name	No.							
<b>I. Overview of Data Collection and Data Flow</b>		0	X	X	X	X	X	X
<b>II. Site Preparation</b>								
Site pad	13,14	X	X	X		X	X	X
Fencing	9	X	X	X		X	X	X
Electrical utilities	2	X	X	X		X	X	X
Data Communication Utilities		X	X	X		X	X	X
Equipment trailer	1, 3	X	X	X		X	X	X
<b>III. Monitoring Equipment</b>								
Automatic Gas Standard Calibrator	4	X	X	X		X	X	X
20 Standard LPM Self Contained Clean Air Supply	5	X	X	X		X	X	X
Auto GC PAMS Site Equipment	6	X						X
Carbon Monoxide Analyzer	7	X	X	X		X	X	X
Rohn Model 25G Self-Supporting Tower and Met One Model 173C Lift System	17	X	X	X		X	X	X
Replacement Parts for Climatronics F460 Weather Systems	8	X	X	X		X	X	X
H2S Converter	10		X	X	X	X	X	X
NOx Analyzer	11	X	X	X		X	X	X
Ozone Monitor	12	X	X	X		X	X	X
Sulfur Dioxide Monitor	15		X	X	X	X	X	X
Continuous Methane/Non-Methane Hydrocarbon Analyzer	16	X	X	X	X	X	X	X
VOC Sampler Model 1800 & Attachment 1816	18	X						X
ZENO 3200 Data Logger	19	X	X	X	X	X	X	X
TCEQ Monitoring Operations Division SOP # AMMO-002	20	X	X	X	X	X	X	X
<b>IV. Cameras</b>								
Site 1 (Only at one location)					X		X	X
Site 2 (Only at one location)					X		X	X

**Equipment Bid Specifications  
No. 00 through No. 20**

## **Bid Specification No. 00**

# **Corpus Christi Air Monitoring and Surveillance Camera Installation and Operation Project**

## **Overview of Data Collection and Data Flow**

### **Continuous Air Monitoring Station (CAMS)**

- CSP CAMS will monitor sulfur dioxide, hydrogen sulfide, and/or continuous total non-methane organic compounds (TNMOC), and/or canister sampler information, and/or meteorological parameters
- CSP CAMS will be installed, operated, and maintained by contractor to The University of Texas at Austin
- Data logger at station will collect readings from each instrument once per second
- Data logger will calculate and store 5-minute averages from the 1-second samples

### **Hub Computer**

- Located at TCEQ Regional Office in Corpus Christi
- Automatically calls each Corpus Christi area CAMS once every 15 minutes and downloads and stores three 5-minute averages via telephone modem connection (including TCEQ CAMS and proposed CSP CAMS)
- TCEQ will provide necessary hardware and TCEQ staff and/or TCEQ contractors will make necessary software configurations for Corpus Christi Hub Computer to retrieve data from CSP sites



## **TCEQ Headquarters Unix Computer**

- Polls Hub Computers around the state, including Corpus Christi via TCEQ Wide-Area-Network (WAN), once every 15 minutes and retrieves three 5-minute averages for each monitoring site
- Calculates 1-hour averages from the 5-minute averages for each parameter from each site
- Relays 5-minute data to TCEQ internal web pages where data are available about 5 minutes after collection from the Hub
- Relays 1-hour CAMS data to TCEQ internal web pages and World-Wide-Web (WWW) Internet web pages for display
  - To TCEQ internal web page displays about 15 to 20 minutes after each hour
  - To WWW Internet web page displays about 25 to 45 minutes after each hour
- TCEQ staff and/or TCEQ contractors will make necessary software configurations for TCEQ Headquarters Unix Computer to collect, process, and display Corpus Christi CSP CAMS data

## **Data Validation**

- University of Texas at Austin contractor staff will use software behind TCEQ firewall to review and validate sulfur dioxide, hydrogen sulfide, TNMOC, and meteorological data
- Validated data will be automatically available for TCEQ internal and WWW Internet web page display

## **Automated Gas Chromatograph (Auto-GC)**

- CSP auto-gc monitoring sites will be installed, operated, and maintained by the University of Texas at Austin contractor
- Auto-gc automatically collects and analyzes samples once per hour
  - Collects sample for first 40 minutes of each hour
  - Starts sample analysis during last 20 minutes of each hour
- Auto-gc analyzes and reports concentrations of over 50 volatile organic compounds (VOC) once per hour based on each 40-minute sample
- Data are automatically retrieved from the auto-gc and stored on a Windows NT computer at the station

## **TCEQ Headquarters Windows NT Computer**

- Retrieves data from the Windows NT computer at each auto-gc monitoring site once per hour via ISDN lines
- Relays 1-hour data to TCEQ internal and WWW Internet web pages for display
- TCEQ staff will configure software for TCEQ Headquarters Windows NT Computer to retrieve auto-gc data from Corpus Christi CSP sites

## **Data Validation**

- The University of Texas contractor staff will retrieve and validate the auto-gc data
- Validated data will be provided back to TCEQ electronically and reposted on the TCEQ web page Event-Triggered Canister VOC Samples
- Each canister will be cleaned and evacuated prior to being run by University of Texas contractor staff
- Each canister will be loaded onto a canister sampler by University of Texas contractor staff
- Each canister will be filled with ambient air over a 1-hour period beginning at a trigger event

- Trigger events will be handled automatically by data logger software based on Total Non-Methane Organic Compound measurements of high TNMOC levels
- Up to 2 canisters can be run in succession and up to 30 canisters will be analyzed per site per year
- Filled canisters will be retrieved and shipped to the University of Texas contract laboratory by University of Texas contractor staff
- University of Texas contract laboratory will analyze each canister for over 80 species of VOC and report results in computer readable electronic format to University of Texas and TCEQ
- TCEQ will make data available on internal and WWW web page displays

## Bid Specification No. 1

### SPECIFICATIONS FOR TRAILERS (PORTABLE STRUCTURE) 582-2-52724

#### MINIMUM GENERAL SPECIFICATIONS

##### INTERIOR

- 1.1 Interior walls shall be insulated with 3-1/2" of fiberglass insulation (R-11 rating) and lined with white vinyl-covered 1/4" plywood, all steel studs.
  - 1.1.1 Walls shall be constructed with 16 gauge steel x 3-1/2" hat section wall studs, placed on 16" centers, with swaged ends for strength and fit.
  - 1.1.2 Walls shall be constructed with 1/8" structural steel angles at top and bottom of wall for added strength.
  - 1.1.3 Wall corners shall be constructed utilizing full radius 13 gauge steel corner posts.
  - 1.1.4 Walls shall be constructed so as to contain an electrolysis barrier at the base of the steel side walls between the exterior aluminum and steel to prevent corrosion.
- 1.2 Interior flat ceiling shall be insulated with 7" of fiberglass insulation and lined with white vinyl-covered 1/4" plywood. Interior height to finished ceiling shall be 7'0".
  - 1.2.1 Roof shall be constructed and supported with 18 gauge steel roof bows placed on 16" centers.
  - 1.2.2 Roof shall be constructed using 0.080 anodized aluminum roof cove that runs full length of side walls for structural strength.
- 1.3 Floor shall be constructed with 3/4" wolmanized exterior grade plywood, Foil Ray insulated lined, and shall be covered with one piece commercial grade vinyl linoleum.
- 1.4 Two (2) 36" x 80" recessed walk doors with flush locking handles (both keyed alike).
  - 1.4.1 Locks on all trailers to be keyed alike.
  - 1.4.2 One (1) door mounted in side wall and one (1) in rear end wall. (ref. sketch)
  - 1.4.3 Locking handles shall have the capability of being locked and unlocked from inside the trailer.
  - 1.4.4 A rain drip shield shall be installed above each of the doors.
  - 1.4.5 Aluminum diamond tread floor plate material shall be installed over recessed step and full width of side walk door.
  - 1.4.6 Aluminum diamond tread floor plate material shall be installed over vinyl flooring material, as threshold, for the full width of rear door.
- 1.5 One (1) 200 amp distribution panel with Square D Model MT QO #QO13040M200, a minimum of twenty (20) 1" breaker spaces to be installed inside on side wall at tongue end of trailer (per sketch). Service entrance for power shall be waterproof through back of distribution panel, and through side wall of trailer. Sealable in or out of use. (see sketch).
  - 1.5.1 All electrical components, hardware, and wiring shall conform to the requirements of the National Electric Code.
  - 1.5.2 The interior wiring of the shelter shall be enclosed in surface mount raceways and all steel conduits.
  - 1.5.3 A separate circuit and circuit breaker shall be installed for the A/C unit, interior lights and exterior lights.
- 1.6 Two (2) 8ft. 120 volt double tube flourescent fixtures shall be installed with bulbs and diffusers. Three-way on/off switches, for interior lights, to be located next to each walk door. (see sketch).
- 1.7 One (1) three-way on/off switch (to be located inside) and one (1) exterior 120 volt light with vandal guard, to be located outside next to each walk door, Magnum Model #055 13 235 or equal. (ref. sketch)
- 1.8 Wall mounted combination air conditioner-heat unit 12,000 BTU (Sun Brand Model No. SUN/STS 12-1-3C or equal) located on center of tongue end wall.
  - 1.8.1 Thermostat shall be dual function with automatic changeover, Magnum Model #024116 or equal. (see sketch for location).
  - 1.8.2 Thermostat wire shall be routed in a neat and professional manner so as to be as inconspicuous as possible.

**1.9 EXTERIOR**

- 1.9.1 Tandem fenders shall be installed to accommodate wide axle assembly.
- 1.9.2 Spare tire carrier shall be mounted on trailer tongue and shall be lockable.
- 1.9.3 Tandem 4" drop axle assemblies with 5 stud hubs and electric brakes; 102" width Torflex brand or equal (breakaway switch & battery included).
- 1.9.4 Five (5) ST 205/75R15 load range C radial tires on five-bolt white-spoke electro-deposition wheels.
- 1.9.5 Four (4) welded ball-mount receivers shall be attached to trailer main frame at corner locations to accept levelling jacks (Magnum Model #05211J190510 or equal). Note: Levelling jacks are to be included for each trailer.
- 1.9.6 Exterior of trailer shall be 0.030 white pre-finished aluminum attached to vertical 16 gauge steel x 3-1/2" hat sections located on 16" centers.
- 1.9.7 Exterior fasteners shall be coated with silver ever-lube corrosive resistant coating to resist weathering.
- 1.9.8 12-volt lighting shall be wrap-around LED stop/tail/turn light indicator and shall utilize harnesses with molded connectors to ensure good connections and eliminate shorts.
- 1.9.9 All 12-volt lighting shall meet DOT/ICC specifications.
- 1.10 Trailer shall meet all DOT/ICC safety requirements.
- 1.11 The underside of the floor shall be protected with an aluminum liner, sealing it against moisture when transporting structure during inclement weather.
  - 1.11.1 Undercarriage and underside of shelter shall be undercoated with Scharph Group coating.
  - 1.11.2 Exposed frame shall be painted with two part catalyzed polyurethane black paint.
- 1.12 Undercarriage tongue shall be a 5' 3-piece A-Frame constructed of 3" x 8" x 3/16" steel rectangular tubing material with center member extending under the trailer 4' for added strength.
  - 1.12.1 Undercarriage tongue shall be equipped with a 2-5/16" Atwood type coupling hitch or equivalent.
  - 1.12.2 Frame members shall be 3" x 8" x 3/16" steel rectangular tubing material.
  - 1.12.3 All cross-members shall be 3" x 8" x 12 gauge steel "C" material positioned on 24" centers for strength
  - 1.12.4 Elevating jack (Fulton Model No. JA214S or equal) equipped with sand pad shall be installed on undercarriage tongue.
- 1.13 Rear step shall be mounted to undercarriage beneath rear door. Step shall be designed and installed to slide in or with the capability of being removed when not in use (Magnum Model #SS-2412 or equal).

## **Bid Specification No. 2**

### **200 amp Electrical Power Specifications for Construction of a CAMS Site**

#### **1. Electrical Power Connection**

The contractor(s) shall obtain all necessary local permits (prior to beginning construction) and request final inspection, if required by local authority. The contractor(s) shall make any corrections to the installations that the local inspectors may require. The contractor shall be responsible for locating all underground utilities in the area of construction of this project and shall be responsible for avoiding and not disrupting nor damaging any underground utilities in the construction and installation of this project.

The contractor shall provide the equipment, materials, and labor to provide electrical connection from the local power company. This shall be a connection for 240 volt, 4 wire (copper), 200 amp, 60 Hz, single phase (two balanced legs for 120 volt -- 100 amps per leg). This shall be wired with entrance cable of adequate size, as specified by Local and National Electrical Code, to carry a 200 amp load..

The contractor shall furnish and install the service pole. The pole shall be a minimum of (?) feet long. It shall be of sound material treated with a creosote or similar material. The pole shall be rigidly mounted vertically in the ground to a depth so that it will support the pole and weight of the wires from the power company pole. This depth shall be at least (?) feet. The height above ground shall be minimum of (?) feet.

**(NOTE:) The dimensions in (?) will need to be determined by the Elect. Co and/or the contractor in order to meet code.**

All electrical equipment used by the contractor must be manufacture listed by Underwriters Laboratories, Incorporated and shall carry Underwriter's label. Materials shall be new equipment and all fittings shall be well galvanized or otherwise made corrosion resistance. All work must be installed in accordance with the National Electrical Code and any local or state laws in existence at the time of installation. If there is a conflict with the National code, the local code shall prevail. Associated with the service pole, the contractor shall furnish, install and wire the following electrical equipment and mount on the service pole:

- A. Rain tight service head
- B. A meter loop base
- C. A "Square D", "QO Type" exterior weatherproof electrical box with a two-hundred (200) ampere main disconnect switch.
- D. 1 ea. 20 ampere GFI breaker
- E. An all weather, 110 volt receptacle connected to the 20 amp GFI breaker.

## Bid Specification No.2

All wiring is to be run in specified conduit with weather tight connectors as required, including the weather tight service head at point of power cut-in. The meter loop shall be completed with ground connection and an eight (8) foot ground rod. Grounding conductor shall be connected from overhead feeder down to ground and connected to the ground rod. Grounding conductor shall be copper and of adequate size as specified by Local and National Electrical Code. Conductor shall be connected to the ground rod by means of copper clamp.

**(NOTE:) This pole will be used to support telephone lines to the site in accordance with code. Telephone lines shall not be responsibility of contractor for electrical service.**

## Bid Specification 3

### SPECIFICATIONS FOR TRAILERS (PORTABLE STRUCTURE)

#### MINIMUM GENERAL SPECIFICATIONS

#### INTERIOR

- 1.1 Interior walls shall be insulated with 3-1/2" of fiberglass insulation (R-11 rating) and lined with white vinyl-covered 1/4" plywood, all steel studs.
  - 1.1.1 Walls shall be constructed with 16 gauge steel x 3-1/2" hat section wall studs, placed on 16" centers, with swaged ends for strength and fit.
  - 1.1.2 Walls shall be constructed with 1/8" structural steel angles at top and bottom of wall for added strength.
  - 1.1.3 Wall corners shall be constructed utilizing full radius 13 gauge steel corner posts.
  - 1.1.4 Walls shall be constructed so as to contain an electrolysis barrier at the base of the steel side walls between the exterior aluminum and steel to prevent corrosion.
- 1.2 Interior flat ceiling shall be insulated with 7" of fiberglass insulation and lined with white vinyl-covered 1/4" plywood. Interior height to finished ceiling shall be 7'0".
  - 1.2.1 Roof shall be constructed and supported with 18 gauge steel roof bows placed on 16" centers.
  - 1.2.2 Roof shall be constructed using 0.080 anodized aluminum roof cove that runs full length of side walls for structural strength.
- 1.3 Floor shall be constructed with 3/4" wolmanized exterior grade plywood, Foil Ray insulated lined, and shall be covered with one piece commercial grade vinyl linoleum.
- 1.4 Two (2) 36" x 80" recessed walk doors with flush locking handles (both keyed alike).
  - 1.4.1 Locks on all trailers to be keyed alike.
  - 1.4.2 One (1) door mounted in side wall and one (1) in rear end wall. (ref. sketch)
  - 1.4.3 Locking handles shall have the capability of being locked and unlocked from inside the trailer.
  - 1.4.4 A rain drip shield shall be installed above each of the doors.
  - 1.4.5 Aluminum diamond tread floor plate material shall be installed over recessed step and full width of side walk door.
  - 1.4.6 Aluminum diamond tread floor plate material shall be installed over vinyl flooring material, as threshold, for the full width of rear door.
- 1.5 One (1) 200 amp distribution panel with Square D Model MT QO #QO13040M200, a minimum of twenty (20) 1" breaker spaces to be installed inside on side wall at tongue end of trailer (per sketch). Service entrance for power shall be waterproof through back of distribution panel, and through side wall of trailer. Sealable in or out of use. (see sketch).
  - 1.5.1 All electrical components, hardware, and wiring shall conform to the requirements of the National Electric Code.
  - 1.5.2 The interior wiring of the shelter shall be enclosed in surface mount raceways and all steel conduits.
  - 1.5.3 A separate circuit and circuit breaker shall be installed for the A/C unit, interior lights and exterior lights.
- 1.6 Four (4) 8ft. 120 volt double tube fluorescent fixtures shall be installed with bulbs and diffusers. Three-way on/off switches, for interior lights, to be located next to each walk door. (see sketch).
- 1.7 One (1) three-way on/off switch (to be located inside) and one (1) exterior 120 volt light with vandal guard, to be located outside next to each walk door, Magnum Model #055 13 235 or equal. (ref. sketch)
- 1.8 Wall mounted combination air conditioner-heat unit 18,000 BTU (Sun Brand Model No. SUN/STS AV18H-1-05 or equal) located on center of tongue end wall.
  - 1.8.1 Thermostat shall be dual function with automatic changeover, Magnum Model #024116 or equal. (see sketch for location).
  - 1.8.2 Thermostat wire shall be routed in a neat and professional manner so as to be as inconspicuous as possible.



Bid Specification No. 3

1.9 EXTERIOR

- 1.9.1 Tandem fenders shall be installed to accommodate wide axle assembly.
- 1.9.2 Spare tire carrier shall be mounted on trailer tongue and shall be lockable.
- 1.9.3 Tandem 4" drop axle assemblies with 5 stud hubs and electric brakes; 102" width Torflex brand or equal (breakaway switch & battery included).
- 1.9.4 Five (5) ST 205/75R15 load range C radial tires on five-bolt white-spoke electro-deposition wheels.
- 1.9.5 Four (4) welded ball-mount receivers shall be attached to trailer main frame at corner locations to accept levelling jacks (Magnum Model #05211J190510 or equal). Note: Levelling jacks are to be included for each trailer.
- 1.9.6 Exterior of trailer shall be 0.030 white pre-finished aluminum attached to vertical 16 gauge steel x 3-1/2" hat sections located on 16" centers.
- 1.9.7 Exterior fasteners shall be coated with silver ever-lube corrosive resistant coating to resist weathering.
- 1.9.8 12-volt lighting shall be wrap-around LED stop/tail/turn light indicator and shall utilize harnesses with molded connectors to ensure good connections and eliminate shorts.
- 1.9.9 All 12-volt lighting shall meet DOT/ICC specifications.
- 1.10 Trailer shall meet all DOT/ICC safety requirements.
- 1.11 The underside of the floor shall be protected with an aluminum liner, sealing it against moisture when transporting structure during inclement weather.
  - 1.11.1 Undercarriage and underside of shelter shall be undercoated with Scharph Group coating.
  - 1.11.2 Exposed frame shall be painted with two part catalyzed polyurethane black paint.
- 1.12 Undercarriage tongue shall be a 5' 3-piece A-Frame constructed of 3" x 8" x 3/16" steel rectangular tubing material with center member extending under the trailer 4' for added strength.
  - 1.12.1 Undercarriage tongue shall be equipped with a 2-5/16" Atwood type coupling hitch or equivalent.
  - 1.12.2 Frame members shall be 3" x 8" x 3/16" steel rectangular tubing material.
  - 1.12.3 All cross-members shall be 3" x 8" x 12 gauge steel "C" material positioned on 24" centers for strength
  - 1.12.4 Elevating jack (Fulton Model No. JA214S or equal) equipped with sand pad shall be installed on undercarriage tongue.
- 1.13 Rear step shall be mounted to undercarriage beneath rear door. Step shall be designed and installed to slide in or with the capability of being removed when not in use (Magnum Model #SS-2412 or equal).

## Bid Specification No. 4

### Specifications for an Automatic Gas Standard Calibrator

Description: Automatic gas standard calibrator; microprocessor controlled for accurately diluting concentrated gases with air. Gas/air flows controlled and measured by separate microprocessor controlled mass flow controllers. To meet or exceed specifications listed in attachments.

#### 1.1 Minimum General Specifications.

1.1.1 Shall dynamically mix a component gas with a balance gas (zero air) at total flow rates up to five (5) liters per minute using automatic computation of component and balance gas flow rates.

1.1.2 Shall have built-in stable ozone generator to provide precise and accurately known ozone concentrations (0-1ppm) using an ultraviolet lamp for ozone generation. The system shall incorporate an internal UV optical sensor in a feedback circuit to control the generation of ozone to produce a constant, stable and repeatable ozone concentration at the specified flow rate.

1.1.3 Shall have gas phase titration of nitric oxide and ozone for the generation of nitrogen dioxide at precise levels

1.1.4 Freestanding bench top single cabinet model.

1.1.5 Shall have front panel alphanumeric display and keypad for manual data input.

1.1.6 Gas and air flows shall be controlled by microprocessor supported precision mass flow controllers (gas flows 0-50 SCCM and air flow 0-5 SLPM ). Controllers shall be made by Brooks Instrument Division. Other ranges shall be optional. Total flow and individual gas and air flows flow rates shall be available for monitoring via the display which shall also provide gas concentrations, ozone oven and chassis temperatures, calibration constants and various other operating parameters.

1.1.7 The calibrator shall include a battery backed-up electronic clock which includes 24 hour time, days, months and years. The clock shall be settable via the keypad (also remotely) and continue to operate during power outages. The clock will be time synched to the system one or more times daily via RS-232 commands.

1.1.8 The calibrator shall restart itself after a power outage and shall not require readjustment or recalibration upon resumption of power.

1.1.9 Calibration data for the flow controllers and ozone generator shall be stored internally and be recallable. MFC calibration data shall utilize a corrective algorithm with at least a ten point comparison of commanded versus actual flow with linear interpolation between points. Data for the ozone generator shall consist of at least ten points of % lamp intensity (or drive voltage) versus ozone output. When calibrated the calibrator shall be able to produce ozone at any total flow between one (1) and five (5) SLPM at a concentration of .05 to 1ppm with an accuracy of +/- 5%.

1.1.10 The system shall have a minimum of four (4) operating modes as described hereafter.

1.1.10.1 Blend : By controlling the system from the front panel the user shall be able to specify the port at the rear of the chassis for cylinder gas (input gas port), the cylinder gas concentration, the required dilution and the concentration of the output gas. The system will then automatically

## Specifications for an Automatic Gas Standard Calibrator (Continued)

open the correct solenoid and allow cylinder gas to flow at the correct rate to mix with the correctly controlled dilution gas and provide the desired blend at the rear output at the desired concentration.

1.1.10.2 Blend with GPT. As in 1.1.10.1 with appropriately mixed ozone to produce the desired level of NO<sub>2</sub>.

1.1.10.3 Manual. As in 1.1.10.1 and 1.1.10.2 with manual selection of all parameters.

1.1.10.4 Set-timer mode: As in 1.1.10.1 and 1.1.10.2 except by presetting levels and sequences of levels. Shall provide 1-20 sequences of up to 99 levels which may be set up on a repeating schedule. This permits the calibrator to run automatic, periodic calibrations of up to 6 different gases (including ozone and GPT produced NO<sub>2</sub>) of various blends. Calibrator should also provide I/O outputs for controlling external valving of gas flows.

1.1.11 The system shall have both a reaction chamber for combining ozone and NO gas and a dilution/mixing chamber for mixing and or dilution of gas blends. The ozone generator's constant flow output goes directly to the reaction chamber. The output of the reaction chamber flows directly to the mixing/dilution chamber and mixed with dilution gas.

1.1.12 The system shall have one dilution gas input (commonly zero air) with a single 0-5 liter mass flow controller. There shall be four (4) gas inputs each isolated and controlled by a separate normally closed solenoid valve. The four valves feed a common 0-50 ccm mass flow controller.

1.1.13 The mass flow controllers accuracy and repeatability from 10 to 90 percent of full scale shall be at least +/- 0.5% with a response time to within two (2)% of set-point of 15 seconds or less.

1.1.14 All gas handling components shall be constructed of non-reactive materials; Teflon, stainless steel, glass or equivalent.

1.1.15 The system shall be able to operate between 10 and 50 degrees C.

1.1.16 Power requirements 90-115 VAC 60 Hz.

1.1.17 The calibrator shall have an RS-232 serial data port (DB-25) to provide for data input and provide information about calibrations being performed, report various operating parameters, ext. All internal programming shall be addressable via these ports for modifications, upgrades calibration etc..

1.1.18 The ozone generator shall be temperature controlled and be insensitive to ambient light and temperature variations.

1.1.19 The rear air input shall be a 0.25 inch Swagelok compression fitting. The rear gas input fittings are to be 0.125 inch Swagelok compression fittings. The output gases shall have 0.25 inch Swagelok compression fittings.

2. Special requirements. These instruments are to be integrated into a complex calibration and data logging system and must therefore perform and operate exactly as the existing calibrators already in place.

2.1 Physical. Freestanding cabinet with display and manual key entry at front. Gas and air inlets and outlets at the rear. DB-25 connector (male) and solenoid driver output at the rear.

## Specifications for an Automatic Gas Standard Calibrator (Continued)

The solenoid driver connector shall mate with a Weidmuller BL series plug 12601-6. The pin out of this connector shall match existing connectors and wiring. The drive for the solenoids shall be open collector type to pull +12 volt to ground with up to 1.5 amp load.

3.1 Operating system (internal software). The calibrator shall work with providing levels of test gases and timed sequences of those levels. The levels are defined by two numbers, the first is keyed to the gas produced ( 1 = NO, 2 = SO<sub>2</sub>, 3 = CO, 4 = H<sub>2</sub>S, 5 = NO<sub>2</sub>, 6 = ozone, 7 = CH<sub>4</sub>, 8 = NO<sub>y</sub>). The second number indicates the gas concentration. Example: level 66 is ozone 400 ppb (at 3 LPM). Sequences are numbered one to 20 with no significance to the number. Levels are defined by flow and concentration. Sequences consists of levels, and duration and valving. Gas inputs follow the level first number as consistently as possible i.e. inlet #1 is for NO, #2 is SO<sub>2</sub>, etc. Of course since there are more gases used in our system than we have inputs, a single calibrator can only provide four test mixtures (plus ozone).

3.1.1 The calibrator can be setup to automatically time and program sequences and also have sequences started externally. Levels and sequences can be programmed into the calibrator either remotely or manually and will be retained in the calibrator's memory. The calibrator shall report the status of the running sequence and level when interrogated.

3.1.2 The nomenclature used with the levels and sequences includes additional information called status blocks which provides additional data to the data retrieval system.

3.1.3 The calibrator communicates with the data retrieval/control system via a system called "dot commands". This is a system which involves a higher language for control/reporting.

4.1 Detailed information for the operating system and various operating hardware and software will be provided upon request to the Ambient Monitoring Section of the TCEQ. Requests should be directed to Larry Lehmann (512) 239-1778 or by email to [llehmann@tnrcc.state.tx.us](mailto:llehmann@tnrcc.state.tx.us). Mr. Lehmann can also direct requests for specific information to the responsible party.

4.1 Testing. A working model of the calibrator shall be delivered to TCEQ for evaluation before a bid will be considered acceptable. This evaluation may take up to 30 days and will include having the subject calibrator placed in the operating system where it should perform exactly as the replaced unit. As noted in Terms and Conditions, all units are tested before acceptance. As is customary, any exception to any specification should be included with the bid. Exceptions may not necessarily disqualify a bid, but failure to include exceptions will be considered bad faith and will disqualify the bid.

## Bid Specification No. 5

### 20 Standard Liter Per Minute Self Contained Clean Air Supply

#### 1.1 MINIMUM GENERAL SPECIFICATIONS:

- 1.1.1 The unit shall be capable of maintaining an output flow up to 20 SLPM at 25 psig continuously.
- 1.1.2 Dewpoint of output air shall be less than -10°C
- 1.1.3 The SO<sub>2</sub> content of output air shall be less than 0.5 ppb
- 1.1.4 The NO content of output air shall be less than 0.5 ppb
- 1.1.5 The NO<sub>2</sub> content of output of air shall be less than 0.5 ppb
- 1.1.6 The O<sub>3</sub> content of output air shall be less than 0.5 ppb.
- 1.1.7 The CO content of output air shall be less than 0.5 ppm
- 1.1.8 The unit shall contain CO Scrubber.
- 1.2 **Operation Limits:** Ambient operational temperature range shall be 10-40°C
- 1.3 **Electrical Characteristics**
  - 1.3.1 The unit shall operate on 105-125 VAC
  - 1.3.2 The unit shall not consume more than 700 watts of power.
- 1.4 **Physical Characteristics**
  - 1.4.1 The unit shall not exceed 65 pounds total weight.
  - 1.4.2 The unit shall be bench mountable.
  - 1.4.3 The unit shall be optionally rack mountable.
  - 1.4.4 The maximum dimensions shall not exceed 11" H x 17" W x 24" deep.
  - 1.4.5 The unit shall have an internal storage tank.
  - 1.4.6 The unit shall have an internal pressure switch that senses the pressure in the storage tank. This pressure switch shall be used to control the compressor.
  - 1.4.7 The unit shall have an internal pressure regulator that shall be adjustable from 10-30psig
  - 1.4.8 The unit shall have front panel mounted pressure gauge which shows the regulated air pressure available at the clean air output port.
  - 1.4.9 The clean air output port shall accept 1/4" tubing.
  - 1.4.10 The unit shall have a clean air output filter to trap particulate released by the unit.
  - 1.4.11 All components shall be attached and/or internal to the unit. There shall be no splitting of the unit into two or more cabinets.

**Bid Specification No. 6**

**AutoGC PAMS Site Equipment**

Supplied by PerkinElmer

PerkinElmer Ozone Precursor System      N6200100

GC and Thermal Desorber with trap, columns and Dean's switch

Includes:      Autosystem GC

                 Turbomatrix TD-1 equipped with ambient air sampler

                 Charles Austin Sample pump

PerkinElmer NCI 902 Interface              S9000090

Balston 78-40 TOC Air Generator

Gas Compressor with receiver tank

Dell Computer

TotalChrom Software

Merlin MicroScience MGB 500 VHA/Software Value Added Package

Includes:      Automated Humidified Dilution system with Humidity

Probe

Gas Regulators (4)

UPS Backup for computer, interface and router

Sample line heaters

TOC Air flowmeter

Helium Purifier

Mmove software

EZSequence software

Installation and Qualification

Additional Equipment necessary

Router

Glass Sample manifold with fan

6L summas (2) for 5 ppb LCS and 56 component Retention time standard

30L summa for 1 ppmv 14 component CVS standard

## Bid Specification No. 7

### Specifications for Carbon Monoxide Analyzers

Description: Microprocessor controlled Carbon Monoxide (CO) Analyzer for the measurement of airborne carbon monoxide over the range of 0-1000 ppm. This instrument is to use the correlation filter wheel-infrared (IR) absorption method of detection. To meet or exceed the following specifications.

#### 1.1 Minimum general specifications.

1.1.1 Detection method IR absorption utilizing correlation wheel and microprocessor control.

1.1.2 Must be U.S. EPA certified (have equivalency) over 10-30 degree C temperature range.

1.1.3 Must be housed in a free-standing cabinet no larger than 8 x 17 x 24 and weigh no more than 60 pounds.

1.1.4 Must operate from standard 60 Hz 115 VAC outlet (95-135 VAC) less than 300 Watts.

1.1.5 Minimum detectable limit < .05 ppm. Zero noise .025 ppm. Span noise .5% of reading.

Precision: .5% of reading. Linearity: 1% of full scale. Zero drift < .1 ppm/24 hours or

< .2 ppm/7 days. Span drift < 1% / 7 days. Rise and fall times(to 95%) < 60 seconds.

Measurement to be temperature and pressure compensated.

1.1.6 The sample pump must be internal to the analyzer and the sample flow rate shall be less than 1 liter per minute. Flow rate to be controlled by critical orifice or other positive method of flow control (variable speed pump, MFC, etc.)

1.1.7 Analog output to be 0-1 volt for selected range of 1 to 1000 ppm in increments of 1 ppm. Span and zero adjustable and off settable.

1.1.8 Gas filter wheel (correlation wheel) shall be designed to prevent leaks and be guaranteed for 5 years. Field and objective mirrors shall not require adjustment even after cleaning. IR source shall be field serviceable and replaceable.

1.1.9 The particulate filter shall be 47 mm and be accessible through the front panel.

#### 1.2 Readouts, communications and hardware/firmware/software.

1.2.1 Analyzer to have easily viewed display preferably high visibility plasma. The display should allow the operator to monitor levels, flows, warnings etc. Setup including zeroing, spanning etc should be accomplished using pushbuttons and the display. In-field setup and troubleshooting should require no more than a DVM (and of course appropriate measured calibration gases etc). There shall be provisions for RS-232 interface and associated software for more extensive diagnostics using a PC.

1.2.2 Software and non-volatile ram storage shall allow the internal storage of a large number of 5 minute average CO samples and a record of alarms and out of limits conditions. The operating system shall be capable of update either by EPROM (EEPROM etc.) replacement or download from a PC.

## **Bid Specification No. 8**

### **Replacement parts for TNRCC-owned Climatronics F460 Weather Systems**

- 1 F460 Crossarm Assembly with 1-1/4 inch collar, PN: 101994-G2**
- 2 F460 Wind Cable, PN: 100605-50**
- 3 F460 Wind Direction Sensor with Resolver, PN: 102139-G0-H0, 101907 included**
- 4 F460 Wind Speed Sensor, PN: 100075-G0-H0, 102104 included**
- 5 F460 Aspirated Shield with Temp/Flow Switch, 1-1/4 inch collar, PN: 102324, 12 VDC Aspirated Shield #TNRCC-TS-10**
- 6 TNRCC Temp/RH/Flow/DC Cable, 9 pair, 22 AWG, PN: 102424-50, M13109 included**
- 7. Retainer Rings, (Dasibi), Climatronic PN:Q2-12**
- 8. BR tip set screw 1/4-20 x 3/16**
- 9. Relative Humidity sensor, Vaisala Humitter, Climatronics # 102425**
- 10. Flow switch for aspirated shield w/o bracket, Climatronics #100179**
- 11. Wind direction resolver PCB, Climatronics #102144**
- 12. Wind speed amplifier PCB, Climatronics #101080**
- 13. O-Ring, Buna N, 60 Durometer (Dasibi), Climatronics PN:2-031**
- 14. Fan, 12 volt, 0.6 amp for converted aspirated shield (old part EBM/Papst 4212H), Climatronics #100173-G2**
- 15. Set Screw 4-40 x 5/32, Climatronics #SC8-5**
- 16. W/D Transducer Bearings 1/8" x 0410 x .0937**



## **Bid Specification No. 9**

### **Fence Specifications for Construction of a CAMS Site**

#### **1. Fence**

The contractor(s) shall obtain all necessary local permits (prior to beginning construction) and request final inspection, if required by local authority. The contractor(s) shall make any corrections to the installations that the local inspectors may require. The contractor shall be responsible for locating all underground utilities in the area of construction of this project and shall be responsible for avoiding and not disrupting nor damaging any underground utilities in the construction and installation of this project.

The contractor shall provide the equipment, materials, and labor to install a fence around the outside edge of site pad after the pad and the electrical service pole are installed. The perimeter of the forty (40) foot by forty (40) foot site shall be enclosed with a six (6) foot high chain-link fence and three (3) gates.

The fence shall be constructed of nine (9) gauge galvanized chain link mesh; three (3) inch O.D., Schedule 40 terminal posts, two and one-half (2-1/2) inch O.D., Schedule 40, line posts; and one and five-eighths (1-5/8) inch O.D., Schedule 40, top rails and gate frames. The top of the fence shall have three (3) strands of barbed wire on extending arms at forty-five (45) degree angle. The barbed wire on the gates may be vertical. Total height of fence shall be seven (7) feet. The maximum distance between line posts shall be ten (10) feet. All posts shall be set in concrete of a sufficient size and depth (approx. 8" x 24") to provide adequate strength and support to fence.

There is one four (4) foot wide by six (6) foot high walk gate and a set of two (2) swing gates, each six (6) foot wide, to provide a twelve (12) foot wide drive-through gate. All gates shall have heavy duty latches. On the drive-through gates, the latch shall be at the center point to secure both swing gates. All gates are to swing outward. All work shall be performed in accordance with the standards of the Industrial and Chain Link Fence Manufacturers Institute and the American Society for Testing and Materials.

**(NOTE:)** In some cases, the size of the two (2) swing gates may be increased in order to provide for a wider drive-through area if preferred.

## Bid Specification No. 10

### SPECIFICATIONS FOR H2S CONVERTOR

**Description:** Continuous conversion of H<sub>2</sub>S to SO<sub>2</sub>. Used for ambient air monitoring. Self contained and free-standing adaptable for rack mounting. Uses PID type controller for oven temperature control. Front panel switch controlled H<sub>2</sub>S conversion or straight through SO<sub>2</sub> sampling. Also has input for DC level control of same function. SO<sub>2</sub> output to be fed to an SO<sub>2</sub> monitor.

#### MINIMUM GENERAL SPECIFICATIONS

- 1.1 Size 17.2 X 5.25 X 22.5 inches Weight less than 30 pounds.
- 1.2 Flow rate 0.5 LPM
- 1.3 Conversion efficiency 96-100%.
- 1.4 AC power 105-125 VAC 60 Hz.
- 1.5 Operating temperature of oven 700 to 750 degrees C.
- 1.6 Includes internal replaceable cartridge type SOX scrubber.
- 1.7 3-15 VDC external switch control. Changes mode of operation from H<sub>2</sub>S to SO<sub>2</sub>,

## Bid Specification No. 11

### Specifications for Nox - Noy Instrument

#### 1.0 NO<sub>x</sub> ANALYZER

*Description: NO<sub>x</sub> monitor is for the measurement of ambient levels of atmospheric oxides of Nitrogen (NO and NO<sub>2</sub>) for use in unattended Continuous Air Monitoring Stations (CAMS). Monitor shall employ the chemiluminescence method for the measurement of NO and a catalytic converter for NO<sub>2</sub> to NO conversion for its subsequent measurement.*

#### MINIMUM GENERAL SPECIFICATIONS

- 1.1 Shall be capable of full scale spans of 0.05-100ppm (normal spans are 0.5 and 1ppm).
- 1.2 Lower detectable level: < 0.5ppb (60 sec. averaging time)
- 1.3 Zero noise: < 0.25ppb RMS (60 sec. averaging time)
- 1.4 Zero drift: < 0.5ppb in 24 hours.
- 1.5 Span drift: ± 1% full scale
- 1.6 Precision: better than ± 0.5ppb at 0.5ppm range
- 1.7 Linearity: ± 1% full scale or better
- 1.8 Shall have EPA equivalence over the range of 15-35°C and can be safely operated over the range of 5-40°C
- 1.9 Sample flow rate: < 1 SLPM
- 1.10 Power requirements: < 500 watts 90-110VAC 60Hz
- 1.11 Weight: < 60 pounds including pump and all options; freestanding (rack mount optional). Must be complete without external or shelf mounted accessories (pump should be external).
- 1.12 All components shall be high quality designed for use in high dependability electronic, electrochemical, or pneumatic systems. In particular, the ozone generator's high voltage transformers shall be designed for long life and safety and not be automotive-type substitutes.
- 1.13 The ozone generator shall have a dryer system suitable for using ambient room air as its air source. The design shall be of such type that does not require replenishing chemicals or use additional pumps, etc.
- 1.14 The monitor shall use microprocessor based electronics and shall provide for the viewing of all necessary operating parameters (flows, voltages, etc.) for normal operation and servicing. Viewing format: fluorescent screen, LED's, or plasma panel.
- 1.15 The photomultiplier tube (PMT) and all sockets and high voltage circuitry thereof shall be of the highest quality. Bidders shall provide part numbers and current replacement prices for the PMT and its socket (or dynode power supply if a separate item) with their bids.
- 1.16 The PMT's operating temperature shall be controlled at < 0° C for reduced noise.
- 1.17 Analog outputs shall be switch, jumper or software selectable from 0.1-10 volts full scale (1 volt full scale normally used) or current output for each of (at least) three (3) signals: NO level, NO<sub>x</sub> level, and NO<sub>2</sub> level. There shall be a method of adjusting zero and full scale settings.
- 1.18 Monitor is to be used for non-attended, automatic, continuous operation and require no replenishment of chemicals, gases, etc. It should resume normal operation after power failures (may require warmup if failure is of long duration).

## **2.0 NOy CONVERTER**

Description: This is an add-on conversion kit to change the function of an API high sensitivity NOx monitor Model 200AU into an NOy monitor. This modifications is completely reversible.

### **MINIMUM GENERAL SPECIFICATIONS**

- 2.1 Shall consist of two (2) parts: an inside shelter bypass pump assembly and an outside unit containing the convertor cartridge and heater.
- 2.2 Bypass pump shall be capable of pumping in excess of 5 LPM and shall dump 1 LPM from each of two (2) lines (orifice controlled) with 1 LPM sample flow.
- 2.3 Temperature controller shall be LOVE Model 1600 installed in pump housing.
- 2.4 Outside enclosure shall be stainless steel Hoffman NEMA box with stainless steel JIC fasteners.
- 2.5 Sample lines and wiring shall be inside flexible steel cable armor (conduit, i.e., BX or Greenfield type) to provide chafe and weather protection.
- 2.6 Pump housing shall include 47mm Teflon paper particulate filter holders for the two sample lines.
- 2.7 Kit shall include all tubing and wiring in bulk quantities to accommodate a sample line length of 50 feet (150 feet of thick wall 1/4" Teflon tube, 50 feet each of thermocouple extension wire and power cable). Installation will include cutting, wires, tubes and armor.
- 2.8 Kit shall contain all connectors and parts to modify the 200AU and to make a field installation exclusive of the shelter and mounting structure.
- 2.9 All surfaces which contact sample or calibration gas flow shall be made of stainless steel or Teflon.
- 2.10 Moly convertors shall be welded stainless steel cartridge type designed for easy field replacement.
- 2.11 Power shall be 105-125 VAC 60 Hz

## Bid Specification No. 12

### Specifications for Ozone Monitor

#### MINIMUM GENERAL SPECIFICATIONS:

- 1.1 No ambient air interferences.
- 1.2 Requires no expendable gases or liquid reagents.
- 1.3 Microprocessor based digital circuitry with temperature and pressure compensation. Uses a latching valve for ambient/scrubbed air, LED display, thumb wheel switches for span and offset controls. Permits switchable monitoring of zero, span, operated, sample frequency, control frequency, and temperature and pressure.
- 1.4 Analog output 0-1 volt full scale available at rear panel barrier strip.
- 1.5 Capable of virtually unattended operation. Able to restart and continue to operate without adjustment or recalibration.
- 1.6 Sample inlet and exhaust via 1/4" Swagelok compression fittings at the rear of the unit.
- 1.7 Front panel rotameter for monitoring sample flow rate.
- 1.8 Sample flow rate adjustable from 1-3 LPM (normally 2 LPM).
- 1.9 Range: 0.003 to 20ppm
- 1.10 Incremental sensitivity: 0.001ppm.
- 1.11 Accuracy: 3% based on Beer's Law and the extinction coefficient for ozone (not on 1% KI results).
- 1.12 Repeatability: 1% or better.
- 1.13 Zero drift: none (zero)
- 1.14 Span drift: none (zero)
- 1.15 Analog output: +/-0.5% of digital reading
- 1.16 Update interval: 10 seconds. Update after each cycle consisting of one reading for ozone-free air (ambient air processed by an ozone to oxygen catalyst) and one reading of ambient air. Readout direct or running average.
- 1.17 Rise and fall times: (10%-90%) not to exceed 24 seconds
- 1.18 Linearity: 0.001ppm.
- 1.19 Temperature range: 32-120°F (0-45°C).
- 1.20 Pressure range: 0.66-1.20 atmospheres (500-900 Torr).
- 1.21 Humidity range: up to 95%
- 1.22 Noise: 0.002ppm or better.
- 1.23 Power requirement: 105-125 VAC, 50-60 Hz.

## **Bid Specification No. 13**

### **Site Pad Specifications for Construction of a CAMS Site**

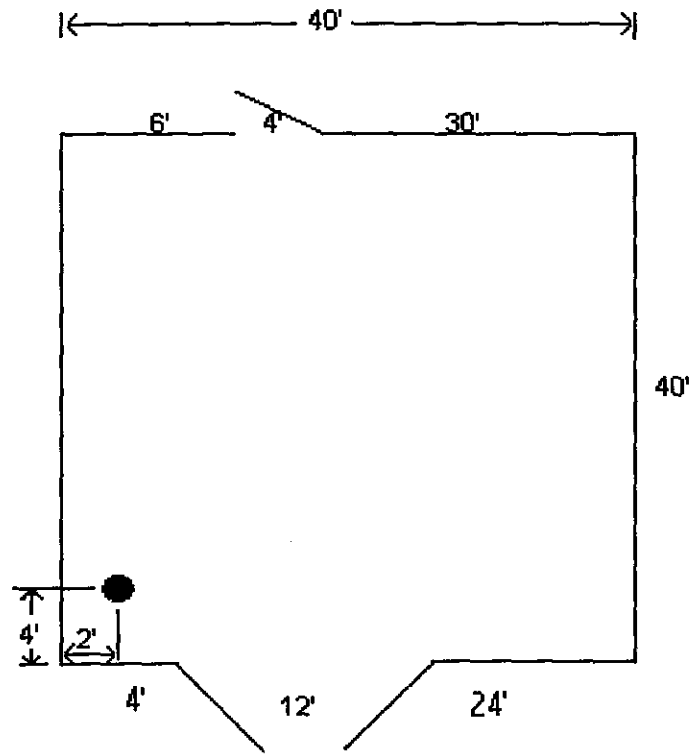
#### **1. Site Pad.**

The contractor(s) shall obtain all necessary local permits (prior to beginning construction) and request final inspection, if required by local authority. The contractor(s) shall make any corrections to the installations that the local inspectors may require. The contractor shall be responsible for locating all underground utilities in the area of construction of this project and shall be responsible for avoiding and not disrupting nor damaging any underground utilities in the construction and installation of this project.

The contractor shall provide the equipment, materials, and labor to construct the site pad. The forty (40) foot by forty (40) foot rectangular site shall be covered with a six (6) inch pad of limestone and five percent (5%) cement rolled in place. The site shall be prepared by scraping and leveling before the pad is applied. The pad surface shall be rolled and leveled then sloped from the middle to the edges with a minimal slope to drain water. The outside edges of the pad shall be three (3) to four (4) inches above grade. Part of the material removed in preparation shall be used at the gates to taper the pad area to the grade level. The remainder of the removed material shall be spread to direct water away from the pad.

Bid Specification No. 14

Site Pad Layout



## Bid Specification No. 15

### Specifications for Sulfur Dioxide Monitor

Description: Sulfur dioxide (SO<sub>2</sub>) monitor for detecting and measuring SO<sub>2</sub> in ambient air and presenting that data as a 0-1 volt output. The instrument shall be microprocessor controlled and use the ultraviolet (UV) fluorescence method utilizing a Tin (Sn) metal vapor lamp. The monitor must have U.S. EPA equivalency for any range from 0-0.050 to 0-1ppm SO<sub>2</sub> full scale (15-35°C).

#### MINIMUM GENERAL SPECIFICATIONS

- 1.1 Display: LCD. Auto-ranging 0-20ppm. Resolution: 0.001 ppm.
  - 1.2 Analog output: 0-1 volt (zero and span adjustable and off-settable).
  - 1.3 Noise: 0.25ppb or 0.1% of reading, whichever is greater.
  - 1.4 Zero drift: <1ppb per 24 hours or 30 days. Span drift: 0.5% 24 hours or 30 days.
  - 1.5 Linearity error: less than +/-1% of full scale. Precision: the greater of 0.5ppb or 1% of reading.
  - 1.6 Instrument shall be temperature and pressure compensated.
  - 1.7 Sample flow rate: 0.5 SLPM.
  - 1.8 Must have temperature controlled (cooled) PMT.
  - 1.9 Must be free-standing, no larger than 8 x 17 x 25 inches (hwd), and weigh no more than 60 pounds.
  - 1.10 Must be able to operate from standard 115V 60Hz AC outlet.
  - 1.11 Must have internal pump with controlled flow.
- 
- 1.2 Hardware, firmware, and software
    - 1.2.1 Must have RS-232 interface. Must have LCD display with menu-driven selection of current ambient level, various temperature and pressure measurements, trend data, voltage tables, list of alarms, i.e., all information necessary for the adjustment and operation of the instrument.
    - 1.2.2 Software must be updatable by replacing (E)EPROMs or downloading new program from a PC
    - 1.2.3 Monitor shall use no screwdriver adjustments or other mechanical adjustments. All adjustments done by electronic components.



## Bid Specification No. 16

### Continuous Methane/Non-Methane Hydrocarbon Analyzer

#### MINIMUM SPECIFICATIONS:

- 1.1 105-125 Volts AC operation
- 1.2 Measurement Ranges: 0-20, 0-200, 0-2000 ppm, user selectable
- 1.3 Recorder Ranges: 1-2000, continuously adjustable from 1-2000
- 1.4 Analog Outputs: Separate voltage outputs ( 0-1volt DC) for Methane, NMHC, Total HC, and FID output for Chromatogram
- 1.5 Digital Output: RS-232
- 1.6 Alarm Systems: Status/Control Line I/O. Allow the user to set the ppm values for Methane and Non Methane Concentrations above which the instrument will trigger an alarm and activate a contact closure available at the rear panel.
- 1.7 Detection limits: 20ppb for Methane, 50ppb for NMHC as propane
- 1.8 Analysis Time: selectable from 10 seconds to 999 seconds
- 1.9 Accuracy: +/- 2%
- 1.10 Precision: +/- 2%
- 1.11 Drift: +/- 2% of span
- 1.12 Sample Pump: Internal to instrument
- 1.13 Measurement Method: Gas Chromatography using Flame Ionization Detector (FID)
- 1.14 Support gas: HC Free Air; N2 Carrier, H2 Fuel
- 1.15 Auto Restart: *Instrument must be able to relight flame and resume operation when power is restored following a power failure.*
- 1.16 The instrument must be portable and capable of continuous unattended operation.

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### Specifications for Rohn Model 25G Self-Supporting Tower and Met One Model 173C Lift System

1. Tower shall be self-supporting, 12" triangle as a minimum, approximately 30' high (10 meters) with hand-operated elevator system and designed for minimum 80 mile-per-hour wind speeds. Tower shall be equal to or exceed specifications for a Rohn Model 25G. Tower package shall include, as a minimum, the following items and all hardware necessary for the assembly of these items:
  - 1.1 Three (3) equal-length tower sections (approx 10' each) with stainless steel nuts and bolts for connecting sections.
  - 1.2 Concrete base plate and pin - base plate or platform to attach to bottom section of tower and anchor tower to ground or concrete pad.
  - 1.3 Tower to include guy wire system option with anchors and associated hardware.
  - 1.4 Tower to include structure or house bracket (18"-36") Rohn Model HBUTVRO and associated hardware for attaching tower to structure.
  - 1.5 Grounding and lightning kits for base and anchors.
  - 1.6 Lift system equal to or exceeding Met One Instruments Model 173C Capstan Drive Elevator System:
    - 1.6.1 Lift shall be configured with special 1-5/8" outside diameter boom, schedule 40 aluminum pipe, that extends 4' from carriage and 4' high for instrument mounting. Shall include all necessary mounting hardware, support cables, and messenger cable.
    - 1.6.2 Hand winch with all associated cables and parts.
    - 1.6.3 Winch to have braking system to prevent elevator from free-falling.
    - 1.6.4 Elevator to have locking mechanism at top to positively lock in place with no movement.
    - 1.6.5 Elevator to be capable of locking in place at any point on the tower.
    - 1.6.6 Elevator track or rail system to be fastened rigidly to tower legs.

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**ENTECH**

**V O C Samplers Model Number 1800**

**and Attachment 1816**

**To meet or exceed the following Specifications:**

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I Each sampler and attachment shall be accompanied by one (1) complete set of maintenance and operating instruction manuals including:

- A. Installation instructions.
- B. Electrical schematics and mechanical drawings (descriptions of each module, theory of operation, board overlays, and circuit diagrams).
- C. Preventive maintenance instructions.
- D. Explanations of diagnostic display interpretations.
- E. Replacement Parts list.
- F. Software flow chart.

Bulletins, revisions, and corrections shall be provided for each manual as they are issued for a period of five (7) years after the delivery and acceptance of all samplers and attachments is complete.

II A. The manuals and other information referenced above shall be made available in electronic format via FTP site and/or CD Rom at no charge to The University of Texas at Austin for a period of five (7) years.

B. Warranty: Samplers and attachments shall be warranted against defects in materials and workmanship for one (1) year from the date of receipt by The University of Texas at Austin. Factory service and repairs shall include a minimum ninety (90) day warranty on parts and labor.

C. Each sampler and attachment shall be accompanied by written certification that the sampler has been activated and meets all specifications. This shall include analysis of recovery and cleanliness testing for each sampler.

## IV. SPECIFICATIONS

### 1. AIR TOXIC SAMPLING UNIT- CANISTER SAMPLER

#### A. ELECTRICAL

1. The sampler shall be capable of being directly powered by external 12 VDC with a maximum 3 Amp draw with the heater off and a maximum 6 Amp draw with the heater on or 115VAC. Any power inverter or converter used must be an integral and internal part of the sampler.
2. The sampler shall have an internal fuse and radio frequency interference (rfi) filter.
3. The instrument power cord (minimum 5 feet) shall be delivered with the unit.
4. The sampler shall be capable of being powered through a Ground Fault Interrupter (GFI) circuit.
5. The sampler shall have a built-in protection against overcurrent, and overvoltage conditions including low energy surges introduced on the primary AC source and the bypass source.
6. All modules shall be of plug-in modular circuit board construction.
7. The electronic circuitry employed throughout the sampler shall utilize solid-state circuitry and be microprocessor-based. In-circuit re-programmable logic devices shall be used throughout the system in order to reduce the use of many discrete integrated circuits on the circuit boards. All card processor software and programmable logic configuration software shall reside on non-volatile memory on each card to facilitate field upgrades. The non-volatile memory on each card shall be ungradable without removing the card from each system.
8. All similar boards shall be interchangeable (with minor adjustments). Minor adjustments shall consist of user programming, software downloads, and/or switch settings. Adjustments which require soldering, jumpers, or potentiometer changes, are not acceptable. Any card which is microprocessor-based shall indicate if its software version is out of date compared to the version in the system.
9. The analog and digital outputs and inputs must be isolated (high impedance) from loading the Coastal Environmental Systems datalogger. Specifications of the Zeno 3200 can be acquired at Coastal Environmental Systems Inc., 1000 First Ave. S. Suite 200, Seattle, Washington 98134, telephone number (206) 682-6048.

**B. PNEUMATICS**

1. Each of the two sampler channels must meet U.S. EPA Method T.O. 15 requirements for cleanliness for the TNRCC target compounds listed in Table 1 using a humid (RH > 30%) air or nitrogen matrix. This cleanliness test must be conducted after the recovery challenge discussed in item 2 below to demonstrate negligible carryover (note that the sampler may not be purged more than that normally associated with purging between non-consecutive sample collection). The network channel blank shall be collected over a 24 hour period and the event trigger channel blank shall be collected over a one hour period. Documentation of the analytical verification will be provided with each sampler.
2. The sampler must have at least 80-120% recovery for all TNRCC target compounds listed in Table 1 attached. This test should be conducted at a concentration of 5-10 ppbV in a humid (RH>30%) air or nitrogen matrix. The network channel recovery shall be collected over a 24 hour period and the event trigger channel recovery shall be collected over a one hour period. Documentation must be provided for each sampler or two out of each delivery batch (a minimum of 20%) of samplers IF documentation is provided that each group of samplers is manufactured from the same lot or source of materials in a similar manner AND all samplers are purged or otherwise passivated in a similar manner. NOTE: A 100 ppbV standard is available for this recovery testing. This standard cylinder contains approximately 3000 liters in an aluminum cylinder. TNRCC can make this cylinder available to the vendor within 15 days of award and the vendor is responsible for shipping costs and paperwork to and from TNRCCs laboratories in Austin, TX. If this cylinder is used, the vendor is only responsible for testing those compounds included in the standard for the recovery certification. This cylinder may not include a few of the target compounds listed in Table 1.
3. The sampler shall have a sample path of only fused silica coated stainless steel tubing, stainless steel fittings and tube adapters, stainless steel electronic mass flow controllers, electro-polished stainless steel valves, Viton or Kel-F O rings. Swagelock ferrules and nuts do not have to be fused silica coated since these have minimal if any contact with the sample.
4. The collected sample shall be a passive sample.
5. The sampler shall have two canister outputs (channels).
6. The sampler shall have the ability to interface and control with the 16 port auto sampler described in #2 of these specifications.
7. The sampler shall have the capability of collecting a 2cc/min (ml/min) to 20 cc/min (ml/min) sample and a 15 to 150 cc/min (ml/min) sample at the same time.

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8. The sample line shall have a flow equal to or greater than 1 liter per minute. The unit will have a pump or fan installed after the sample collection Tee to generate the sample line flow. The sample shall be collected from this sample line stream.
9. The sampler shall have two electronic mass flow controllers.
10. One electronic mass flow controller(MFC) shall have an operating range of 2-20 cc/min (ml/min) and be capable of being set at any flow between 0 and 20 cc/min. The MFC must be temperature compensated over the 32-120 F operating range and insensitive to vibration. The input and output voltages must be proportional to the flow and shielded. The sampler shall have an integral on/off valve or control which turns the valve off when the flow is 0-1% of full scale. Elastomer components will not be acceptable in the controller. The normal 24- hour sample shall flow through this electronic mass flow controller.
11. One electronic mass flow controller shall have an operating range of 15-150 cc/min (ml/min) and be able to be capable of being set any flow between 0 and 150 mL/min. The MFC must be temperature compensated over the 32-120 F operating range and insensitive to vibration. The input and output voltages must be proportional to the flow and shielded. The unit shall have an integral on/off valve or control which turns the valve off when the flow is 0-1% of full scale. Elastomer components will not be acceptable in the controller. The event trigger sample shall flow through this electronic mass flow controller.
12. Both electronic mass flow controller shall be specified to have the capability of controlling the specified flow rate with a minimum of 2 PSIG differential pressure between the input and the output of the electronic mass flow controller.
13. The sampler shall have an digital output to indicate operation of the sample line pump or fan such as a pressure transducer or flow verification device.
14. The sampler shall have a ¼" fused silica lined Swagelok sample inlet located at the rear of the sampler. This port must be shipped in a manner to maintain sampler cleanliness and include clean brass caps or plugs
15. The sampler shall have a 1/8" fused silica lined Swagelok sample outlets located at the front of the sampler. These ports must be shipped in a manner to maintain sampler cleanliness and include clean brass caps or plugs for each of the two sample outputs.
16. The sampler shall have a sample manifold design to manage moisture build up in the unit.

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17. The sampler shall have 0-15 PSIA ( $\leq .25\%$  Accuracy including linearity, hysteresis and repeatability) pressure transducer on each of the two channels to measure the sample canisters pressure.
18. A 1/8", 3 foot fused silica coated stainless steel sample line will be supplied for each sampling port. The line will have a 1/8" Swagelok fitting on one end to attach to the canister sampler and a 1/4" Swagelok nut fitting on the other end to attach to the sampling canister . These lines must be shipped in a manner to maintain sampler cleanliness and include clean brass caps or plugs. Each sample line will be labeled as either "Event Trigger" or "Network".
19. The sampler will have a purge routine, which can be manually activated via unit software, to allow the sampler to be flushed at maximum flow rate for one or both channels for cleaning.
20. The sampler will have the ability to readily turn on and off the internal heater without having to open the unit and have the heater turned off when a low-bit setting is received.
21. The sampler shall have a slope variable and an intercept variable for each MFC so that a calibration and setting of each MFC flowrate set via front panel and/or remotely.
22. The sampler shall have a slope variable and an intercept variable for each pressure transducer so that a calibration and setting of each pressure transducer set via front panel and/or remotely.
23. The unit shall have a valve installed after the sample collection inputs of the MFC and before the sample line pump to allow pressurized purging, blank testing, recovery testing, and troubleshooting of the sampler. When in the closed position the sample line flow shall be only the sample flow into the MFC channels. The sample line flow indication shall indicate the lack of sample line flow when the valve is closed.

**C. OPERATING ENVIRONMENT**

1. The sampler shall operate in a climate controlled (heated and air conditioner cooled) or a non-climate controlled enclosure (fan cooled) with a temperature of range 32° F to 120° F
2. The sampler shall be insulated and have an thermostat controlled internal heater and a cooling fan.
3. The sampler shall have a rack mount enclosure capable of being operated in a 19" rack mount.



4. The sampler shall have a rack mount enclosure capable of being operated setting on a bench and include rubber feet to minimize movement.
5. The sampler shall not weight more than forty pounds does not include the additional multiple port auto sampler or canisters.

**D. COMMUNICATION, ANALOG OUTPUTS AND DIGITAL I/O**

1. The sampler shall be capable of measuring and outputting the pressure of the sample canister during sample and non-sampling times.
2. The sampler shall have the analog signal of 0-5 or 1-5 VDC output of the two sample canister pressures.
3. The sampler shall have the analog signal of 0-5 VDC output of both MFC flow rates during sample and no-sample times.
4. Sampler shall start event triggered sampling at the sensing of a digital low signal sent by the external data logger to the sampler.
5. The sampler shall store and sample at the duration time set in the sampler for the event trigger sample.
6. The sampler shall store and sample at the flow rate set in the sampler for the network sample.
7. The sampler shall store and sample at the duration time set in the sampler for the network sample.
8. The sampler shall store and sample at the flow rate set in the sampler for the event trigger sample.
9. The sampler shall have full setup and operation via front panel and display.
10. The sampler shall have full setup and actuation functionality, as well as software updating capability, via telephone line to standard modem to unit through an RS232 port at a baud rate of 9600, 8 bits, 1 stop and no parity check using terminal emulation software (etc. HyperTerm) of a PC computer. The displayed terminal menu shall be the same as the display menu on the front panel of the sampler. This remote functionality must be capable of being performed on 386 and higher processors running Windows 95 (and up) with minimal RAM requirements. Any customized or non-standard software necessary, such as Visual Basic or LabWorks, must be provided for each unit.

11. The sampler shall have full setup and actuation functionality, and update sampler software via the RS232 port using pass thru mode of the two wire RS232 COMM 1 port of the Coastal Environmental Systems, Inc. Zeno 3200 data logger. This includes the capability of being able to upload the settings from one sampler to a central location and then download these settings to other samplers in a downloadable file format. Any software or programs necessary for accomplishing this must be provided as a part of this award. This remote functionality must be capable of being performed on 386 and higher processors running Windows 95 (and up) with minimal RAM requirements. Any customized or non-standard software necessary, such as Visual Basic or LabWorks, must be provided for each unit.
12. The sampler shall have a screw terminal strip with the output of the two canister pressures, two electronic mass flow controller flow rates, digital indication of sample line flow, digital output indication of sample in progress for both channels, digital input to actuate the sample canister, digital input to actuate the event trigger sample and sample in progress digital output.. The sampler will have the ability to readily turn on and off the internal heater without having to open the unit and have both of the heaters turned off when a low-bit setting is received. These inputs and outputs must be isolated (high impedance) from loading Coastal Environmental Systems data logger.
13. The sampler shall have a digital output set when unit is sampling.
14. The sampler will have the ability to interpret at least five dot commands issued from a Zeno 3200 data logger (Coastal Environmental Inc.) with TNRCC firmware via two wire RS232 at 9600 with 8,1, and 9 stop bits. Specifications of the Zeno 3200 can be acquired at Coastal Environmental Systems Inc., 1000 First Ave. S. Suite 200, Seattle, Washington 98134, phone number (206) 682-6048.

The dot commands issued to the sampler will be interpreted in background mode and not interfere with the front panel display or stop any sampling unless the dot command issues a request to do so.

Error checking of the dot command is accomplished by appending an exclamation mark "!" character to the end of the command line, followed by a checksum. The checksum is a two digit decimal number representing the modulo 100 arithmetic addition of the values of all ASCII characters in the command line, including the decimal point at the beginning and the exclamation mark at the end.

"^A.352 15:44:00 03/22/00 !36"

The sampler will return an "ok" if the sampler understands the command and the checksum matches the checksum calculated by the sampler. The sampler will return a "?" when the checksum does not match and the sampler will return a "?" followed by an error message if the checksum matches but the command is not understood.

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The Canister Status command or “.402” command if received without errors will return the outputs as described by item “d) Canister Status” listed above.

The dot commands are:

- a. Set Time: In the format of “.352 hh:mm:ss MM/DD/YY” where hh is the hour, mm is the minute, ss is the second, MM is the month, DD is the day, and YY is the year.
- b. Start Can: In the format of “.400,ff,c,dddd,rrr” where ff is the variable flush time of 0 to 99 minutes, c is the channel number, dddd is the canister sample duration in minutes and rrr is the electronic mass flow controller cc/min flow rate. Note that there must be some way to designate which channel this command is being sent to control.

Note: “.rrr” command is optional input by the operator and if omitted the “dddd” or duration command should set the electronic mass flow controller based on duration, beginning and target ending pressure. The target ending pressure should be user selectable.

Note: The sample will be automatically delayed to start on an even 5 minute increment if necessary (e.g. if the start command is received at 8:31 the sample will actually start at 8:35).

- c. Stop Can: In the format of “.401c”. Stop canister will stop canister sampling. c is the channel number
- d. Canister Status in the format of “.402”. Canister status will show time, date, current port status, canister pressure readings, flow meter readings, and durations.
- e. Port set : in the format of “.403pp”. Postions multi-port value to indicted port. pp is the port of the multiccanister sampler

### **E. OPERATION**

1. The sampler should have front panel display to display the network sample canister pressure, event trigger canister pressure, electronic mass flow controller flow for the scheduled sample and event trigger sample and operation of the unit (including the port number).
2. The sampler shall have touch keys or keypad on the front panel to enter parameters into the unit. At a minimum, the sampler shall have a 10 number key pad and scroll pads or keys.

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3. The sampler shall be able to be fully setup and fully functional via the front panel touch keys/keypad and display.
4. The sampler shall have a menu driven display and be easily viewable in direct sunlight and in the dark.
5. The sampler shall be microprocessor controlled.
6. The sampler shall indicate the stop date/time, start date/time, starting pressure during static flow, ending pressure during static flow and electronic mass flow controller average flow rate, minimum and maximum flow rate of sample run (excluding the first and last minute of sampling) of each channel of the sampler via display output or printer.
7. The sampler shall have a leak test to determine proper setup of the canister. The leak test shall test the unit and "sampler to canister" tubing to determine the leak tightness of the canister connection.
8. The leak test shall have a user-specified value to determine pass/fail. The value shall be in PSI/min. A value of 0.09 PSI/min shall be the default value. The actual delta pressure shall be displayed in psi/min along with the pass/fail indication. If the leak test fails the sampler shall await a one key stroke entry of the operator to retest the channel or discontinue leak testing. After completion of the leak test a message must appear to remind the operator that "LEAK TEST IS COMPLETE - OPEN CANISTER VALVE".
9. The sampler shall have a sequence menu to allow the unit to sequence through predetermined sample times without entering a new sample setup (normal operation of on 24-hour sample every six day), or by predetermined sample times using a new sample setup for each event (scheduled event trigger sample) or by some external device (event trigger in response to a bit set-point).
10. The mass flow controllers must be accurate within 1% of full scale and within 2% of the reading within 4 seconds over the operating pressure differential (2 to 14.7 psi) with a flow rate setting of 10-100% of MFC full scale setting. The unit must be capable of delivering a flow rate with no more than 5% variability when used in the sampler (excluding the first and last minute during equilibration).
11. Sampling will continue until the set sampling duration for a sample is complete or the canister pressure reaches a user specified set point, with a default of 12.7 psia.
12. The sampler shall be capable of collecting samples while setting up a new schedule program without interrupting current sampling.

13. The network channel should be set-up to routinely collect a canister every 6<sup>th</sup> day for 24 hr duration. This channel can also be set-up to be triggered remotely via the emulation software or via a low-bit setting (either manually tripped or using data from another instrument such as TNMHC, ozone, or meteorological parameters). NOTE: If the channel is enabled to sample when a low bit setting is received any run already in progress will not be terminated.

The event triggered channel will usually be setup to either be in a standby mode awaiting a start command (either via software emulation, on-site activation, or a low-bit setting) or be used for scheduled sample collection. This channel does need to have the capability to collect every 6<sup>th</sup> day 24 hr samples and be able to collect non-sequential hour long samples on given days as part of a saved method. Scheduled samples take priority but the user should have the ability to override this setting if they are sure that they want to stop a run in progress (or start a sample which will interfere with a regularly scheduled sample). In general, scheduled samples have top priority, then low bit activated samples, and finally remote start samples. The sampler can be started or stopped at any time via the keyboard or dot commands. As with the network channel, a run in progress is not automatically terminated to allow initiation of an event triggered sample but may start at the completion of a previous sample if the bit is still set low.

14. Software will allow the operator to either remotely or using the front panel to enable or disable the activation of the sampler to act on a low-bit setting.
15. After a power outage, once the power is restored the sampler will resume operation.

## V. AIR TOXIC SAMPLING UNITS - MULTICAN ATTACHMENT

### A. ELECTRICAL

1. The attachment shall be capable of being directly powered by external 12 VDC with a maximum 3 Amp draw or 115VAC without the heater on and a maximum of 6 Amp draw with the heater on. Any power inverter or converter used must be an integral and internal part of the multican attachment.
2. The attachment shall have an internal fuse and radio frequency interference (rfi) filter.
3. The instrument power cord shall be delivered with the unit.
4. The attachment shall be capable of being powered through a Ground Fault Interrupter (GFI) circuit.
5. The attachment shall be engineered and constructed in compliance with standard codes.
6. The attachment shall have a built-in protection against undervoltage, overcurrent, and overvoltage conditions including low energy surges introduced on the primary AC source and the bypass source.
7. All similar boards shall be interchangeable (with minor adjustments). Minor adjustments shall consist of user programming, software downloads, and/or switch settings. Adjustments which require soldering, jumpers, or potentiometer changes, are not acceptable. Any card which is microprocessor-based shall indicate if its software version is out of date compared to the version in the system. All card processor software and programmable logic configuration software shall reside on non-volatile memory on each card to facilitate field upgrades. The non-volatile memory on each card shall be upgradable without removing the card from each system.

### B. PNEUMATICS

1. A minimum of one port from each attachment must be tested and meet U.S. EPA Method T.O. 15 requirements for cleanliness for the TNRCC target compounds listed in Table 1 using a humid (RH > 30%) air or nitrogen matrix. This cleanliness test must be conducted after the recovery challenge discussed in item 2 below to demonstrate negligible carryover (note that the sampler may not be purged more than that normally incorporated into any routine used to purge the sampler between routine sample collection). The blanks shall be collected over a one hour sample period. Documentation of the analytical verification will be provided with each sampler.

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2. The attachment must have at least 80-120% recovery for all TNRCC target compounds listed in Table 1 attached. This test should be conducted at a concentration of 5-10 ppbV in a humid (RH>30%) air or nitrogen matrix. Testing may be required on only one port from each attachment IF documentation is provided that the sampler ports were manufactured from the same lot or source of materials in a similar manner AND all ports are purged or otherwise passivated in a similar manner. The recovery sample shall be collected over a one hour sample period. NOTE: A 100 ppbV standard is available for this recovery testing. This standard cylinder contains approximately 3000 liters in an aluminum cylinder. TNRCC can make this cylinder available to the vendor within 15 calendar days of award and the vendor is responsible for shipping costs and paperwork to and from TNRCCs laboratories in Austin, TX. If this cylinder is used, the vendor is only responsible for testing those compounds included in the standard for the recovery certification. This cylinder may not include a few of the target compounds listed in Table 1.
3. The sampler shall have a sample path of only fused silica coated stainless steel tubing, stainless steel fittings and tube adapters, stainless steel electronic mass flow controllers, electro-polished stainless steel valves, Viton or Kel-F O rings. Swagelok ferrules and nuts do not have to be fused silica coated since these have minimal if any contact with the sample.
4. The collected sample shall be a passive sample.
5. The attachment shall have sixteen canister outputs on the front of the unit with stream selection controlled by a 1/8" 16 port Valco electronic valve. These ports must be shipped in a manner to maintain sampler cleanliness and include clean brass caps or plugs
6. The attachment shall have the ability to interface with and be controlled by the canister sampler described in line item 1 of this purchase.
7. The attachment shall have a 1/8" fused silica coated Swagelok sample line connection on the front of the attachment of no more than 2 ft to connect the multicanister sampler to the air toxics can sampler event trigger port. These lines must be shipped in a manner to maintain sampler cleanliness and include clean brass caps or plugs.
8. The attachment shall have a labeled (1-16) 3 foot fused silica coated stainless steel 1/8" sample line for each of the 16 sample ports with a 1/8" Swagelok fitting connection to the unit and a 1/4" Swagelok fitting connection for connection to a SUMMA sampling canister. These lines must be shipped in a manner to maintain sampler cleanliness and include clean brass caps or plugs. These lines should connect to the front of the attachment panel.
9. The attachment shall have the capability of measuring and displaying canister pressure upon demand (remotely or on-site) for the sample canisters connected to

each of the 16 sampling lines when the event triggered channel of the sampler is not in use. The canister pressure change associated with the dead volume of the multican attachment can be no more than 0.05 psi or approximately 20 ml dead space (when used in conjunction with line item #1).

### **C. OPERATING ENVIRONMENT**

1. The attachment shall be capable of operating in a climate controlled (heated and air conditioner cooled) or a non-climate controller (fan cooled) (temperature range 32° F to 120° F) enclosure.
2. The attachment shall be insulated, and have an internal heater and a cooling fan.
3. The attachment shall not weight more than twenty-five pounds. This weight does not include the controlling canister sampler or the sample canisters (line item 1).
4. The attachment will be rack mountable in a 19" rack and have rubber feet attached to minimize movement if placed on a desktop or bench.

### **D. COMMUNICATION, ANALOG OUTPUTS AND DIGITAL I/O**

1. The sampling system shall be capable of measuring and outputting the pressure of the sample canister during sample and non-sample times. (when used in conjunction with line item #1).

The sampling system shall have the analog signal of 0-5 or 1-5 VDC output of the selected sample canister pressures. (when used in conjunction with line item #1).

2. The sampling system shall have the analog signal of 0-5 VDC output of the MFC flow rate during sample and no-sample times. (when used in conjunction with line item #1).
3. The sampling system shall start the sample of the event trigger sample, into the second channel at the sensing of a digital low signal send by the external data logger to the unit (when used in conjunction with line item #1).
4. The sampling system shall store and sample at the duration time set in the attachment for the event trigger sample (when used in conjunction with line item #1).
5. The sampling system shall store and sample at the flow rate set in the attachment for the event trigger sample (when used in conjunction with line item #1).
6. The sampling system shall store and sample at the duration time set in the unit for the sample (when used in conjunction with line item #1).
7. The sampling system shall store and sample at the flow rate set in the unit for the event trigger sample (when used in conjunction with line item #1).



9. The sampling system shall have full setup and operation via keyboard and display (when used in conjunction with line item #1).
10. The sampling system shall have full setup and actuation functionality via a telephone line to standard modem to unit through an RS232 port at a baud rate of 9600, 8 bits, 1 stop and no parity check using terminal emulation software (etc. HyperTerm) of a PC computer. The displayed terminal menu shall be the same as the display menu on the front panel of the attachment (when used in conjunction with line item #1). This remote functionality must be capable of being performed on 386 and higher processors running Windows 95 (and up) with minimal RAM requirements. Any customized or non-standard software necessary, such as Visual Basic or LabWorks, must be provided for each unit.
11. The sampling system shall have full setup and actuation functionality via the RS232 port using pass thru mode of the two wire RS232 COMM 1 port of the Coastal Environmental Systems, Inc. Zeno 3200 data logger. Specifications of the Zeno 3200 can be acquired at Coastal Environmental Systems Inc., 1000 First Ave. S. Suite 200, Seattle, Washington 98134, (206) 682-6048. (when used in conjunction with line item #1).
12. The sampling system shall have a screw terminal strip on the rear of the unit to indicate the current port position.
13. The sampling system shall have a digital output set when unit is sampling (when used in conjunction with line item #1).
14. The sampler will have the ability to interpret at least five dot commands issued from the Zeno 3200 data logger via two wire RS232 at 9600 with 8, 1, and 9 stop bits (when used in conjunction with line item #1).

The dot commands are:

- a. Set Time: In the format of “.352 hh:mm:ss MM/DD/YY” where hh is the hour, mm is the minute, ss is the second, MM is the month, DD is the day, and YY is the year.
- b. Start Can: In the format of “.400,ff,c,dddd,rrr” where ff is the variable flush time of 0 to 99 minutes, c is the channel number, dddd is the canister sample duration in minutes and rrr is the electronic mass flow controller cc/min flow rate. Note that there must be some way to designate which channel this command is being sent to control.

Note: “rrr” command is optional input by the operator and if omitted the “dddd” or duration command should set the electronic mass flow controller based on duration, beginning and target ending pressure. The target ending pressure should be user selectable.

Note: The sample will be automatically delayed to start on an even 5 minute increment if necessary (e.g. if the start command is received at 8:31 the sample will actually start at 8:35).

- c. Stop Can: In the format of ".401c". Stop canister will stop canister sampling. c is the channel number.
- d. Canister Status in the format of ".402c". Canister status will show time, date, current port status, canister pressure readings, flow meter readings, and durations. c is the channel number.
- e. Port set : in the format of ".403pp". Postions multi-port value to indicted port. pp is the port of the multiccanister sampler
- f. The dot commands issued to the sampler will be interpreted in background mode and not interfere with the front panel display or stop any sampling unless the dot command issues a request to do so.
- g. Error checking of the dot command is accomplished by appending an exclamation mark "!" character to the end of the command line, followed by a checksum. The checksum is a two digit decimal number representing the modulo 100 arithmetic addition of the values of all ASCII characters in the command line, including the decimal point at the beginning and the exclamation mark at the end.

"^A.352 15:44:00 03/22/00 !36"

The sampler will return an "ok" if the sampler understands the command and the checksum matches the checksum calculated by the sampler. The sampler will return a "?" when the checksum does not match and the canister sampler will return a "?" followed by an error message if the checksum matches but the command is not understood.

The Canister Status command or ".402" command if received without errors will return the outputs as described by item "d) Canister Status" listed above.

## **E. OPERATION**

1. The sampling system should have front panel display to display the sample canister pressure, event trigger canister pressure, electronic mass flow controller flow for the scheduled sample and event trigger sample and operation of the attachment (when used in conjunction with line item #1).
2. The sampling system shall have touch keys/keypad on the front panel to enter parameters into the attachment (when used in conjunction with line item #1).

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3. The sampling system shall be able to be operated via the front panel touch keys/keypad and display (when used in conjunction with line item #1).
4. The sampling system shall have a menu driven display (when used in conjunction with line item #1) which is easily viewable in bright daylight conditions and in the dark .
5. The sampling system shall be microprocessor controlled (when used in conjunction with line item #1).
6. The sampling system shall indicate the stop date/time, start date/time, port number, starting pressure during static flow, ending pressure during static flow and electronic mass flow controller flow rate (with minimum and maximum flow of sample run excluding the first and last minute of sampling) of each sample via display output or printer (when used in conjunction with line item #1).
7. The sampling system shall have a leak test to determine proper setup of each canister. The leak test shall test the attachment and sampler to canister tubing to determine the leak tightness of the canister connection (when used in conjunction with line item #1).
8. The sampling system leak test shall have a user-specified value to determine pass/fail. The value shall be in PSI/min. A value of 0.09 PSI/min shall be the default value. The actual delta pressure shall be displayed in psi/min along with the pass/fail indication. If the leak test fails the sampler shall await a one key stroke entry of the operator to retest the channel or discontinue leak testing. After completion of the leak test a message must appear to remind the operator that "LEAK TEST IS COMPLETE - OPEN CANISTER VALVE".
9. At the end of a sampler period, the unit will measure ending static canister pressure, advance to the next port, measure static canister pressure and continue to advance through each port until a can pressure no greater than a user specified pressure (1.0 psia default) is measured (when used in conjunction with line item #1).
10. The sampling system shall have a sequence menu to allow the attachment to sequence through predetermined sample times without entering a new sample setup (when used in conjunction with line item #1).
11. The mass flow controllers must be accurate within 5% of the set point over the operating pressure differential (2 to 14.7 psi) and flow rates listed in number 10 or 11 under pneumatics while delivering a flow rate with no more than 10% variability (excluding the first and last minute during equilibration) (when used in conjunction with line item #1).

12. The sampling system will be programmed to automatically terminate sampling when the sample canister pressure reaches 12.7 psia (when used in conjunction with line item #1).
  
13. The event triggered channel will usually be setup to either be in a standby mode awaiting a start command (either via software emulation, on-site activation, or a low-bit setting) or be used for scheduled sample collection. This channel does need to have the capability to collect every 6<sup>th</sup> day 24 hr samples and be able to collect non-sequential hour long samples on given days as part of a saved method. Scheduled samples take priority but the user should have the ability to override this setting if they are sure that they want to stop a run in progress (or start a sample which will interfere with a regularly scheduled sample). In general, scheduled samples have top priority, then low bit activated samples, and finally remote start samples. The sampler can be started or stopped at any time via the keyboard or dot commands. As with the network channel, a run in progress is not automatically terminated to allow initiation of an event triggered sample but may start at the completion of a previous sample if the bit is still set low. The sampling system shall have the ability to indicate via front panel display and remotely which port have a usable vacuum (available ports).

Table 1 - Target Compounds

Compound Name	901001	Flag	Compound Name
ethylene			1,1,1-trichloroethane
acetylene			benzene
ethane			carbon tetrachloride
propylene			cyclohexane
propane			2-methylhexane
isobutane			2,3-dimethylpentane
vinyl chloride			3-methylhexane
1-butene			1,2-dichloropropane
1,3-butadiene			trichloroethylene
n-butane			2,2,4-trimethylpentane
t-2-butene			2-chloropentane
bromomethane			n-heptane
c-2-butene			c-1,3-dichloropropene
3-methyl-1-butene			methylcyclohexane
isopentane			t-1,3-dichloropropene
trichlorofluoromethane			1,1,2-trichloroethane
1-pentene			2,3,4-trimethylpentane
n-pentane			toluene
isoprene			2-methylheptane
t-2-pentene			3-methylheptane
1,1-dichloroethylene			1,2-dibromoethane
c-2-pentene			n-octane

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methylene chloride	tetrachloroethylene
2-methyl-2-butene	chlorobenzene
2,2-dimethylbutane	ethyl benzene
cyclopentene	p-xylene +m-xylene
4-methyl-1-pentene	styrene
1,1-dichloroethane	1,1,2,2-tetrachloroethane
cyclopentane	o-xylene
2,3-dimethylbutane	n-nonane
2-methylpentane	isopropylbenzene
methyl t-butyl ether	n-propylbenzene
3-methylpentane	m-ethyltoluene
2-chloroprene	p-ethyltoluene
2-methyl-1-pentene + 1 hexene	1,3,5-trimethylbenzene
n-hexane	o-ethyltoluene
chloroform	1,2,4-trimethylbenzene
t-2-hexene	n-decane
c-2-hexene	1,2,3-trimethylbenzene
1,2-dichloroethane	m-diethylbenzene
methylcyclopentane	p-diethylbenzene
2,4-dimethylpentane	n-undecane

## Bid specification No. 19

### Specifications for Zeno 3200 Data Logger

#### Minimum General Specifications:

1. Zeno 3200 DataLogger
- 1.1. 32-bit microcontroller, Motorola 68332, 16MHz, full floating point arithmetic, 16Kb data storage memory.
- 1.2. 14 single-ended analog inputs (7 differential) 18 bit resolution, 1 sample per second +/-5mV to +/-5V in 10 ranges, software selectable.
- 1.3. 2 single-ended, 12 bit resolution input channels
- 1.4. 8 user configurable digital input channels
- 1.5. 6 general purpose digital input/output channels.
- 1.6. 1 tipping bucket rain gauge input.
- 1.7. 5 switched excitation outputs of 1.25, 2.5, 5.0VDC, 100mA
- 1.8. 5 switched power inputs, 12VDC and 5VDC
- 1.9. Power management software with hardware watchdog timer and power monitor.
- 1.10. Real-time clock, battery-backed
2. Two-way Radio
- 2.1. Operates at 406-430 MHz or 450-475 MHz; 5W; 1200 baud; mechanical assembly
- 2.2. Antenna: Directional Yagi antenna to increase strength and distance of signal
- 2.3. Modem: Phone modem, low power, full temperature range, Zeno compatible
3. Base Station
- 3.1. Two-way radio operates at 406-430MHz or 450-475MHz; 5W; 1200 baud; mechanical assembly.
- 3.1.1. In enclosure complete with power supply
- 3.1.2. Connector for antenna and omni-directional antenna
4. Intercept Software
- 4.1. Windows-point and click, data collection, display and forward software
- 4.1.1. Automatically/manually collects data (wire, dial-up phone, radio, cell-phone)
- 4.1.2. Displays, archives, alarms and shares data with other files

**STANDARD OPERATING PROCEDURE (SOP)**

**Title: Standard Operating Procedure for Air Monitoring Network Changes**

Team Leader: <u>Joseph Panketh</u>	Date: <u>11-27-00</u>
Quality Control Review: _____	Date: _____
Section Manager: <u>Roy Hartmann</u>	Date: <u>11-27-00</u>
Effective Date: <u>11-27-00</u>	

**1.0 PURPOSE:**

This document describes step-by-step procedures in updating the air monitoring network.

**2.0 SCOPE:**

The scope of this procedure covers the selection of new air monitoring sites, site approval process, site preparation, and deployment of the new station. The same procedure is followed when adding new equipment or deleting equipment at an existing site.

**3.0 METHOD:**

These procedures involve coordination between Ambient Monitoring Section and other areas of the Monitoring Operations Division and the Field Operations Division.

**4.0 LIMITATIONS:**

Acquiring ideal site locations are not always possible. The best possible location in the general area is chosen. Obtaining permission from the land owners has become a long and arduous process. Site preparation work can turn out to be very long and difficult process. Availability of manpower resources in the regions is a consideration when adding new equipment at existing stations.

**5.0 PROCEDURE:**

5.1 The need for a change in the network is identified and communicated to the Network Design Team.

5.2 The Network Design Team makes recommendation to the Division Director whether to proceed with the project or not. The Team also determines whether this is to be a NAMS, SLAMS, PAMS, or SPM and what the monitoring objective and measurement scale are. Approval process for each type of these monitors differ and the Code of Federal Regulations Part 58 must be consulted. The Division Director makes the final decision. (More details in Attachment A)

- 5.3 If the project is to proceed, a work order request is generated by the Project Leader and sent to the Field Operations Division to assess the feasibility of regional staff operating the new equipment or station. (Please refer to the Ambient Monitoring Work Manual Revision Form, Attachment B)
- 5.4 The Field Operations Division (FOD) agrees or disagrees with the proposal. If FOD agrees to the proposal, the regional Air Program Manager assigns a regional contact for the project. If FOD cannot handle the manpower requirement, then the Project Leader investigates the possibility of contracting the work out.
- 5.5 If the need is for a new site, the regional contact searches for potential sites in the general area suggested by the Ambient Monitoring Section and provides information on three potential sites to the Monitoring Coordination Team Leader. (Please refer to Site Selection and Documentation Procedures Manual, Section 1, Attachment C for proper siting requirements)
- 5.6 Monitoring Coordination Team Leader approves the site with concurrence from the Leader of the Air Pollution Meteorology Team.
- 5.7 The Project Leader prepares a letter and/or TNRCC standard license agreement and sends it to the property owner to obtain permission to locate the station.
- 5.8 If the wording in the standard license agreement is altered by legal staff of the property owner, the Project Leader contacts TNRCC General Law Division for assistance in resolving the differences.
- 5.9 The regional contact works with the property owner to obtain permission and signature on the license agreement.
- 5.10 An Ambient Monitoring Work Request Form (Attachment D) is sent by the Project Leader to the Systems Planning and Implementation Team, Technical Support Team, and the Engineering Support and Development Team detailing the network changes to be implemented.
- 5.11 The Systems Planning and Implementation Team Leader forwards to the regional contact the minimum specifications for fence, electricity, and pad.
- 5.12 After the license agreement has been signed by both parties, regional contact gets bids for site preparation work including fence, electricity, and pad and sends to Systems Planning and Implementation Team Leader. Systems Planning and Implementation Team Leader reviews the bids and selects the successful bidder.
- 5.13 The Systems Planning and Implementation Team Leader forwards the bids to the purchasing ASC. A purchase order is issued to the successful bidder and the regional



contact oversees the work to make sure everything is done according to specifications. Work must be completed at least one week before the deployment date.

- 5.14 The regional contact makes a request to the Telecommunications Section for new telephone line to be installed at the station. The regional contact works with the Telecommunications Section staff and the telephone service provider to have the phone line installed at least one week before the station is to be deployed.
- 5.15 In the meantime, Systems Planning and Implementation Team prepares the monitor and/or outfits the station with the required monitoring equipment and readies it for deployment.
- 5.16 The Systems Planning and Implementation Team checks the equipment for proper operation prior to deployment.
- 5.17 *The Monitoring Coordination Team Leader prepares a site addition/deletion form with address, phone number, parameters to be added/deleted, whether the site/equipment is permanent or short term, who operates the station/equipment, and who validates the data and forwards it to the Site File Coordinator and the Systems Administrator. (Please refer to Monitoring Site Start-up Form, Attachment E)*
- 5.18 The Site File Coordinator obtains an AIRS number and forwards it to the Monitoring Coordination Team Leader and makes arrangements for registering the site/equipment in AIRS.
- 5.19 The Monitoring Coordination Team Leader notifies the Site File Coordinator, Engineering Support and Development Team( Engineering Support and Development Team will configure program in the Zeno to reflect the network changes to be implemented, Attachment F), *MeteoStar On-site Engineering Support (MeteoStar On-site Engineering Support staff will configure MeteoStar system to reflect the network changes to be implemented, Attachment G), and the Systems Administrator (Attachment H) about the upcoming network change at least one week ahead of the implementation date.*
- 5.20 The Systems Planning and Implementation Team Leader notifies the regional staff about the tentative date for deployment of the station.
- 5.21 The Systems Planning and Implementation Team staff deploys the station/equipment and with assistance from Engineering Support and Development Team and MeteoStar staff checks out the station for proper operation prior to leaving the station. They will also take a GPS reading of the latitude and longitude of the site location and digital photographs of the eight cardinal points as required by the EPA guidelines. The latitude and longitude coordinates and the digital photographs will be forwarded to the Site File Coordinator, Monitoring Operations Web Page Developer, and Systems Administrator through Monitoring Coordination Team Leader.

- 5.22 The regional contact or the contract operator is responsible for entering in the operator log details about the implementation change. The regional contact signs the property transfer slips. The regional contact or the contract operator is also responsible for ensuring that a five-point calibration has been initiated and was completed successfully. A successful calibration determines the actual start up date for the equipment.
- 5.23 The Monitoring Coordination Team Leader notifies the Network Design Team, Technical Support Team, and the Data Validators that the new station is up and running.

Attachment A

**Monitoring Data Management and Analysis Procedures for Air Monitoring Network Changes**

1. If the new monitor/station is to be a National Air Monitoring Station (NAMS), the Site File Coordinator requests registration of the site as NAMS to EPA's Office of Air Quality Planning and Standards (OAQPS) in Research Triangle Park, North Carolina.
2. If the monitor/station is to be a State and Local Air Monitoring Station (SLAMS), the Site File Coordinator requests registration of the site as SLAMS to EPA Region 6 in Dallas.
3. If the monitor/station is to be a Special Purpose Monitor (SPM), the Site File Coordinator requests concurrence from the Network Design Team and the Monitoring Coordination Team Leader.
4. When relocating an existing site, the regional contact makes a physical measurement of the distance the station is to be moved and forwards it to the Site File Coordinator. If the distance between the existing site and the proposed new site is greater than 100 yards (91.4 meters), the Site File Coordinator obtains a new AIRS number. The Monitoring Coordination Team Leader assigns a new CAMS number if the site is a continuous monitoring station.
5. If the distance moved is less than or equal to 100 yards, the site keeps the CAMS number and the AIRS number.
6. After a new site is installed or relocated, the Site File Coordinator requests the regional contact or the contract operator to provide the site file information required for registering the site in AIRS. (Site File information requirements are to be found in the Site Selection and Documentation Procedure Manual.)
7. The Site File Coordinator makes sure that a duplicate AIRS number, CAMS number, and/or site name is not issued because another station had existed at the same location in the past.
8. After the equipment/station is set up, all activities at the station must be entered into the operator log by the station operator so that the data validators can make determinations about the validity of the data.
9. The Project Leader will provide to the Data Validators and the Technical Support Team the name, phone number, and e-mail address of the station operator and the validator if the manual validation is done by someone other than the TNRCC Monitoring Data Management and Analysis Section staff.

Attachment B

## Ambient Monitoring Work Manual Revision Form

**To:** Director  
 Field Operations Division

**Date:**

**From:** Steve Spaw, P.E., Director  
 Monitoring Operations Division

**Subject:** Ambient Monitoring Work Manual Revision/Addition

<b>Description of Revision or Addition:</b>			
<b>Field Operations Responsibilities:</b>			
<b>Reason for Revision/Addition:</b>			
This is a new site which is required by/is intended to provide.....			
<b>Monitoring Location Unique Identification</b>			
<b>All Common Name(s)</b>			
<b>Region Number</b>		<b>New or Existing Work Location</b>	
<b>Closest Street Highway Intersection:</b>			
<b>Start/End Date of Work:</b>			
<b>Months per Year:</b>		<b>Monthly Man-Hours Required for both on-site and off-site activities (Do not include travel):</b>	
<b>Training Required? yes no</b>		<b>Training Provided by:</b>	
<b>Location of Training:</b>		<b>Man-hour to Complete Training:</b>	
<b>Comments Attached?</b>			
yes no			

cc: Terry L. Blodgett, Field Operations Division

## Description of Required Information

<b>Description of Revision or Addition</b>	A full description of the work to be added or revised within the Ambient Monitoring Work Manual.
<b>Reason for Revision/Addition</b>	The reason the requested revisions are necessary (e.g., US EPA mandate, ozone mapping . . . etc)
<b>Monitoring Location Unique Identification</b>	This is a <u>unique</u> identification number or name.
<b>All Common Name(s)</b>	Many monitoring sites have several common names which are used to identify them. List <u>all</u> common names which are known.
<b>New <u>or</u> Existing Work Location</b>	State whether the site is a site which Field Operations is already conducting work at.
<b>Region Number</b>	TNRCC Region where the work will occur.
<b>Closest Street Highway Intersection</b>	Major highway intersection where the work will be performed. If not appropriate, the closest landmark.
<b>Start/End Date of Work</b>	The start date is the date which Field Operation's Staff will start and stop expending man-hours.
<b>Months per Year</b>	The number of months per year that will require Field Operations to expend man-hours.
<b>Monthly Man-Hours Required</b>	The estimated number of man-hours to perform the work (EXCLUDING TRAVEL) including on-site time <u>and</u> hours required off-site.
<b>Training Required? (yes/no)</b>	State whether training will be appropriate prior to the start date of the work or on an on-going basis.
<b>Training Provided by</b>	Who will provide the training.
<b>Location of Training</b>	Location of required training.
<b>Man-hour to Complete Training</b>	Hours required to complete training including estimated travel time, out-of-class reading . . . etc.

Attachment C 1

**NEW SITE SELECTION**

**Criteria for selecting air monitoring site include but are not limited to the following list:**

Probe siting criteria as described in Title 40 Code of Federal Regulations Part 58 (40 CFR 58) Appendix E, "Probe Siting Criteria for Ambient Air Quality Monitoring" must be followed.

The location should be available for several years. A site operated for one year or less has limited usefulness in air quality trend determination. Electric power must be available in the immediate vicinity. High-volume air samplers for particulate matter of 10 microns or less (PM10) require 110 volts, 60 Hertz, 10 amperes, whereas Continuous Air Monitoring Stations (CAMS) require 220 volts, 60 Hertz, 100 amperes. CAMS also require telephone service. Therefore, it is important that telephone lines or pedestals are within reasonable distance to avoid excessive installation costs and time delays.

Consider locating the station on public property, which is generally more likely to be available for long-term monitor placement.

The site must be relatively secure and free from vandalism. It must also pose no safety hazard to the general public.

Hazards, such as low electric wires or roof depressions subject to flooding, should be avoided.

Requests for establishing or relocating a site should be submitted to the Monitoring Coordination Unit Leader. Detailed site documentation must be submitted to the Site File Coordinator if the request is approved. Both a paper and computer site file will then be initiated at the TNRCC central office and will be available to the public.

*40 CFR 58 contains additional criteria for site election*

Attachment C 2

**DISCONTINUANCE OF A SITE OR EQUIPMENT**

Discontinuance may occur for a variety of reasons; for example, the required monitoring may be terminated or completed, the site may become unavailable, or it may no longer pass the siting criteria. In every situation, the Monitoring Coordination Team Leader must review the circumstances and determine whether to shut down the monitoring site. Anyone who desires to discontinue a site should begin by contacting the Monitoring Coordination Team Leader. The Monitoring Coordination Team Leader will then inform the Site File Coordinator to complete the Implementation/Change Request for the Air Quality Monitoring Network (Site Selection and Documentation Procedures [SSDP 4.1.1]). The activities associated with the discontinuance of a site include the following.

The Monitoring Coordination Team Leader will:

Notify the site operator of the discontinuance and ask for the return of the equipment, and recover all of the equipment and associated extra supplies.

The Systems Planning and Implementation Team will:

Perform maintenance and/or repair, as required, on the returned equipment.

The regional staff will:

Restore or repair the site, if necessary, as agreed with the owner/manager of the property. On Continuous Air Monitoring Station sites, where the services of an outside contractor may be required, bids are generally necessary for work associated with site restoration and repair. The regional staff may contact the Systems Planning and Implementation Team Leader of the Ambient Monitoring Section if they need additional information on the bidding process. The site operator will also make arrangements for the utilities to be disconnected and notify the Purchasing ASC in Austin and the Monitoring Coordination Team Leader when this has been done.

The Site File Coordinator will:

Prepare the necessary paperwork to deactivate the site and archive the paper site file and update the database.

Attachment C 3

**RELOCATION OF AN EXISTING SITE**

The Code of Federal Regulations (CFR) lists a number of reasons that require the relocation of an existing monitoring site (40 CFR 58, Appendix D, p. 174, July 1, 1995). A monitoring site may also be relocated for a variety of other reasons; for example, there might be new construction in the area, or the ownership or management of the property on which the site is located might change. As with the discontinuance of a monitoring site, the Monitoring Coordination Team Leader must review the circumstances and determine whether the monitoring site needs to be moved. Whenever a site is relocated, the regional staff will need to make a physical measurement of the distance between the old and the new site to determine whether a new Aerometric Information Retrieval System (AIRS) number needs to be assigned. According to guidelines from the Regional Administrator of the U. S. Environmental Protection Agency (EPA), Region 6, if the distance between the old site and the new site is less than or equal to 100 yards, or 91.4 meters, the same AIRS number can be used; otherwise, a new AIRS number will need to be obtained from the TNRCC AIRS Air Quality Data Coordinator. The Monitoring Coordination Team Leader will also assign a new CAMS number if the site is a continuous monitoring station.



Attachment D

**AMBIENT MONITORING WORK REQUEST FORM**

To: Roy Hartmann, Ambient Monitoring Section      Date of Request: \_\_\_\_\_

Requested by: \_\_\_\_\_ Ext. \_\_\_\_\_ Section: \_\_\_\_\_

Specifications and drawings (if required) of work requested:  
(Use additional pages if required)

Materials Required:

Materials shall be supplied by: \_\_\_\_\_

Materials shall be charged to index number: \_\_\_\_\_

Project completion date requested: \_\_\_\_\_

**Completed by Ambient Monitoring Section**

Date received: _____	Work Request Number: AMSX- _____
Work request assigned to: _____	
Yes    Work can be completed by requested completion date.	
No    Work can not be completed by requested date. You may discuss a revised date with Ambient Monitoring personnel and/or elect to contract a vendor for work requested.	
M/hrs: _____ Materials used: (Use additional pages if required.)	
Project was completed and/or cancelled on _____ by _____	

Project was completed to requestor's satisfaction: \_\_\_\_\_ Date: \_\_\_\_\_

**NOTES**

Attachment E

**Monitoring Site Start Up Form**

<b>Site Name</b>		<b>Street Address:</b>			<b>CAMS #:</b>				
<b>City:</b>		<b>County:</b>			<b>Phone: ( )</b>				
<b>AIRS Number</b>		<b>Latitude :</b>			<b>Longitude :</b>				
<b>Parameter</b>	<b>Monitor Manufacturer</b>	<b>Monitor Model</b>	<b>NAMS/SLAMS / PAMS/SPM ?</b>	<b>Parameter Method Code</b>	<b>Parameter POC #</b>	<b>Data to AIRS?</b>		<b>Data used for PSI?</b>	
						Y	N	Y	N
						Y	N	Y	N
						Y	N	Y	N
						Y	N	Y	N
						Y	N	Y	N
						Y	N	Y	N
						Y	N	Y	N
						Y	N	Y	N
						Y	N	Y	N
						Y	N	Y	N
						Y	N	Y	N

**Note:** Shaded information fields to be completed by the Ambient Monitoring Section, clear fields to be completed by the MDM&A Section. If this is an existing station, the information below to be completed when there is a change in the monitor configuration.

**Short-Term/Long-Term:**

**Site Operator:**

**Data Validator:**

**Change of Equipment Form**

<b>Site Name</b>		<b>AIRS #</b>			<b>CAMS #:</b>						
<b>Parameter</b>	<b>Added or deleted ?</b>		<b>Monitor Manufacturer</b>	<b>Monitor Model</b>	<b>NAMS/SLAMS PAMS/SPM ?</b>	<b>Parameter Method Code</b>	<b>Parameter POC #</b>	<b>Data to AIRS?</b>		<b>Data used for PSI?</b>	
	A	D						Y	N	Y	N
	A	D						Y	N	Y	N
	A	D						Y	N	Y	N
	A	D						Y	N	Y	N
	A	D						Y	N	Y	N
	A	D						Y	N	Y	N

**Attachment F**

**Task List for New Site or Changes to Site performed by the Engineering Support and Development Team**

**Procurement**

1. Resources  
(Monitoring Coordination Team Leader, Cal Lab, and MeteoStar)
2. Equipment hardware  
(Printed Circuit Boards for Zeno)
3. Software for Zeno  
(Firmware for Zeno)

**Preparation**

1. Manufacture interface modules.  
(Building terminal modules for CS10, Multi-can, Special Projects)
2. Develop the Zeno software.  
(Enhancing our generic configuration file)
3. Test Zeno on test bench.  
(Test on Zeno tester)
4. Test Zeno with development software.  
(Test in Lab)
5. Test Zeno in fully integrated system where practical.  
(Test in Test Trailer)
6. Review MeteoStar/LEADS data collecting.  
(DSR web pages and manual validation)
7. Drawings for Zeno channel assignments.

**Notification of TNRCC personnel**

1. System Administrator (Channel assignment)
2. MeteoStar (Bit flagging)
3. Systems Planning and Implementation Team  
(Wiring diagram of new equipment configuration)

**Configuration of Zeno site files**

Update the LAN to ensure that the latest site file is available. (H:\Everyone\zenoprogram)

**Configuration of Change Request**

Create ECR Log. (Update Zeno data base with Deviations, Zeno serial number, TNRCC number, Firmware version, configuration file name, and Zeno status.)

**Attachment G**

**Task List for New Site or Monitor Addition into MeteoStar and Web Pages performed by the MeteoStar On-site Engineering Support Staff**

Serve as a back up to Systems Administrator. Complete tasks of Attachment H if Systems Administrator is unavailable.

Use site latitude and longitude provided to set up the sites with Ozone monitors on the Ozone maps.

Once the station is deployed and after each monitor passes a calibration, the MeteoStar On-site Engineering Support staff changes the monitor status which allows the site to appear in the PSI Report, AQI ratings and the Ozone Maps.

Attachment H

**Task List for New Site or Monitor Addition into Meteostar and Web Pages  
performed by the Systems Administrator**

Tasks to be completed on the regional hub computer

1. create sailer & time sync configuration files  
(script files containing modem communication commands)
2. edit dial-out modem file  
(script containing list of stations each modem calls)
3. add time sync command to crontab  
(scheduler to automatically execute jobs)

Tasks to be completed on TNRCC3

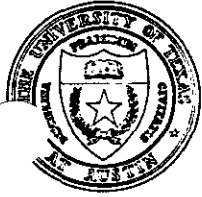
4. edit epa, cams, address, and extra data files  
(site configuration files)
5. update exports  
(non-MonOps directories)
6. create zeno channel configuration file  
(data logger configuration)
7. create calibrations limits file  
(enables automatic calibrations and checks)
8. create audit trail file  
(to hold validator notes)
9. edit hourly averages validation configuration file  
(defines NEG and MUL tests)
10. edit pollution database status configuration file  
(exports hourly data to the Ingres database)
11. edit parameter & method code files if adding new parameter or method code

Tasks to be completed on DSR

12. update Ingres database tables
13. update html pages
14. for non TNRCC sites, add responsible entity to web script

Miscellaneous Tasks

15. update "Monitor Status" web page as needed when monitors are turned off or on
16. update Manual Validation privileges



CENTER FOR ENERGY STUDIES  
THE UNIVERSITY OF TEXAS AT AUSTIN

J. J. Pickle Research Campus • 10100 Burnet Road • Austin, Texas 78758  
512/471-7792 • FAX: 512/471-1720

December 4, 2003

Air Quality Solutions, Inc.  
1301 So. IH-35, Suite 107  
Austin, TX 78741-1169

Attention: Mr. Rogelio C. Ramon, President

Subject: Corpus Christi Air Monitoring and Surveillance Camera Installation Project (Project) - Subcontract for Installation of Monitoring Stations - Addendum to Request for Finalized Bid

Dear Mr. Ramon:

On November 24, 2003 you were sent a request to finalize your bid for your collaboration with the University of Texas at Austin in the Corpus Christi air quality monitoring project.

Attached you will find an Addendum to the request for finalized bid which provides additional requirements and more detailed information concerning the following:

1. Revised Schedule of Specifications.
2. Preparation requirements for the Donna Park Site.
3. Camera Specifications.
4. Specification for Data Communications at each site.
5. Additional specifications for acceptance criteria.
6. Training requirements for the Data Validation Tools and TCEQ Protocols pertaining to the validation tools.

Your finalized bid should be post marked no later than December 22, 2003. All other terms and requirements of the request for finalized bid remain unchanged. If you should have questions concerning the request for finalized bid please do not hesitate to contact Vince Torres by phone at 512/471-5803 or by email at [vmtorres@mail.utexas.edu](mailto:vmtorres@mail.utexas.edu)

Sincerely,

A handwritten signature in cursive script that reads "Vince Torres".

Vincent M. Torres,  
Project Manager

Enclosures



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THE UNIVERSITY OF TEXAS AT AUSTIN

J. J. Pickle Research Campus • 10100 Burnet Road • Austin, Texas 78758  
512/471-7792 • FAX: 512/471-1720

December 4, 2003

URS Corporation 9801 Westheimer, Suite 500  
Houston, TX 77042

Attention: Mr. Al Hendler

Subject: Corpus Christi Air Monitoring and Surveillance Camera Installation  
Project (Project) - Subcontract for Installation of Monitoring Stations -  
Addendum to Request for Finalized Bid

Dear Mr. Hendler:

On November 24, 2003 you were sent a request to finalize your bid for your collaboration with the University of Texas at Austin in the Corpus Christi air quality monitoring project.

Attached you will find an Addendum to the request for finalized bid which provides additional requirements and more detailed information concerning the following:

1. Revised Schedule of Specifications.
2. Preparation requirements for the Donna Park Site.
3. Camera Specifications.
4. Specification for Data Communications at each site.
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Sincerely,

A handwritten signature in cursive script that reads "Vince Torres".

Vincent M. Torres,  
Project Manager

Enclosures



**Schedule of Specifications for Establishing Monitoring Sites  
and  
Adding Equipment to Existing Sites**

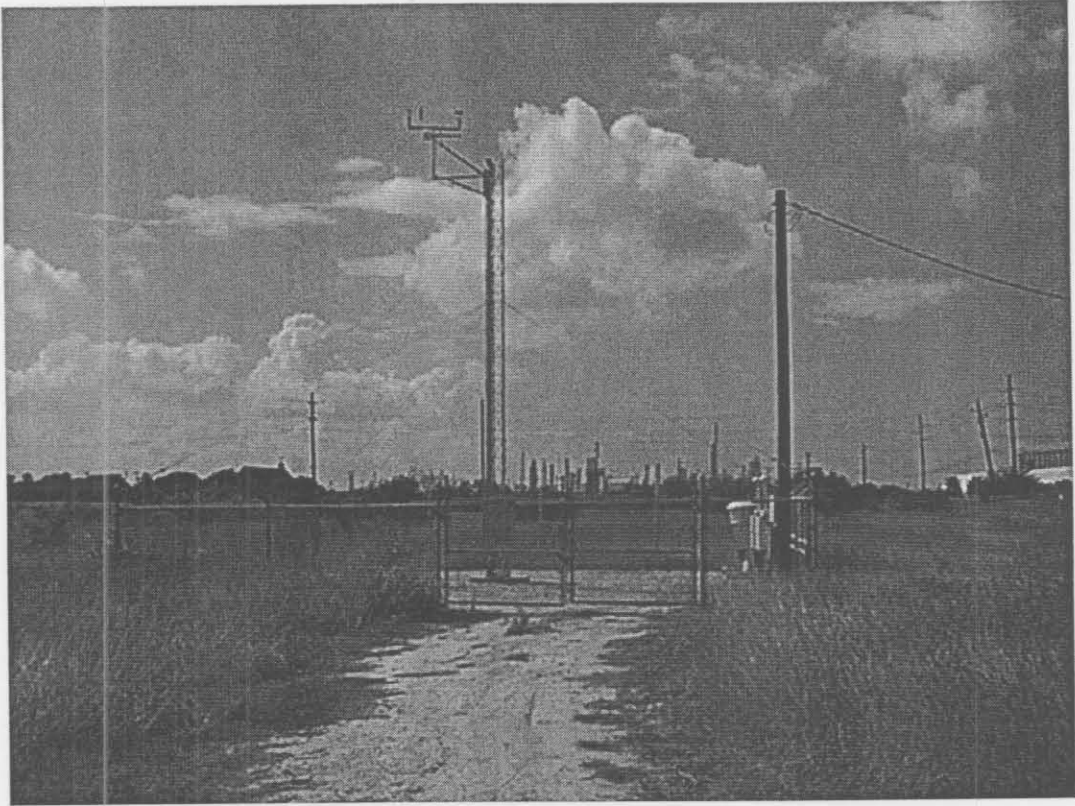
Applicable Specifications		1.a	1.b	1.c	1.d	1.e	1.f	1.g
Name	No.				C199			
<b>I. Overview of Data Collection and Data Flow</b>		0	X	X	X	X	X	X
<b>II. Site Preparation</b>								
Site pad	13,14	X	X	X		X	X	X
Fencing	9	X	X	X		X	X	X
Electrical utilities	2	X	X	X	X	X	X	X
Data Communication Utilities	Adden	X	X	X	X	X	X	X
Equipment trailer	1, 3	X	X	X	X	X	X	X
<b>III. Monitoring Equipment</b>								
Automatic Gas Standard Calibrator	4	X	X	X		X	X	X
20 Standard LPM Self Contained Clean Air Supply	5	X	X	X		X	X	X
Auto GC PAMS Site Equipment	6	X						X
Carbon Monoxide Analyzer	7							
Rohn Model 25G Self-Supporting Tower and Met One Model 173C Lift System	17	X	X	X		X	X	X
Replacement Parts for Climatronics F460 Weather Systems	8	X	X	X		X	X	X
H2S Converter	10		X	X	X	X	X	X
NOx Analyzer	11							
Ozone Monitor	12							
Sulfur Dioxide Monitor	15		X	X	X	X	X	X
Continuous Methane/Non-Methane Hydrocarbon Analyzer	16	X	X	X	X	X	X	X
VOC Sampler Model 1800 & Attachment 1816	18	X						X
ZENO 3200 Data Logger	19	X	X	X	X	X	X	X
TCEQ Monitoring Operations Division SOP # AMMO-002	20	X	X	X	X	X	X	X
<b>IV. Cameras</b>								
Site 1 (Only at one location)	21				X		X	X
Site 2 (Only at one location)	21				X		X	X

**Addendum to the November 24, 2003 Request for Final Bid for a Subcontract for  
Installation of Monitoring Stations under The University of Texas at Austin's  
Corpus Christi Air Quality Monitoring Project**

The following requirements and specifications are to be incorporated in the final bid response.

1. Donna Park Monitoring Site (I.d, C199): Although the site pad and fencing are adequate to locate a new monitoring trailer at this site, the contractor shall make allowances in their bid to provide a new trailer for the equipment scheduled for this site per Specification Nos. 1 & 3. The contractor shall allow for the cost of temporary removal of the fencing (fabric) and posts, as necessary to drive the new trailer onto the existing site pad (see attached photos) and for the replacement of the fencing and posts after the trailer is in place. UT Austin shall specify at a later date where at the site the trailer shall be located. The contractor shall also allow for the installation of additional electrical service per Specification No. 2.
2. The Contractor shall provide and install the surveillance cameras at two sites to be determined at a later date per Specification No. 21 (Attached) with appropriate connecting wire and coaxial cable.
3. Data communication utilities at each site shall include one telephone line and an ISDN line for the cameras and Auto GCs, as well as the necessary communications lines to support the Zeno 3200 (Specification No. 19).
4. There will be no carbon monoxide analyzers, NOx analyzers, or ozone monitors required at any of the seven sites.
5. As part of the acceptance criteria for each site, the contractor will be required to show that the selection and operation of equipment has been designed and installed to allow the operators of the site to comply with the TCEQ Data Validation Tools and protocol. Therefore, the contractor shall provide an explanation in the bid how they intend to comply with this requirement. This plan must have the approval of the TCEQ. Any questions regarding data validation shall be addressed to David Brymer (TCEQ) at 512/239-1725.
6. The orientation and training of all personnel necessary to transition the sites from the installation phase of the project to the full operation phase shall include comprehensive training in TCEQ Data Validation Tools and protocols. This training shall be conducted by personnel with experience in TCEQ version of MeteoStar Data Validation Tools and Quick Look Reports. Retrieval, validation, reporting and archival, along with the data management involved shall be performed and documented in accordance with the requirements of the TCEQ data validation SOP. The syllabus for this training shall be submitted to UT Austin a minimum of 30 days prior to the proposed date for commencing this training and will be submitted to the TCEQ for their approval. The contractor shall make any necessary changes in the training plan at no cost to UT Austin. Information about the TCEQ Data Validation Tools may be found on the TCEQ DRS/AutoGC web pages. Additional information on the requirements for data validation, training objectives and proficiency operators are expected to have upon completion of the training may be addressed to Mr. David Brymer (TCEQ) at 512/239-1725.

Photos of Donna Park Site (1.d, C199)

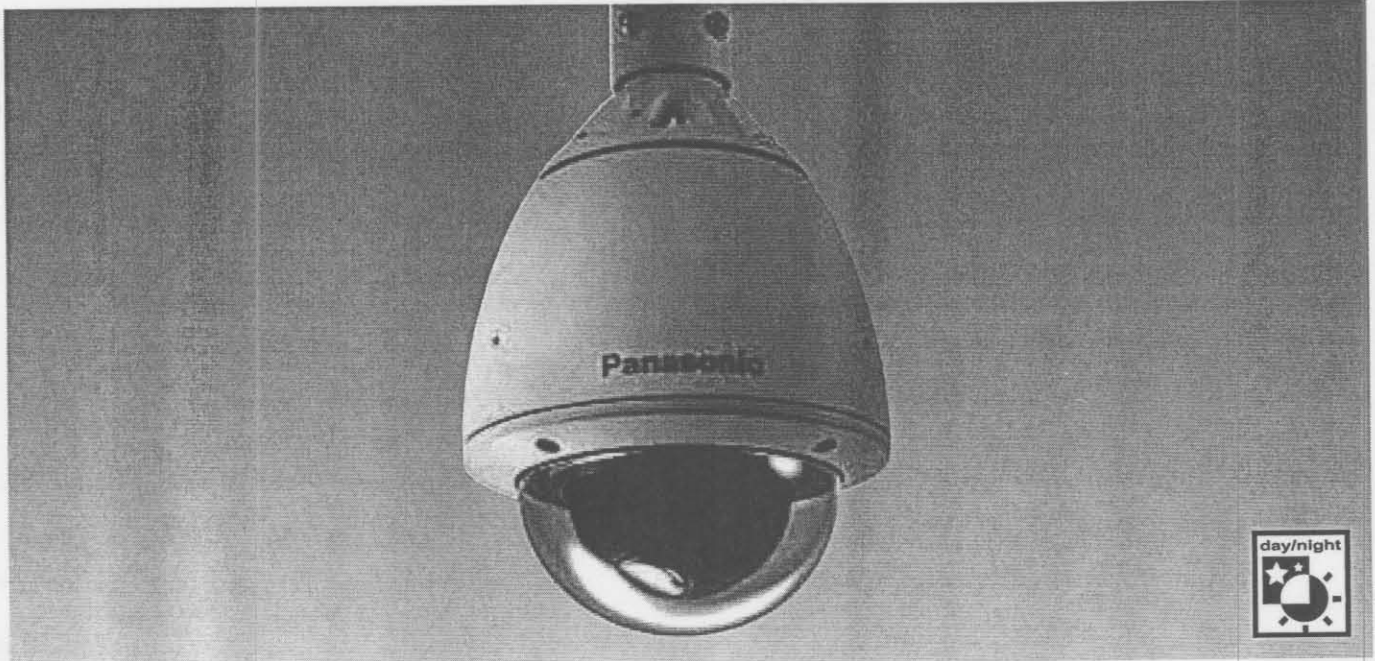


**Specification No. 21**

**Surveillance Camera**

# Panasonic®

Weather Proof & Vandal Resistant  
Color Dome Camera  
with Low-Light B/W Mode  
**WV-CW864**



## AN ALL WEATHER AND VANDAL RESISTANT DOME CAMERA FOR 24-HOUR OUTDOOR SURVEILLANCE.

The new WV-CW864 from Panasonic combines a vandal resistant outdoor housing with 22x zoom capability. This all-in-one color/mono switch-over dome camera is ideal for outdoor applications.

The WV-CW864 rugged body meets international IP66 standards for dust and moisture resistance, and can be easily installed under eaves or exterior walls.

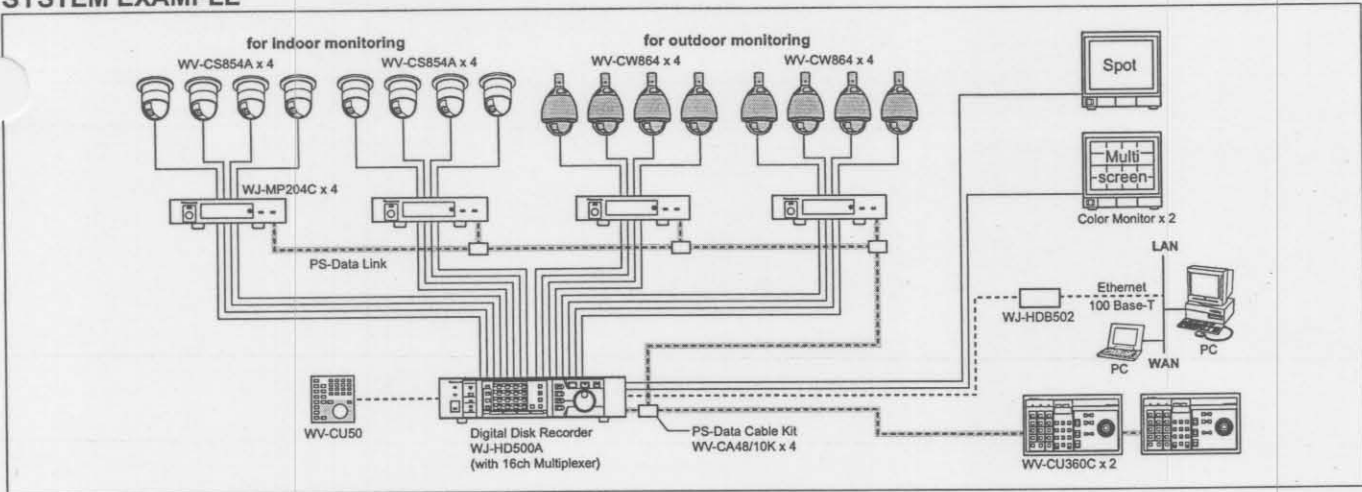
This ultra sensitive camera produces clear color images in lighting as low as 0.5 lx(0.05 fc) or black-and-white images at 0.03 lx(0.003 fc) (both with sensitivity 2x up, AGC high). The WV-CW864 also comes equipped with digital flip capabilities for ease of tracking. Privacy zone masking protects against operator misuse and the general public's rights to privacy. Patrol learn functions and motion detection are only two of 64 pre-set operations, raising surveillance to an unprecedented level.

The WV-CW864 is ideal for various applications such as outdoor parking lots, retail sites, parks, hotels and office buildings.

### Key Features

- IP66 of IEC 60529 standard for all weather proof environmental structure.
- Unitized all-in-one dome color unit with low-light B/W mode.
- Switches from selected color mode to B/W mode, automatically or manually for day and night 24-hour surveillance.
- 570-line at B/W and 480-line at color imaging horizontal resolution.
- Super sensitivity of 0.5 lx(0.05 fc) in color mode, and 0.03 lx(0.003 fc) in B/W mode (at sensitivity 2x up, AGC high).
- Built-in Digital-Flip allows immediate automatic 180-degree turn for improved tracking.
- Privacy zone masking function.
- Built-in motion detector.
- Patrol Learn function.
- Image hold function during panning.
- 64 camera angle preset positions.
- Panning speed of max. 300 degree/s at sequential mode.
- 22x optical zoom lens (3.79 - 83.4mm at F1.6) plus 10x electronic digital zoom for total zoom capacity of 220x.
- Auto focus lens.
- Thermostat automatically controls built-in heater and cooling fan functions.
- Multiplex-coaxial or RS485 data communication.
- Four (4) alarm inputs and two (2) outputs terminals.
- 16 alphanumeric character display.
- Multiplexed Vertical Drive(VD2) sync capability with Panasonic system products.
- Optional sun shield; WV-7176 is available for application of the avoid the direct rays of the sun.

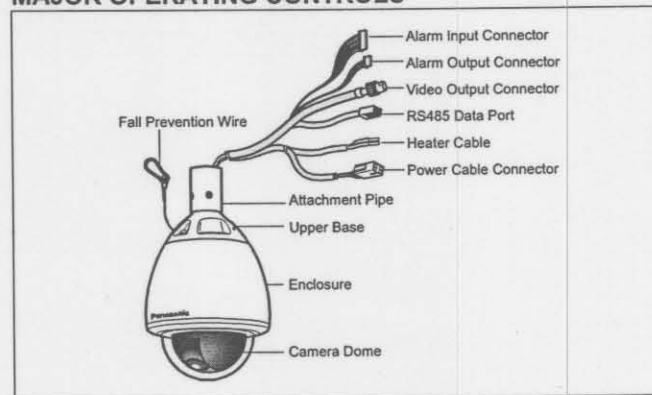
## SYSTEM EXAMPLE



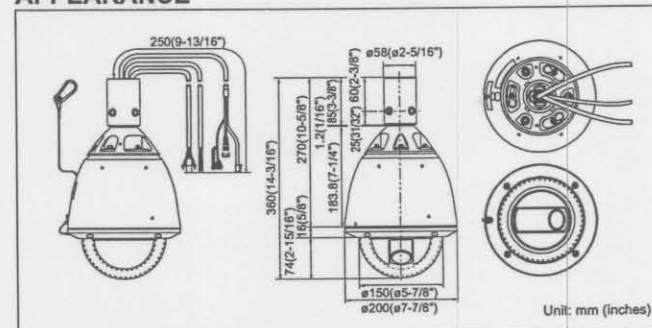
## SPECIFICATIONS

Model No.	WV-CW864
Effective Pixels	768 (H) x 494 (V)
Scanning Area	3.65 mm (H) x 2.74 mm (V), 1/4-type CCD
Synchronization	Internal/Line-lock/Multiplexed Vertical Drive (VD2)
Horizontal Scanning Frequency	15.734 kHz
Vertical Scanning Frequency	59.94 Hz
Video Output	1.0 V <sub>p-p</sub> NTSC composite/75 Ω
Horizontal Resolution	more than 480 lines at color, 570 lines at B/W mode
Vertical Resolution	more than 350 lines at center
Signal-to-Noise Ratio	50 dB (AGC Off, weight On)
Minimum Illumination	0.5 lx(0.05 fc) at color, 0.03 lx(0.003 fc) at B/W mode at SENS UP x 2 (AGC High)
Zoom Speed	approx. 4.5 s (Tele/Wide) in manual mode
Focus Speed	approx. 6.0 s (Far/Near) in manual mode
Iris	automatic (open/close is possible)/manual
Maximum Aperture Ratio	1 : 1.6 (Wide) - 3.0 (Tele)
Focal Length	3.79 - 83.4 mm
Angular Field of View	H 2.6° - 51.7° V 2.0° - 39.9°
Electronic Shutter	1/60 (Off), 1/100, 1/250, 1/500, 1/1,000, 1/2,000, 1/4,000, 1/10,000 s
GC Control	On (Low)/On (Mid)/On (High)/Off
Sensitivity	max. 32 times, Auto/Fix
Back Light Control	selectable On/Off (SETUP MENU)
Zoom Ratio	x22 plus digital zoom x10
Iris Range	F1.6 - 22, close
Auto Focus	Manual/Auto
Auto Mode	Off/Seq/Sort/Auto Pan/Patrol
Auto Pan Key	Seq/Sort/Auto Pan/Patrol Play
Digital Flip	On/Off
Camera ID	preset ID, camera ID, area title : up to 16 characters
Back Light Control	On/Off
Motion Detector	On/Off
Alarm In	4 inputs (Alarm IN 1-4)
Alarm Out	2 outputs (Alarm/Aux1, B/W/Aux2)
B/W Mode	Auto/On/Off
Privacy Zone	On/Off, up to 8 zones
Proportional Pan/Tilt	On/Off
Patrol Learn	Learn/Play/Stop, up to 30 seconds
Cleaning	On/Off
Imaging Hold	On/Off
Panning Range	360° endless
Panning Angle Setting	possible (in auto-pan mode)
Panning Mode	manual/sequential position/sort position/auto pan
Panning Speed	manual : approx. 0.1°/s - 120°/s 8-steps/64-steps sequence position : maximum approx. 300°/s
Tilting Range	0°-180°
Tilting Mode	manual/sequential position/sort position
Tilting Speed	manual : approx. 0.1°/s - 120°/s 8-steps/64-steps sequential position : maximum approx. 300°/s
Power Source	24 V AC, 50 Hz
Power Consumption	Camera 18 W Heater 41 W
Ambient Operating Temperature	-30°C - +50°C (-22°F - 122°F) (at continuous operation mode)
Dimensions	ø200 (D) x 360 (H) mm [ø7-7/8" (D) x 14-3/16" (H)]
Weight	approx. 5 kg (11 lbs.)

## MAJOR OPERATING CONTROLS



## APPEARANCE



## OPTIONAL ACCESSORY



• Weights and dimensions are approximate. • Specifications are subject to change without notice. • These products may be subject to export control regulations.

# Panasonic

Panasonic Security & Digital Imaging Company  
A Division of Matsushita Electric Corporation of America

## Security Systems Group

Executive Office : One Panasonic Way 3E-7, Secaucus, New Jersey 07094

### Zone Office

Eastern : One Panasonic Way, Suite 3E-7, Secaucus, NJ 07094 (201) 348-7303

Central : 1707 N. Randal Road, 1C-2, Elgin, IL 60123 (847) 468-5211

Western : 6550 Katella Ave., Cypress, CA 90630 (714) 373-7840

<http://cctv.panasonic.com/>

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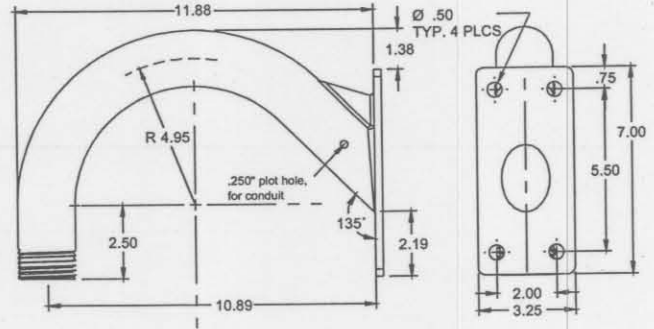
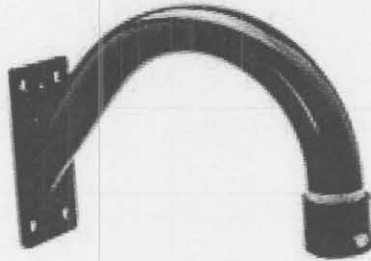
WV-JHCW864T(2P-495)

# Gooseneck Wall Mount PWM20G Videolarm for Panasonic



1

Outdoor Dome Brackets and Mounts



### DESCRIPTION

With its distinctive gooseneck design, the PWM20G presents a sleek, aesthetically pleasing look. This wall mount will supports most VIDEOLARM outdoor domes, as well as those of many other manufacturers.

### FEATURES:

- Durable powder coat finish
- All aluminum construction
- 1 1/2" pipe thread on end for quick and easy dome mounting
- 75 lb load rating

Model	Unit Weight	Shipping Weight	Shipping Box Dim.
PWM20G	2.5 lbs	2.5 lb	15" x 12" x 12"
* Shipping weights depend on box dimensions.			
Spec#	Rev. Date	Catalog Section	VidFax#
6024	0195	1	S24

Due to our continued efforts to advance technology, product specifications are subject to change without notice.

24-hour technical assistance  
1-800-554-1124  
2525 Park Central Blvd.  
Decatur, GA 30035

Phone: (770) 987-7550  
1-800-554-1124  
U.S. & Canada only

Fax: (770) 987-9705  
1-800-826-0366  
VidFax: 1-800-547-5044

Email: info@videolarm.com  
www.videolarm.com

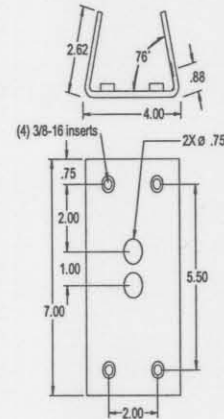
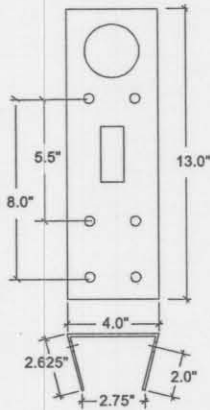
# Pole Mount Adapter PPM3/PAPM3 Videolarm for Panasonic



PM3



APM3



## DESCRIPTION

The PPM3 pole mount adapter is designed to allow a dome housing to be mounted to an existing pole. Stainless steel straps are included. The VIDEOLARM PM3T tension tool must be used to adjust the straps.

## FEATURES

- Mounts to poles 3" - 15" dia.
- Durable powder coat finish
- Heavy-gauge steel for maximum stability
- 150 lb load rating

## OPTIONS/ACCESSORIES

PM3T - Tension tool used for mounting this bracket.

Model	Unit Weight	Shipping Weight	Shipping Box Dim.
PM3	7 lbs	7 Grd/7 Air	14 x 8 x 11

\* Shipping weights depend on box dimensions.

Spec#	Rev. Date	Catalog Section	VidFax#
6024	0195	1	S24

Due to our continued efforts to advance technology, product specifications are subject to change without notice.

## DESCRIPTION

This is the aluminum version of the PPM3. It also allows domes or housings to be mounted to an existing pole. Stainless steel straps are NOT included with the APM3.

## FEATURES

- Mounts to poles 3" - 15" dia.
- Durable powder coat finish
- All aluminum construction
- Threaded bolt inserts to make installation quicker and easier
- 75 lb load rating

Model	Unit Weight	Shipping Weight	Shipping Box Dim.
APM3	7 lbs	7 Grd/7 Air	14 x 8 x 11

\* Shipping weights depend on box dimensions.

Spec#	Rev. Date	Catalog Section	VidFax#
6024	0195	1	S24

Due to our continued efforts to advance technology, product specifications are subject to change without notice.

24-hour technical assistance  
1-800-554-1124  
2525 Park Central Blvd.  
Decatur, GA 30035

Phone: (770) 987-7550  
1-800-554-1124  
U.S. & Canada only

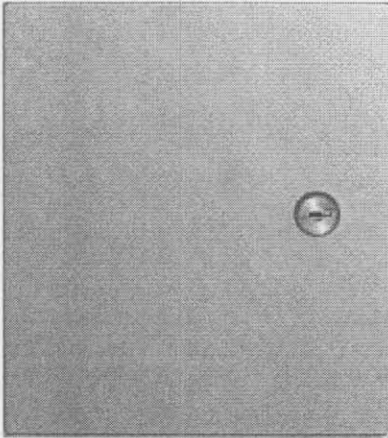
Fax: (770) 987-9705  
1-800-826-0366  
VidFax: 1-800-547-5044

Email: info@videolarm.com  
www.videolarm.com





## AC CAMERA SUPPLY (TV-24X-UL)



24 VAC Multizone Output  
4, 8, 16 Zones  
Dome Power  
UL Listed

96 VA and 192 VA Output Power  
Fuse Isolation  
Heater Power  
Class 2 Power Limited

The AlarmSaf UL Listed TV-24X-UL AC Camera Supply is a multi-output Class 2 Power Limited AC power source providing 24 VAC at 4 or 8 Amps. Designed specifically with the Systems Integrator in mind, the TV-24X-UL series provides an economical solution to powering AC cameras, maglocks, and doorstrikes. The TV-24X-UL is available with either 4, 8, or 16 output zones. Features include a master On/Off switch, low voltage AC presence indicator and individually fused zones.

### DIMENSIONS

- B02  
– 12" x 12" x 4"

### SPECIFICATIONS

#### Input Characteristics

- AC Input
  - 120 VAC  $\pm$  10%
  - 60 Hz
  - See Table

#### Output Characteristics

- Typical Output Zone
  - 24 VAC
  - Total Current: See chart
  - Zone Protection
  - 4 Zone: 2A Fuse
  - 8 and 16 Zone: 1A Fuse

#### Visual Indicators

- AC Presence: Green LED

#### Operational Characteristics

- Temp. Range: 0° to 50°C
- Humidity: 85% @ 30°C

### FEATURES

- Single or Multiple Zone Outputs
- Master Power Switch
- Individually Fused Outputs
- AC Presence LED
- AC Line Cord For Testing
- Class 2 Power Limited
- Key Lockable, Steel Cabinets
- Limited Lifetime Warranty
- Large Cabinet for ease of wiring

### LISTINGS

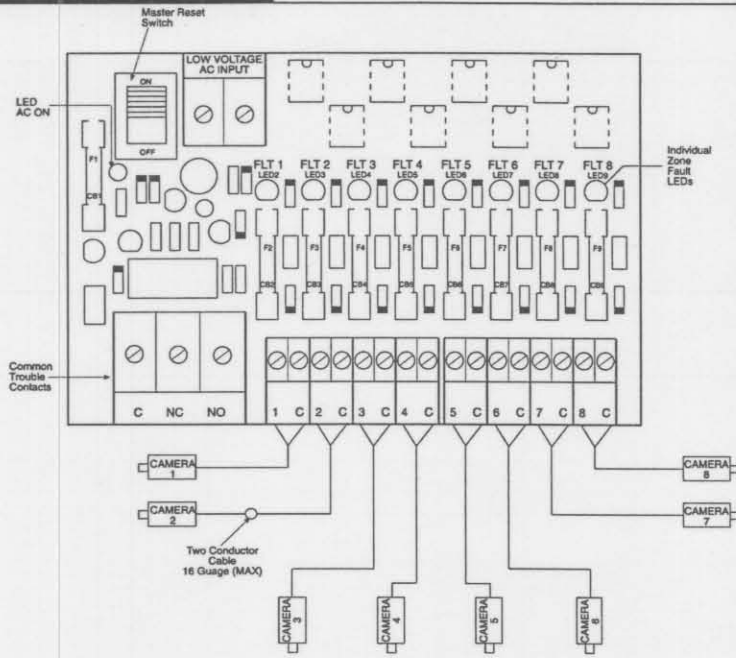


- UL Listed, UL2044, Guide DRQH

### ORDER INFORMATION

Order Number	Model Number	Number of Zones	Total Output Current (Amps)	VA Maximum	Input Current (Amp.)	Cabinet (Inches, H x W x D)
02030	TV-244-UL	4	4	96	0.8	12" x 12" x 4"
02031	TV-248-UL	8	4	96	0.8	12" x 12" x 4"
02029	TV-2416-UL	16	8	192	1.6	12" x 12" x 4"

# TYPICAL HOOKUP



NOTE for typical hookup, units with greater than 8 zones use multiple boards

# Panasonic®

## Preliminary Digital Disk Recorder WJ-HD500BV

Version 2.2



PS•Data

### THIS NETWORK-CAPABLE, HIGH-RESOLUTION DIGITAL SURVEILLANCE RECORDER CAN BE EQUIPPED WITH, UP TO 320GB\* OF HARD DISK STORAGE.

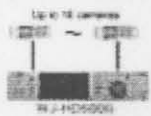
\*(With optional 160GB hard drive)

Panasonic introduces the WJ-HD500BV, the recorder for images covering longer periods of time. It comes equipped with 160GB of hard disk storage as standard equipment, to which you can add an additional



160GB. By combining optional extension units, you can build storage with up to 4.2 terabytes, enough to record three (3) full months (90 days) of images from 16 cameras.†

The list of high-performance surveillance features goes on and on. JPEG Recording offers high-quality digital images.



With no tapes to change, this system is maintenance free.

With images stored on a hard disk, search and retrieval are ultra fast. Triplex capabilities

allow simultaneous storage, re-play and live monitoring. Multiple time and location recording can be configured in up to four separate groups. Using the 10Base-T/100Base-TX network connections, allows both viewing of real-time images, and search and retrieval of stored images using an ordinary Web browser. No dedicated software is needed.

High resolution, multifunctional, network compatible, the WJ-HD500BV has everything you need for advanced surveillance applications in a wide range of settings. †(Depending on selected recording mode)

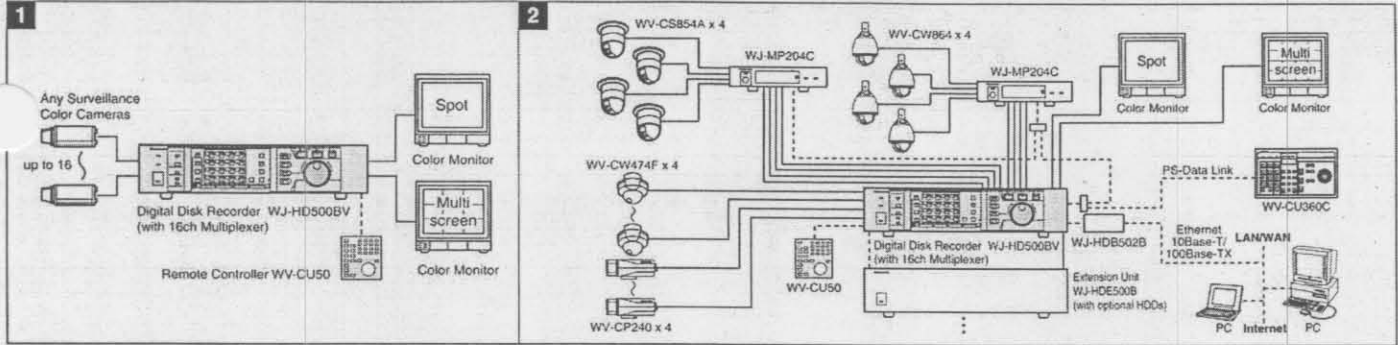
#### KEY FEATURES

- High quality pictures by DIGITAL recording.
- Built-in 160GB HDD plus 160GB can be added in one unit (320GB total).
- Up to 4.2 terabyte expansion method with optional component units.
- Four (4) virtual recording systems in one HDD for individual location.
- RAID level 1 (Mirroring) for reliability.
- 4 (four) way JPEG compression recording modes selectable.
- 720H x 480V (frame) or 720H x 240V (field) sampling pixels selectable.
- Built-in 16ch multiplex recording system. Triplex mode (Live / Recording / Playback)
- 10Base-T/100Base-TX network interface capability. Network interface protocol; TCP/ IP, HTTP, FTP, DHCP and DNS.
- Can be connected specific CD-R or DVD-RAM device through SCSI connector.
- 3D scan conversion for stable freeze frame picture.
- Four programs / five timer schedules per recorder.
- Recording modes; 1 (one) shot rec, multi-shot rec and time-lapse rec.
- Quick search function (thumbnail, alarm list and direct modes)
- Motion detector function
- Optional remote controller; WV-CU50 is available for easy operation.
- New easy to use GUI

#### MAJOR OPERATING CONTROLS

Front View	Rear View
<ul style="list-style-type: none"> <li>1 Remote LED</li> <li>2 Timer LED</li> <li>3 Power LED</li> <li>4 HDD LED</li> <li>5 FULL LED</li> <li>6 Sequence Button</li> <li>7 Multiscreen Select Button</li> <li>8 Camera Select Button (1-16)</li> <li>9 Set Up / ESC Button</li> <li>10 Copy Button</li> <li>11 EL-Zoom Button</li> <li>12 Daylight Savings Switch</li> <li>13 Display Button</li> <li>14 Alarm Search Button</li> <li>15 Jog / Shuttle Dial</li> <li>16 Rec. Button</li> <li>17 Play / Pause Button</li> <li>18 Stop Button</li> <li>19 Index Button</li> <li>20 Group Select Button</li> <li>21 Rec. Preview Button</li> <li>22 Rec. Stop Button</li> </ul>	<ul style="list-style-type: none"> <li>23 Lock Button</li> <li>24 Spot / Multiscreen Button</li> <li>25 Alarm LED</li> <li>26 Alarm Reset Button</li> <li>27 Switch Guard</li> <li>28 Power Switch</li> <li>29 AC Inlet</li> <li>30 Fan Unit</li> <li>31 10Base-T/100Base-TX Connector</li> <li>32 Serial Connector</li> <li>33 Video Sync Out Connector</li> <li>34 Remote Terminal</li> <li>35 PS-Data Terminal</li> <li>36 SCSI Connector (Copy)</li> <li>37 Alarm Connector</li> <li>38 Control Connector</li> <li>39 SCSI Connector (Ext. Storage)</li> <li>40 Audio Out Connector</li> <li>41 Audio In Connector</li> <li>42 Spot Out Connector</li> <li>43 Multi Screen Out Connector</li> <li>44 Camera In Connector (1-16)</li> <li>45 Camera Out Connector (1-16)</li> </ul>

**SYSTEM EXAMPLES**



**STANDARD CONFIGURATIONS**

**Digital Disk Recorder WJ-HD500B**

Digital Disk Recorder with Motion Detector and Network Boards  
**WJ-HD500BV**

**OPTIONAL COMPONENTS & ACCESSORIES**

**Remote Controller WV-CU50**

**Extension Unit WJ-HDE500B**  
(4 drive bays for HDD)

**Extension Unit WJ-HDE505B**  
(4 drive bays for HDD with SCSI driver)

**Extension Unit WJ-HDE510B**  
(2 drive bays for HDD plus DVD 4.7GB drive)

**CD-R Drive Unit PHD500CDRXA**

**DVD-Ram/R External Drive Unit PHD500DVDXB**

**DISK DATA CHART** Recording Interval : approx. 1second (Color NTSC Signal, Audio Signal : Off) more than 4,160GB HDD

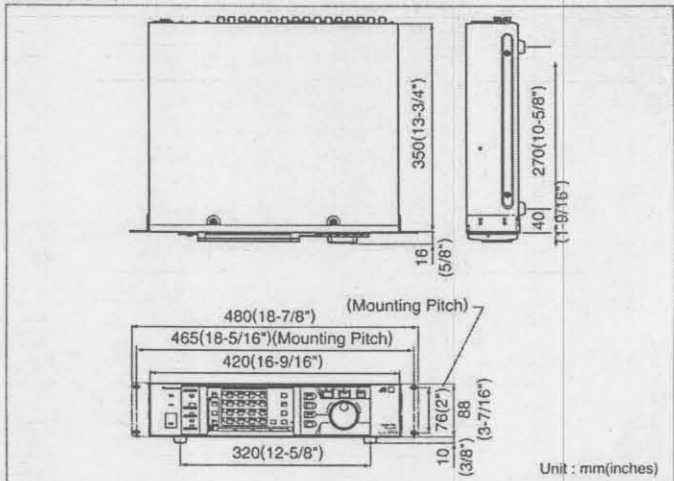
Recording Time Mode		(hour)	24H (1-day)	48H (2-day)	168H (1-week)	720H (1-month)	2,160H (3-month)	
		(second)	86,400s	172,800s	604,800s	2,592,000s	7,776,000s	
Camera Channel	Mode	Compression Mode	Imaging Data Size [B]					
	Sampling Pixel Size		Hard Disk Drive [GB]					
8 (7.5FPS)	720H x 480V	Super Fine	86,016	66	132	462	1,980	5,939
		Fine	53,248	41	82	286	1,225	3,676
		Normal	32,768	25	50	176	754	2,262
	720H x 240V	Extended	22,528	17	35	121	518	1,555
		Super Fine	45,056	35	69	242	1,037	3,111
		Fine	26,624	20	41	143	613	1,838
16 (15FPS)	720H x 480V	Normal	18,432	14	28	99	424	1,273
		Extended	12,288	9	19	66	283	848
		Super Fine	86,016	132	264	924	3,959	11,878
	720H x 240V	Fine	53,248	82	163	572	2,451	7,353
		Normal	32,768	50	101	352	1,508	4,525
		Extended	22,528	35	69	242	1,037	3,111
720H x 240V	Super Fine	45,056	69	138	484	2,074	6,222	
	Fine	26,624	41	82	286	1,225	3,676	
	Normal	18,432	28	57	198	848	2,545	
	Extended	12,288	16	32	112	481	1,442	

Recording Interval : The recording interval is the length of time for which images from the same camera can be reproduced. When multiple cameras are used, the recording sequence and amount of time allocated to each camera can be pre-set to fit the available recording interval.

**SPECIFICATIONS**

General	
Power Source	120V AC, 60Hz
Power Consumption (approx.)	65 W
Ambient Operating Temperature	5°C - 45°C (41°F - 113°F)
Standard Hard Disk Drive Unit	160 GB
Drive Bay for Optional HDD Unit	1 bay
Dimensions (W x H x D)	420 x 88 x 350mm (16 - 9/16" x 3 - 7/16" x 13 - 3/4")
Weight (approx.)	7.5 kg (16.5 lbs.)
Input / Output	
Video	Video Input 16 terminals, 1V [p-p] / 75 Ω, NTSC composite video signal with automatic termination / looping through (BNC)
	Video Output 16 terminals, 1V [p-p] / 75 Ω, NTSC composite video signal with looping through (BNC)
	Spot Output 1 terminal, 1V [p-p] / 75 Ω (BNC)
	Multi-screen Output 1 terminal, 1V [p-p] / 75 Ω (BNC)
	Sync Output 1 terminal, 1V [p-p] / 75 Ω (BNC)
Audio	Audio Input -10dB, unbalanced, monaural (pin-jack)
	Audio Output -10dB, unbalanced, monaural (pin-jack)
Others	External Storage SCSI Interface (D-sub, half pitch 50-pin)
	Copy SCSI Interface (D-sub, half pitch 50-pin)
Control Input / Output	Group 1-4 recording output, manual recording output, Emergency recording output, DVD/HDD level output, external storage unit emergency input, DVD expansion unit emergency input, unit emergency output, power inspection input, power off output, emergency recording input, time adjustment input, time adjustment output, sequence select output (D-sub, 25-pin)
Alarm Connector	1-16ch alarm input, alarm recover input, recording mode external input, alarm recover output, alarm output, sequence select output (D-sub, 25-pin)
Data	RS-485 (RJ-11)
Remote	2 wire system for specific remote controller
Serial Port	RS-232C (D-sub, 9-pin)

**DIMENSIONS**



\*Weights and dimensions are approximate. \*Specifications are subject to change without notice. \*These products may be subject to export control regulations.

**Panasonic**

Panasonic Digital Communications & Security Company  
Unit of Matsushita Electric Corporation of America

**Security Systems Group**

<http://www.panasonic.com/cctv>

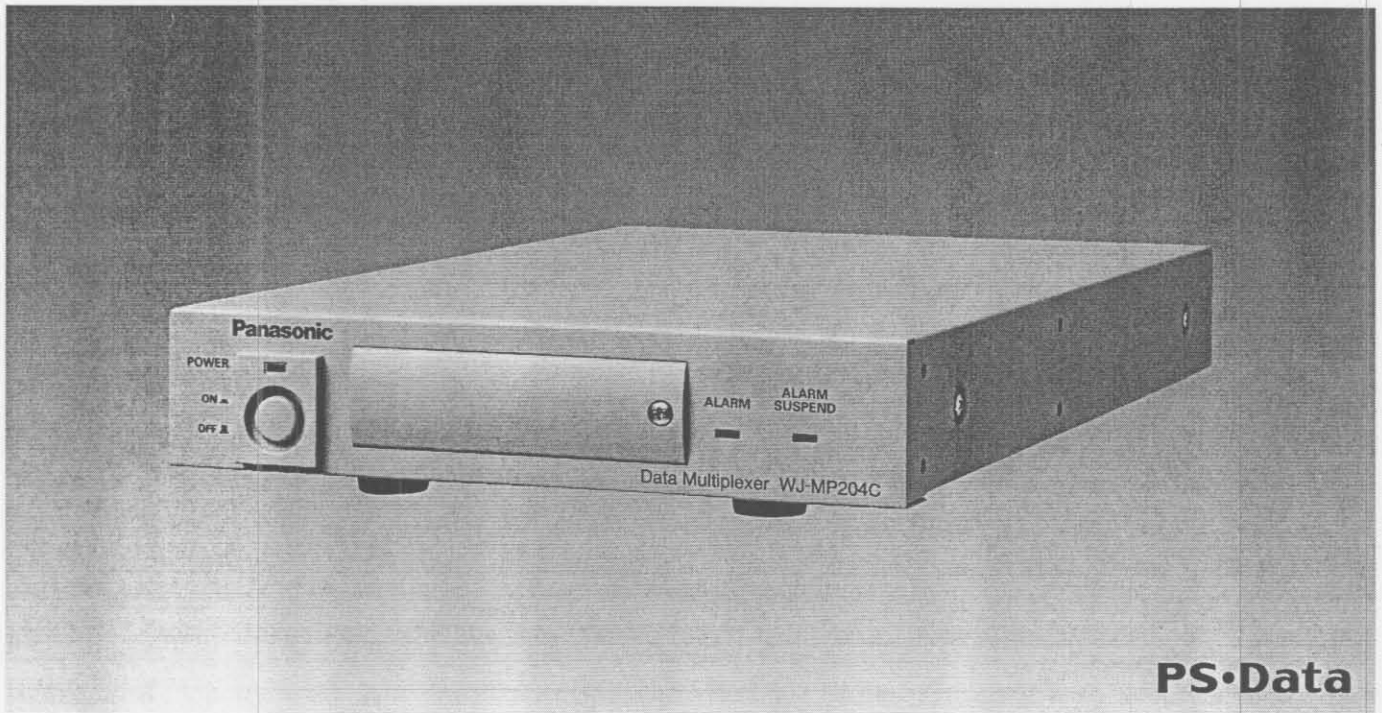
Executive Office : One Panasonic Way 3E-7, Secaucus, New Jersey 07094  
Zone Office  
Eastern : One Panasonic Way, Secaucus, NJ 07094 (201) 348-7303  
Central : 1707 N.Randal Road, Elgin, IL 60123 (847) 468-5205  
Western : 6550 Katella Ave., Cypress, CA 90630 (714) 373-7840

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DIVISION OF MATSUSHITA ELECTRIC OF PUERTO RICO, INC.  
San Gabriel Industrial Park 65th Infantry Ave. KM. 9.5 Carolina, P.R. 00985 (809) 750-4300

# Panasonic®

## Data Multiplex Unit WJ-MP204C



### PS•Data

The Panasonic WJ-MP204C Data Multiplex Unit allows for the remote control of multiple surveillance systems. The WJ-MP204C can operate up to four (4) camera functions, alarm setting and other system components with Panasonic's Video Multiplexers, the WJ-FS309 / FS316 by using **Panasonic Security Data (PS•Data)** link mode.

Connecting up to four (4) WJ-MP204C Data Multiplex Units in daisy chain connection allows expansion of the systems to include up to 16 cameras.

The Panasonic WJ-MP204C Multiplex Unit provides a cost-effective solution for your surveillance application.

### Key Features

#### Basic function

- Four (4) camera inputs and selection.
- Operate the camera function and setup.
- Alarm resetting and suspension.
- Built-in two (2) way data communication modes for suite system application. **Panasonic Security Data (PS•Data)** link mode for Optional System Controller WV-CU360C and Video Multiplexer WJ-FS309 and WJ-FS316.

Camera Communication Data mode for Matrix Switcher WJ-SX350, or Matrix System500.

#### Panasonic Security Data (PS•Data) link mode with optional System Controller WV-CU360C

- Camera selection (in daisy chain connection allows expansion of a system up to 16 cameras).
- Camera site setting and operation (Pan/Tilt/Zoom/Focus/Iris).
- Alarm resetting and suspension.
- Finely turned panning/tilting (WV-CS854A only).

with optional System Controller WV-CU360C and Video Multiplexers WJ-FS309/FS316/FS409/FS416/FS616C.

- Remote control of Panasonic Video Multiplexers are possible.
- Camera site setting and operation (Pan/Tilt/Zoom/Focus/Iris) are possible.
- Camera reset is possible.

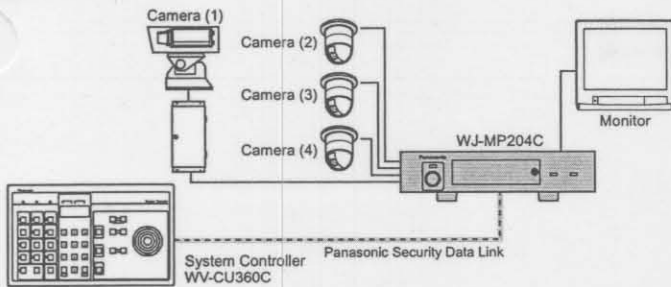
#### Camera Communication Data mode

with optional Matrix Switcher WJ-SX350, or Matrix System500, using with RS485 data cables (max.4000ft length)

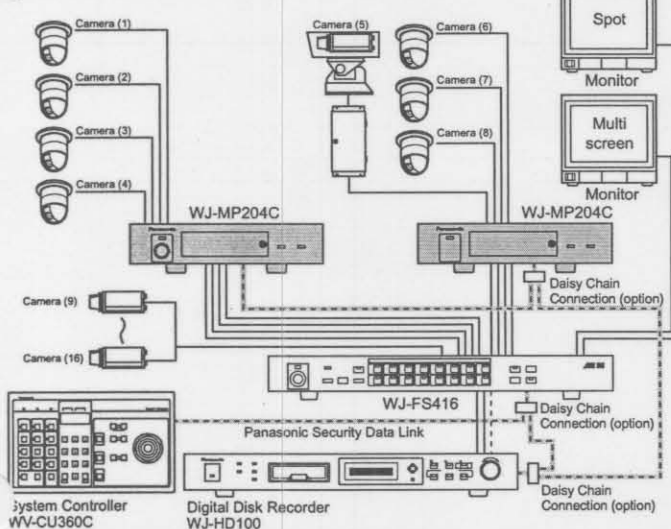
- Camera site setting and operation (Pan/Tilt/Zoom/Focus/Iris).
- Camera reset.

## SYSTEM EXAMPLES

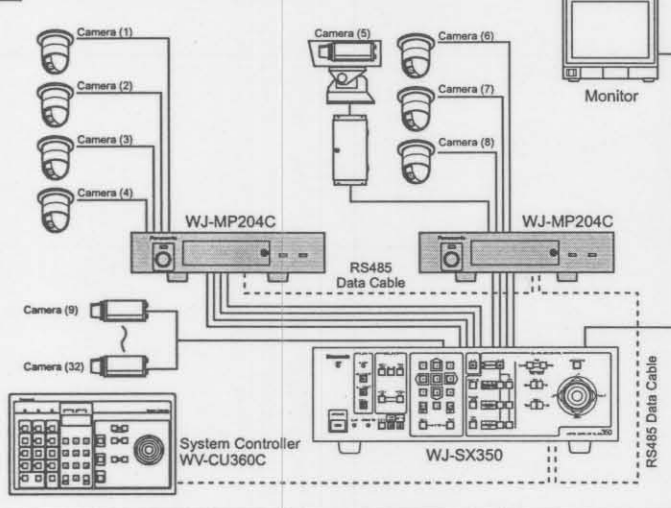
### 1 BASIC SYSTEM



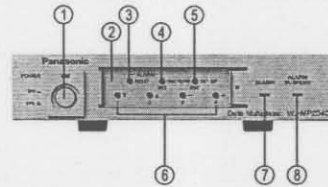
### 2 VIDEO MULTIPLEXER WJ-FS416 SYSTEM



### 3 MATRIX SWITCHER WJ-SX350 SYSTEM

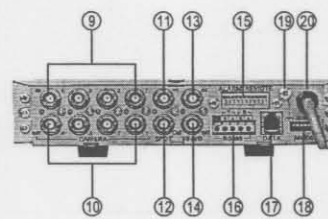


## MAJOR OPERATING CONTROLS



#### Front View

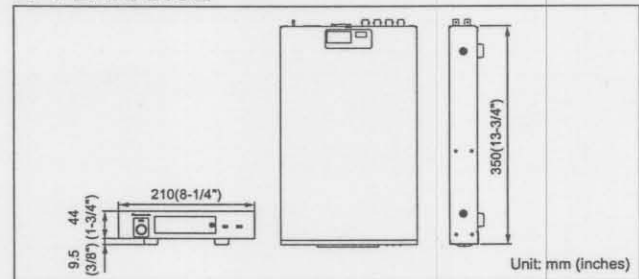
1. Power Switch
2. Unit Number Switch
3. Alarm Reset Button
4. Alarm Suspend/Set Button
5. ESC/Setup Button
6. Camera Selection Button
7. Alarm Indicator
8. Alarm Suspend Indicator



#### Rear View

9. Camera Input Connectors 1-4
10. Camera Output Connectors 1-4
11. Video Input Connector
12. Video Output Connector
13. VS/VD Input Connector
14. VS/VD Output Connector
15. Alarm/Remote Connector
16. RS-485 Terminal
17. Data Port
18. Dip Switch
19. Signal Ground Terminal
20. Power Cord

## APPEARANCE



## SPECIFICATIONS

Power Source	120 V AC, 60 Hz
Power Consumption	7 W
Video Input	1V [p-p] / 75Ω x 4
Spot Input	1V [p-p] / 75Ω x 1
VS/VD Input	VS (1V [p-p] / 75Ω), VD (4V [p-p] / 75Ω) x 1
Video Output	1V [p-p] / 75Ω (Looped through) x 4
Spot Output	1V [p-p] / 75Ω x 1 (Changeable Output from video input, or Spot input)
VS/VD Output	VS/VD IN (Looped through), or internal VD (4V [p-p] / 75Ω) x 1
Data Communication Standard	Based on RS485 (4-Line / 2-Line)
	Modular Jack x 1, or 5 pins terminator x 1
Alarm Input	4 (Changeable Alarm Output / Remote Input / Remote Output)
Alarm Output	1 (O.C. [16 V, 100 mA])
Alarm Resume Input	1 (No voltage contact)
Alarm Resume Output	1 (0/5 ↔ O.C. [16 V, 100 mA])
Spot Change Input	1 (No voltage contact)
Alarm Change Output	1 (O.C. [16 V, 100 mA])
Unit address	1-8 (Setting by Recover Switch)
Operating for System	Select the Camera, Alarm (Data/Display / Resume / Suspend), Setup, Camera, Lens, Housing, PAN / TILT, External device control
Ambient Operating Temperature	-10°C - +50°C (14°F - 140°F)
Ambient Operating Humidity	Less than 90%
Dimensions	210 (W) x 44 (H) x 350 (D) mm [8-9/16" (W) x 1-3/4" (H) x 13-3/4" (D)]
Weight	2.6 kg (5.72 lbs.)

## OPTIONAL ACCESSORIES

EIA 19-type Rack Mounting Brackets

**WV-Q204/1**  
(for mounting one WJ-MP204C)

**WV-Q204/2**  
(for mounting two WJ-MP204C)

Tools for Daisy Chain Connection

**WV-CA48/10K** (Cable Kit)

**WV-CA48/50** (Cable)

**WV-CA48/JN** (Junction Unit)

**WV-CA48/TN** (Termination)

\* Weights and dimensions are approximate. \* Specifications are subject to change without notice. \* These products may be subject to export control regulations.

# Panasonic

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Printed In Japan

WJ-JHMP204T (2P-469C)

## **APPENDIX D**

### **Corpus Christi Air Monitoring and Camera Surveillance - Project Schedule**

Activity Name	Contract Ref	Start Date	Finish Date	2003												2004												2005											
				O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N										
Receipt of Project Funds		10/2/03	10/2/03	>																																			
Project Implementation	IV.B, p. 5	10/2/03	10/2/03	>																																			
Advisory Board Formed (w/in 3 months ROF)	I.A.1, p. 2	10/2/03	1/2/04																																				
Execute Site Access Agreements	1.0	10/2/03	1/2/04																																				
Advisory Board Meetings (Minimum 2 per year)	I.A.1, p. 2	12/1/03	12/1/03																																				
		6/1/04	6/1/04																																				
		12/1/04	12/1/04																																				
		6/1/05	6/1/05																																				
Execute Contract w/ Contractor for Site Installation, 6 AMS & 2 SC, min (w/in 6 months ROF)	I.A, p. 1 IV.C, p. 5	10/1/03	4/1/04																																				
		10/1/03	4/1/04																																				
Execute Contract w/ Contractor for Operations & Maintenance (w/in 6 months ROF)	IV.D, p. 5	10/2/03	4/2/04																																				
Preparation & Approval of QAPP (Must be approved prior to commencement of sampling)	IV.E, p. 5	11/12/03	2/4/05																																				
Site Installations Complete and Operational (w/in 18 months ROF)	IV.D, p. 5	2/16/04	4/15/05																																				
Cameras Installed & Operational and Sampling Commences & Continues @ AMS	IV.D, p. 5	4/4/05	11/30/05																																				
Quarterly Reports	IV.F, p. 6	2/2/04	3/2/04																																				
		5/2/04	6/3/04																																				
		8/3/04	9/3/04																																				
		2/1/05	3/1/05																																				
		5/3/05	6/3/05																																				
		8/3/05	9/5/05																																				
Annual Reports	IV.A, p. 5	8/2/04	10/2/04																																				
		8/2/05	10/2/05																																				



## **APPENDIX E**

**Financial Report of Expenditures**  
***Financial Report of Interest Earned***

**Corpus Christi Air Monitoring and Surveillance Camera Installation and Operation Project**

**Accounting Report for the Quarter  
10/2/03 - 12/31/03**

**A. Total Amount of COCP Funds and Other Funds Received Under This Proposal**

Total Grant Amount: \$6,761,718.02  
 Total Interest Earned: \$16,549.96  
 Total Funds Received: \$6,778,267.98

**B. Summary of Expenditures Paid by COCP Funds**

	Prior Yr. Carryover	Yr. 1 Budget	Yr. 1 Adjustments	Prior Activity <10/2/03	Current Activity 10/2/03 - 12/31/03	Remaining Balance 12/31/2003
Salaries	\$0.00	\$76,374.00	\$0.00	\$0.00	(\$27,645.97)	\$48,728.03
Fringe	\$0.00	\$19,094.00	\$0.00	\$0.00	(\$5,830.44)	\$13,263.56
Supplies	\$0.00	\$90,000.00	\$0.00	\$0.00	\$0.00	\$90,000.00
Other	\$0.00	\$7,532.00	\$0.00	\$0.00	(\$60.92)	\$7,471.08
Subcontract	\$0.00	\$1,800,000.00	\$0.00	\$0.00	\$0.00	\$1,800,000.00
Travel	\$0.00	\$2,000.00	\$0.00	\$0.00	\$0.00	\$2,000.00
Equipment	\$0.00	\$5,000.00	\$0.00	\$0.00	\$0.00	\$5,000.00
Indirect Costs	\$0.00	\$300,000.00	\$0.00	\$0.00	(\$5,030.60)	\$294,969.40
<b>TOTALS</b>	<b>\$0.00</b>	<b>\$2,300,000.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>(\$38,567.93)</b>	<b>\$2,261,432.07</b>


**C. Interest Earned by COCP Funds as of 12/31/03**

Prior Interest Earned: \$0.00  
 Interest Earned This Quarter: \$16,549.96  
 Total Interest Earned to Date: \$16,549.96

**D. Balance of COCP Funds as of 12/31/03**

Total Grant Amount: \$6,761,718.02  
 Total Interest Earned: \$16,549.96  
 Total Expenditures: (\$38,567.93)  
 Remaining Balance: \$6,739,700.05

I certify that the numbers are accurate  
and reflect actual expenditures  
for the quarter

  
Accounting Certification