AFBC Co-Firing of Coal and Hospital Waste

**Quarterly Report
August 1 - October 31, 1996**

Work Performed Under Contract No.: DE-FC21-91MC27205

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For
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I. INTRODUCTION

A. PROJECT OBJECTIVE

The project objective is to design, construct, install, provide operator training and start-up a circulating fluidized bed combustion system at the Lebanon Pennsylvania Veteran's Affairs Medical Center. This unit will co-fire coal and hospital waste providing lower cost steam for heating and possibly cooling (absorption chiller) and operation of a steam turbine-generator for limited power generation while providing efficient destruction of both general and infectious hospital waste. The steam generated is as follows:

- Steam = 20,000 lb/hr
- Temperature = 353 F (saturated)
- Pressure = 125 psig
- Steam quality = ~98.5%

B. REPORTING PERIOD

The reporting period is from August 1, 1996 to October 31, 1996.

C. REPORT LAYOUT

The Progress Reports will show progress and direction for each task and subtask. The Final Technical Report will also provide a coherent chronology of tasks and subtasks throughout the project. Weekly status meetings were held. In part, this report summarizes the primary issues discussed in those meetings relating to the completion of this project.

II. TASK ONE - Design, Specify, Procure, Install and Start-Up Facility

A. SUBTASK 1-A - DESIGN

Progress: Work on the Operation and Maintenance Manual continues.

Three support systems have been designed by Nutec and have been installed at the LVA site:

- Steam silencer and support - is located next to the North side of the facility building.
- Ash conditioner system - supports for the ash screw and the rotary valve and ash conditioner are in place and support the ash conditioner system.
- Support to raise the skiphoist approximately two feet above the existing foundation floor. Note, this was done as part of the concrete two-foot raised platform to be installed by the building contractor during August.

Additional design changes were required by Nutec for the boiler support structure. Those changes were completed by mid-August.

Problems: None

Plans: Continue design and drafting work. The P&IDs continue to be revised to as-built status.

B. SUBTASK 1-B - EQUIPMENT PURCHASE AND FABRICATION

Progress: The status of the major pieces of equipment in the procurement process is shown on Table 1. The fabrication procedure developed for the combustor, boiler, economizer and bins allowed these items to be fabricated by DONLEE.

Problems: None

Plans: Continue with authorized expenditures.

C. SUBTASK 1-C - INSTALLATION

Progress: The construction work has been broken into smaller contracts. This allows us to take advantage of smaller constructors who specialize in specific portions of the construction package. The progress in the various work being done on-site is discussed below.

The completion ratios for each subsystem for August 1, 1996 to October 31, 1996 are shown below.

Lebanon VA Project Subsystem Completion Ratios

Task	System	Completion Ratio 8/1/96	Completion Ratio 10/31/96
01	Building	97%	100%
02	Compressed Air	100%	100%
03	Service Water	100%	100%
04	Gas Lines & Startup Burner	100%	100%
05	Ash Reinjection & Conditioning	100%	100%
06	Limestone	100%	100%
07	Baghouse	100%	100%
08	Stack	100%	100%
09	Coal Handling	100%	100%
10	Combustor & Hot Cyclone	100%	100%
11	Hospital Waste & Sterilization	96%	100%
12	Boiler	100%	100%
13	Analyzer and Sample Lines	99%	100%
14	Main Control System	99%	100%

TASK 08 - PAINTING - Summary Progress Report. The painting of the structure and the equipment of the facility is in the scope of the Lebanon VA Medical Center.

Problems: None

D. SUBTASK 1-D - SHREDDER SYSTEM VERIFICATION AND TESTING

Part of Phase I Contract testing to be done at DONLEE Pilot facility.

Progress: Task completed in June 1992.

Problems: None.

Plans: Task completed in June 1992.

E. SUBTASK 1-E - START-UP

Progress: Shakedown, startup and operation began after the completion of the equipment and instrument installation. The various subsystems of the facility were started up one at a time during pre-startup check out.

Sub-System Item No.	Sub-System Description	Start-Up Status
1	Building	Checked
2	Compressed Air	Checked
3	Water Service Lines	Checked
4	Gas Lines & Startup Burner	Checked
5	Ash System	Checked including the Ash System
6	Limestone System	Checked
7	Baghouse	Checked
8	Stack	Checked
9	Coal Handling System	Checked
10	Combustor and Hot Cyclone	Checked
11	Hospital Waste and Sterilization System	The hydraulic lines were installed and the system was checked by the vendor.
12	Boiler and Steam Lines Feed and Recirculation Water Lines	Checked
13	Analyzers	Started up and Checked
14	Main Control System	Partially Checked

Operator training sessions were held during this quarter to meet PA DER requirements, in addition to hands-on training of the operators.

Other training sessions planned are sessions for the Shredder System and the Control System.

Several items have been accomplished during the startup thus far:

- The blowers and ID fan have all been checked out and run regularly.
- The pressure drops across the bubble caps for all of the beds have been determined.
- The bed sand was procured and put into the unit's various beds.
- The unit has been run as a gas-fired fluidized bed on short term and around the clock basis.
- The operators were trained during the round-the-clock running.
- Startup and shutdown procedures were determined, and the burner was setup for operation.
- The first time coal was fired (partially) in the unit was 6/19/96.
- A comprehensive test matrix for the coal and limestone testing was developed by DONLEE.
- Coal/limestone test operation was conducted from the start of September through mid to late October.
- A comprehensive test matrix for the coal, limestone and medical waste testing was developed by DONLEE.

Problems: The Lebanon VA has hired a responsible individual who will repair, replace or maintain the Honeywell control system of the CFB facility.

Plans: The facility will be completed during the period of November/December of 1996. Work continues on the Training Program and the Operation and Maintenance Manual.

III. TASK TWO - Obtain Permits

Progress: Work continues on items required for the Air Quality and Solid Waste permits for PA DEP.

Problems: None. Preparation for the PA DEP site review after construction has started since the installation of the equipment has begun.

Plans: None.

IV. TASK THREE - Procure Coal, Limestone and Ash Disposal Contracts

Progress: Early in the project the coal, limestone and ash disposal contracts could not be finalized because the initial supply date was in question due to NEPA approval related delays. Lebanon VA had received a supply proposal from Naughton Energy for coal, limestone and for ash disposal. During May 1994 the Lebanon VA set up a contract for procuring coal and limestone and for disposing of the generated ash when the facility is operational. Drenzo Coal Company is the ultimate supplier (subcontractor) of the coal and limestone. Coal shipments were received at the site on April 29, 1996, in mid-June, and during September and October 1996.

Problems: Naughton has a three-year contract (through September 1997) to supply the coal and limestone, and to dispose of the ash generated. The contract started in October 1994. From then until the time that the facility is operational, the right to purchase the coal and limestone and to dispose of ash is lost, or underutilized.

Plans: Limestone and coal shipments have been obtained to do check outs and operation of the coal and limestone systems.

V. TASK FOUR - Conduct One Year Test Program

Progress: This task will be performed after the installation, pre-startup check outs and startup/shakedown of the facility have been completed. Stack testing and biospore testing are required by the Pennsylvania Department of Environmental Protection to demonstrate performance and for the proof of DRE (destruction removal efficiency), respectively. At least one test of each type is required by PA DEP, however, more tests can be required. Due to funding limitations, only about one each of the stack tests or biospore tests can be performed. A test matrix will also be performed to demonstrate the performance and operation limitations of the CFB facility and its emission levels, if possible.

Problems: None.

Plans: Spotts, Stevens & McCoy (SSM) was selected as the stack sampling vendor. Their final costs of the tests have been determined. SSM completed the development of the protocol for the test facility and will also perform the analyses of the solids samples gathered during testing.

VI. TASK FIVE - Prepare Final Report

Progress: None. The report is due 3 months after the test program is completed.

Problems: None. The task is to be completed after the test program is finished.

Plans: Currently information has been gathered concerning the equipment and facility. Preparation is being made to perform a matrix of tests that will demonstrate the performance and operation limits of the CFB system, quantify emission levels, identify problem areas and aid in performing scale-up analyses for future commercial designs.

VII. PROJECT COSTS

Changes to the contract

The following items have undergone price increases during this project.

Changes to LVA Project Contract

NO	DESCRIPTION
1.	An air compressor was purchased for the new facility. It was originally believed that the present system would be able to provide sufficient air quantities but the new facilities requirements are larger than originally anticipated. The cost of a 300 cfm air compressor rated at 110 psi was \$21,189 (revised). The air is supplied for the pneumatic transport of limestone and ash, pneumatic slidegates and instrumentation.
2.	An ash conditioner needed to be added to the contract. The Solid Waste Division of Pennsylvania's Department of Environmental Resources requires that the ash be conditioned with water before transport. The ash conditioner was supplied at a cost of \$60,156 (revised), including ducts and screw conveyors.
3.	The cost of the ash handling storage and screw system has increased to \$152,292 due to purchasing 22 NiHard 45° elbows for pneumatic ash and limestone transport.
4.	The bed cleaning system which processes the ash generated from the combustion of the coal, limestone and medical waste currently costs \$26,114.
5.	The scope of the sand silo design has been reduced to a sand "funnel," resulting in a cost reduction of \$5,000 to \$10,000. The cost of the sand funnel was \$2925.
6.	The total cost of the bins: ash, limestone and coal has increased from \$43,065 to an estimated \$108,663 (revised).
7.	The boiler required \$8,111.00 of additions to meet the VA specifications. This number will be revised pending final boiler design.
8.	The cost of the economizer sootblower was \$8,784.
9.	The redesign of the stack is complete. The total cost of the stack is now \$59,448 (revised). This cost includes \$23,200 for installation under Aycokk.P.O. 70059.
10.	The feedwater circulating pump was bought by LVAMC. DONLEE's cost is zero.
11.	The coal feeders were originally proposed to be screws. The VA has requested weighing capability. Weigh belt feeders were selected in place of screw feeders. The cost was \$45,690.00.
12.	The annunciator panel requested by the VA will be approximately \$8160.00.
13.	The cost of the controls computer package has increased from \$83,442 to \$97,001. This cost increase is due to a required increase in the I/O capacity of the control system and for two computer courses.
14.	The baghouse and sorbent injection system currently cost \$136,824 (revised).
15.	The cost of the vendor doing the ducting and piping has increased to \$409,451(revised).
16.	The electrical contractor cost for the facility installation is currently \$268,968 (revised).
17.	The emissions monitoring system required \$56,500 above the proposal for the HCl monitoring system and heated sample lines.
18.	An oxygen analyzer to be used to measure oxygen at the boiler entrance and to be used to help control oxygen levels in the system was needed at a cost of \$6,548.
19.	Expansion joints were needed to allow for thermal growth throughout the system at a cost of \$25,862.
20.	The cooling bed and lift channel blowers cost \$13,060.
21.	The cost to move the gas lines at the facility was originally \$5,500. This cost was deleted by the gas company, UGI, in early February.
22.	The hospital waste handling and subsystems (or skip hoist) currently cost \$36,815.
23.	The cost of the added transmitters for pressure and flow indication added to the specification, was \$11,635 (revised). This cost increase is due to the number of transmitters that have been added.
24.	The cost of instruments: K and R thermocouples and thermocouple wire has increased to \$8,955 (revised).
25.	The painting currently costs \$12,240 (revised).
26.	Geotechnical Engineering Services for the building and foundation have been added to ensure that the facility is constructed properly and safely. The cost is partly offset by the October 1993 budget cost of the building and foundation. The cost of the services was \$9,512.
27.	The building and foundation cost is currently \$646,981 due to change order increases.
28.	Design Engineering Services have been added to provide independent supervision for the construction. The cost of these services is included in the October 1993 budget cost of the building and foundation. The cost has since been reduced to \$8,911 from \$10,911.
29.	The cost of the design and manufacture of the initial platforms, supports and ladders was \$27,000.
30.	The refractory, materials and installation by DONLEE is now \$89,388 (revised).

31.	The refractory engineering, materials and installation vendor's cost was \$88,007.
32.	A refrigerated room is required for the storage of medical waste in the event that the unit is not operating. The cost of the refrigerated room was \$15,407 with freight included.
33.	The Solid Waste Division of Pennsylvania's Department of Environmental Resources requires that the medical waste be weighed before disposal. The cost of a scale to be mounted in the loading dock was \$4382.
34.	The price of the shredder blower has increased due to a freight charge. The final price was \$3,140.
35.	Slidegates were needed for the coal, limestone and ash handling systems at a cost of \$52,665.
36.	Soil borings were required to determine soil bearing capacity before the foundation design could be started. It was originally believed that the VA had this information. The cost of the soil borings was \$5850.
37.	The start-up burner system, including its panel and motors, for the circulating fluidized bed cost is \$10,914 (revised).
38.	The cost of the steelwork or equipment support (structure) has increased from \$72,290 to \$143,639 (estimated).
39.	The general valves for the circulating fluidized bed system currently cost \$29,018.
40.	The cost of the vendor equipment installation, including the platform installation and extras, is now \$585,062 (revised).
41.	The cost of additional payment/performance bonds has been maintained in the individual contracts (vendor equipment installation and ducting and piping). This item as a result is \$0.
42.	The additional feedwater and steam valves were ordered at a cost of \$2,313 (revised).
43.	Spare shredder hydraulic filters were purchased for \$764.
44.	The air cannons were purchased for the coal silos at a cost of \$5,527.
45.	The noise control pads and bases for the blowers, fans, compressor and shredder hydraulic unit have been purchased and installed at a cost of \$4,288.
46.	A heatless air dryer was purchased to provide air dried to -40 F dewpoint, at a cost of \$7,028 (revised).
47.	The orifices and venturis for flow measurement have been designed and cost \$13,060 (revised).
48.	A cart for medical waste handling was purchased to check out the skip hoist and shredder equipment. The cart cost was \$682. However, this cart was returned when it was discovered that the cart design had changed, and the cart dimensions were too large to be used. Another cart design was chosen by DONLEE and LVA and six or more have been purchased by LVA.
49.	The site trailer for an office and storage space was rented for a minimum of 4 months at a cost of \$5,463 for an expected 21 months.
50.	The equipment for the chemical feedwater system has been costed at \$1,305.

Contract Costs-to-Date:

The Lebanon VA Project Costs-to-Date are shown on page 8.

Equipment Costs

The equipment/service costs are shown on the Lebanon VA Project Equipment/Service Cost Summary beginning on page 9.

VIII. SUMMARY

Operating permits will be obtained after construction has been completed. Structural corrections have been made to make the facility meet the required building codes. Budget problems continued to occur through this reporting period. The unit will be turned over to the Veterans Administration due to the exhaustion of the project funding.

Lebanon VA Project Costs-to-Date Reported by Task

TASK	May-96	Jun-96	Jul-96	Quarterly Total	Aug-96	Sep-96	Oct-96	Quarterly Total	Contract Costs To-Date
TASK I - Design/Build/Install	120,972.58	246,567.25	158,492.67	526,032.49	114,674.45	124,008.45	105,825.93	344,508.83	6,540,582.73
TASK II - Permitting									38,030.59
TASK III - Obtain Coal, Limestone & Ash Contracts									44,098.29
TASK IV - Testing									
TASK V - Final Report									
PROJECT TOTAL	120,972.58	246,567.25	158,492.67	526,032.49	114,674.45	124,008.45	105,825.93	344,508.83	6,944,068.78
COST SHARE	6,920.68	17,590.03	10,351.30	34,862.01	5,783.68	7,273.73	6,044.61	19,101.92	431,475.81
DOE BILLING	114,051.90	228,977.22	148,141.37	491,170.48	108,890.78	116,734.73	49,781.42	325,406.91	6,512,592.97

Lebanon VA Project Equipment/Service Costs

ITEM NUMBER	EQUIPMENT/SERVICE	VENDOR	CURRENT COST/\$ RELEASE	PURCHASE ORDER NO.	\$ PAID THIS QUARTER	\$ PAID TO-DATE	BALANCE- UNLIQUIDATED OBLIGATIONS
1	Insulation Materials & Installation	AC&S	\$19,410	70124	\$0	\$16,000	\$3,410
2	Linear Regulated AC/DC Voltage	Acopian	\$148	70200	\$0	\$148	\$0
3	Office Trailer Rental - 7 Months	Acton Mobile Industries	\$2,110	70160	\$645	\$1,930	\$180
4	Baghouse Ring Gaskets	Aerpulse Inc.	\$86	66677	\$0	\$86	\$0
5	Dry Injection Fabric Filter: Baghouse	Aerpulse Inc.	\$136,511	42019B	\$0	\$136,511	\$0
6	Heatless Air Dryer	Air Flow Co., Inc.	\$7,028	70101	\$0	\$7,028	\$0
7	15 ppm NO in nitrogen	Air Products	\$518	70005	\$0	\$518	\$0
8	Air Cannons	Airmatics	\$5,527	70099	\$0	\$5,527	\$0
9	Cooling Bed & Economizer Tubes	Allegheny Boiler Tube	\$29,000	70000	\$0	\$29,000	\$0
10	Swagelock Fittings	Allentown Valve/Fitting	\$820	70138	\$0	\$820	\$0
11	Weld Inspection, visual & magnetic particle	American Testing Laboratory	\$320	70168	\$0	\$320	\$0
12	Instrument Repair	Ametek	\$1,100	66571	\$0	\$1,100	\$0
13	Probe Exchange to 36"	Ametek	\$241	70129	\$0	\$241	\$0
14	Microchip for Flue Gas Oxygen Analyzer	Ametek	\$133	70216	\$133	\$133	\$0
15	Service and repair of analyzer	Ametek	\$2,235	70220	\$2,235	\$2,235	\$0
16	Plant Encl/Site Prep/Foundation Bldg & Foundation	Arthur Funk	\$654,326	70023	\$31,109	\$630,723	\$23,602
17	Vendor Equipment Installation	Aycock, Inc.	\$658,259	70059	\$49,228	\$658,259	\$0
18	Stack anchoring	Aycock, Inc.	\$9,775	70104	\$0	\$9,775	\$0

Lebanon VA Project Equipment/Service Costs

ITEM NUMBER	EQUIPMENT/SERVICE	VENDOR	CURRENT COST/\$ RELEASE	PURCHASE ORDER NO.	\$ PAID THIS QUARTER	\$ PAID TO-DATE	BALANCE- UNLIQUIDATED OBLIGATIONS
19	Structural Changes to boiler, coal & CFBC	Aycock, Inc.	\$41,945	70159	\$0	\$41,945	\$0
20	Sluice bed support work	Aycock, Inc.	\$9,400	70164	\$0	\$9,400	\$0
21	Scale	B&M Scale	\$4,382	70048	\$0	\$4,382	\$0
22	Installation of in-floor scale	B&M Scale	\$1,079	70222	\$1,079	\$1,079	\$0
23	Coal Handling Equipment checkout & training	Beaumont Birch Company	\$1,633	70174	\$0	\$1,633	\$0
24	Coal Storage, Handling & Feeding	Beaumont Birch Company	\$297,203	13455B	\$0	\$297,203	\$0
25	O&M Manual Binders	Beaverite Products	\$808	70147	\$0	\$808	\$0
26	LVA Telephone	Bell Atlantic			\$223	\$223	\$0
27	Transformer for Leb VA Equipment	Blatt & Meyers	\$49,400	70075	\$0	\$49,400	\$0
28	Supply/Install Exterior Emergency Lights	Blatt & Meyers	\$8,350	70143	\$0	\$8,350	\$0
29	Noise Suppression: Motor/Blowers	BRD Noise - Vibration Control, Inc.	\$4,288	70096	\$0	\$4,288	\$0
30	Two Spring Flexible Mounts CV-4-26 weatherproofed	BRD Noise - Vibration Control, Inc.	\$156	70165	\$0	\$156	\$0
31	Platforms, Supports and Stairs and Design	BSM, Inc.	\$27,000	70084	\$0	\$27,000	\$0
32	Insulate ID Fan & ACB Outer Coils	C&C Insulation Inc.	\$2,780	70197	\$0	\$2,780	\$0
33	Stack Insulation/Cladding	C&C Insulation, Inc.	\$2,913	70150	\$0	\$2,913	\$0
34	Compressor Relief Valve	C. H. Reed	\$132	20730	\$0	\$132	\$0
35	Compressor Sample Parts	C. H. Reed	\$42	70106	\$0	\$42	\$0
36	Service Call - QMA-60 Compressor	C. H. Reed	\$350	70210	\$0	\$350	\$0

Lebanon VA Project Equipment/Service Costs

ITEM NUMBER	EQUIPMENT/SERVICE	VENDOR	CURRENT COST/\$ RELEASE	PURCHASE ORDER NO.	\$ PAID THIS QUARTER	\$ PAID TO-DATE	BALANCE- UNLIQUIDATED OBLIGATIONS
37	Air Compressor	C.H. Reed	\$21,015	70054	\$0	\$21,015	\$0
38	Service Call - QMA-60 Compressor	C.H. Reed	\$346	70207	\$346	\$346	\$0
39	Electrical Equipment & Installation	Carpenter Engr	\$268,968	70024	\$6,550	\$268,108	\$6,798
40	Instruments: Thermocouples	CGS Thermodynamics	\$5,428	70052	\$0	\$5,428	\$0
41	K Thermocouple Wire	CGS Thermodynamics	\$715	70130	\$0	\$715	\$0
42	CGS Drwg.B5618 1/8" R T/C w/o head and block	CGS Thermodynamics	\$573	70158	\$0	\$573	\$0
43	2000' K T/C wire & 50' R T/C wire	CGS Thermodynamics	\$1,016	70163	\$0	\$1,016	\$0
44	Replacement thermocouples	CGS Thermodynamics	\$1,222	70183	\$0	\$1,222	\$0
45	Thermocouple	CGS Thermodynamics	\$472	70212	\$472	\$472	\$0
46	Thermocouples	CGS Thermodynamics	\$298	70218	\$298	\$298	\$0
47	Small screw cover heat and block	CGS Thermodynamics	\$106	70219	\$106	\$106	\$0
48	Hydraulic Hoses/Fittings	Chester County Hydraulics	\$1,551	70123	\$0	\$1,551	\$0
49	(8) 1/2" Hydraulic Hoses: (7) 5' and (1) 6'	Chester County Hydraulics	\$388	70175	\$0	\$388	\$0
50	Hydraulic Fittings	Chester County Hydraulics	\$16	70187	\$0	\$16	\$0
51	Hydraulic Fittings	Chester County Hydraulics	\$11	70189	\$0	\$11	\$0
52	Beams, W6 x 15	Coastal Steel	\$293	18601		\$293	\$0
53	Angle & bar steel	Coastal Steel	\$714	18811		\$714	\$0
54	Channel, beam, angle for coal system	Coastal Steel	\$3,665	70037		\$3,665	\$0

Lebanon VA Project Equipment/Service Costs

ITEM NUMBER	EQUIPMENT/SERVICE	VENDOR	CURRENT COST/\$ RELEASE	PURCHASE ORDER NO.	\$ PAID THIS QUARTER	\$ PAID TO-DATE	BALANCE- UNLIQUIDATED OBLIGATIONS
55	Beams & angles for coal structure	Coastal Steel	\$4,119	70038		\$4,119	\$0
56	Beams and angles for coal bin assy	Coastal Steel	\$509	70043		\$509	\$0
57	Beams & angles	Coastal Steel	\$1,945	70050		\$1,945	\$0
58	Beams & angles	Coastal Steel	\$418	70051		\$418	\$0
59	Beam, W6 x 15 x 184"	Coastal Steel	\$314	70065		\$314	\$0
60	Angles & Drop	Coastal Steel	\$132	70068		\$132	\$0
61	Beams for coal bin grating structure	Coastal Steel	\$254	70071		\$254	\$0
62	Beams & channels	Coastal Steel	\$313	70076		\$313	\$0
63	Beams & angles	Coastal Steel	\$1,422	70079		\$1,422	\$0
64	Angles	Coastal Steel	\$265	70082		\$265	\$0
65	Beams & angles	Coastal Steel	\$5,755	70086		\$5,755	\$0
66	2" Ball valve//157 #SWP / Part No. 106760	Combraco	\$28			\$28	\$0
67	Commonwealth of Pennsylvania - permit fees	Commonwealth of PA	\$200		\$200	\$200	\$0
68	Welding Rods (16) RA85H	Commonwealth Supply	\$265	70018		\$265	\$0
69	Cart for medical waste	Consolidated Plastic Co.	\$0	70102	\$0	\$0	\$0
70	Boiler & Economizer: Economizer Sootblower	Copes-Vulcan	\$8,784	41917B	\$0	\$8,784	\$0
71	Bed Material Cooling/Cleaning System (Jacobson Crusher)	CSI Systems Inc.	\$18,070	70041	\$0	\$18,070	\$0
72	Bed Material Cooling/Cleaning System (Kinergy Vibrating Screen)	CSI Systems Inc.	\$8,044	70042	\$0	\$8,044	\$0

Lebanon VA Project Equipment/Service Costs

ITEM NUMBER	EQUIPMENT/SERVICE	VENDOR	CURRENT COST/\$ RELEASE	PURCHASE ORDER NO.	\$ PAID THIS QUARTER	\$ PAID TO-DATE	BALANCE- UNLIQUIDATED OBLIGATIONS
73	Limestone 8" Flexible (Kinergy)	CSI Systems Inc.	\$84	70120	\$0	\$84	\$0
74	Limit Switches	Dauphin Electric	\$365	70141	\$0	\$365	\$0
75	Ash Conditioner	Detroit Stoker	\$34,815	70009	\$0	\$34,815	\$0
76	Ash Conditioner: Chutes	Detroit Stoker	\$2,979	70062	\$0	\$2,979	\$0
77	Ash Discharge Chute, 350-134430072, nylon	Detroit Stoker	\$342	70169	\$0	\$342	\$0
78	Shredder: Move from York to Site	DONLEE	\$5,200	70035	\$0	\$0	\$0
79	Stack design	DONLEE	\$7,045	70103		\$7,045	\$0
80	Boiler Trim - tricocks for McDonnell & Miller	DONLEE	\$11	Stock	\$0	\$11	\$0
81	Boiler Trim - Fittings for PI-504	DONLEE	\$11	Stock	\$0	\$11	\$0
82	Bin, Sand (Sand funnel)-Replaces bed mat'l bin estimated @ \$10,000	DONLEE	\$2,925	WO	\$0	\$0	\$0
83	Coal Bins	DONLEE	\$55,805	WO	\$0	\$0	\$0
84	Limestone Bin - 30 Ton	DONLEE	\$14,408	WO	\$0	\$0	\$0
85	Limestone Bin - 2 Ton	DONLEE	\$4,200	WO	\$0	\$0	\$0
86	Ash Bins (2)	DONLEE	\$34,250	WO	\$0	\$0	\$0
87	Boiler & Economizer: Boiler	DONLEE	\$41,478	WO	\$0	\$0	\$0
88	Boiler & Economizer: Economizer Casing	DONLEE	\$8,205	WO	\$0	\$0	\$0
89	Stack (Chimney) - 2nd Design	DONLEE	\$7,045	WO	\$0	\$0	\$0
90	Combustor/Cyclone/Cooling Bed Unit -No Tubes	DONLEE	\$123,355	WO	\$0	\$0	\$0

Lebanon VA Project Equipment/Service Costs

ITEM NUMBER	EQUIPMENT/SERVICE	VENDOR	CURRENT COST/\$ RELEASE	PURCHASE ORDER NO.	\$ PAID THIS QUARTER	\$ PAID TO-DATE	BALANCE- UNLIQUIDATED OBLIGATIONS
91	Refractory Materials & Installation: Installation	DONLEE	\$88,799	WO	\$0	\$0	\$0
92	Startup Burner Panel	DONLEE	\$1,284	WO	\$0	\$0	\$0
93	Steelwork or Equipment Support	DONLEE	\$143,639	WO	\$0	\$0	\$0
94	Baghouse Level Probe	Drexelbrook	\$227	70118	\$0	\$227	\$0
95	Magnehelic Gauges	Dwyer Instruments, Inc.	\$45	70128	\$0	\$45	\$0
96	Rotameters/N.G. Gauge	Dwyer Instruments, Inc.	\$155	70136	\$0	\$155	\$0
97	Differential pressure switch & magnehelic burner	Dwyer Instruments, Inc.	\$111	70177	\$0	\$111	\$0
98	Manometers	Dwyer Instruments, Inc.	\$286	70182	\$0	\$286	\$0
99	Model 1950-2 ID Fan Inlet Pressure Switch	Dwyer Instruments, Inc.	\$98	70185	\$0	\$98	\$0
100	(2) Model 2150 Pressure Gauges	Dwyer Instruments, Inc.	\$85	70198	\$0	\$85	\$0
101	4 Differential pressure transmitters	Dwyer Instruments, Inc.	\$110	70214	\$110	\$110	\$0
102	Magnehelic gauges	Dwyer Instruments, Inc.	\$91	70217	\$91	\$91	\$0
103	Instruments: Pressure Indicators/Transmitters	Dwyer/Honeywell	\$1,090	70055	\$0	\$1,090	\$0
104	Computerized Portable Analyzers	ECOM America	\$4,638	70030	\$0	\$4,638	\$0
105	Safety Signs for Facility	Emed Company Inc	\$264	70205	\$0	\$264	\$0
106	Troubleshoot Coal Handling PLC	Emtrol	\$750	70191	\$0	\$750	\$0
107	Add a digital out signal	Enertec	\$866	70213	\$0	\$0	\$866
108	Emissions Monitoring Equipment	Enertec	\$135,300	14172B	\$4,765	\$135,300	\$0

Lebanon VA Project Equipment/Service Costs

ITEM NUMBER	EQUIPMENT/SERVICE	VENDOR	CURRENT COST/\$ RELEASE	PURCHASE ORDER NO.	\$ PAID THIS QUARTER	\$ PAID TO-DATE	BALANCE- UNLIQUIDATED OBLIGATIONS
109	Current Follower Kit	Engineered Drive Inc.	\$105	70192	\$0	\$105	\$0
110	Outside Review of Bldg-Preliminary/Final	Entech	\$926		\$0	\$926	\$0
111	Boiler Trim - gage glass & valves	Ernst Gage Co.	\$670	70146	\$0	\$670	\$0
112	Hospital Waste, Handling & Sub-Systems	Essex Conveyor	\$36,815	41820	\$0	\$36,815	\$0
113	Bolts, nuts & screws	Fastenal Company	\$368	70072	\$0	\$368	\$0
114	Bolts, 3/4 x 3, A235	Fastenal Company	\$84	70073	\$0	\$84	\$0
115	Bolts, nuts & washers	Fastenal Company	\$439	70074	\$0	\$439	\$0
116	Bolts, washers & nuts	Fastenal Company	\$335	70077	\$0	\$335	\$0
117	Bolts & washers	Fastenal Company	\$73	70087	\$0	\$73	\$0
118	Bolts & washers	Fastenal Company	\$468	70100	\$0	\$468	\$0
119	300, 3/8" extra heavy nuts, plated	Fastenal Company	\$9	70167	\$0	\$9	\$0
120	Hardware- nuts, bolts, washers, etc.	Fastenal Company	\$12	70215	\$12	\$12	\$0
121	UV Scanner (#109026) & Flame Control Amplifier (#309624)	Fireye, Inc.	\$131	70223	\$0	\$0	\$131
122	Flyash Reinjection System	Fox Valve/DONLEE	\$9,031	70034	\$0	\$9,031	\$0
123	Boiler & Economizer: Boiler Sootblower-Engr Only	Fuel Efficiency	\$1,300	41916	\$0	\$1,300	\$0
124	Boiler & Economizer: Boiler Sootblower	Fuel Efficiency	\$5,113	70001	\$0	\$5,113	\$0
125	Site trailer rental - 13 months	GE Capital Modular Space	\$2,708	70098	\$0	\$2,708	\$0
126	Service Call - Air Conditioning in Control Room	George Strohm, Jr., Inc.	\$40		\$0	\$40	\$0

Lebanon VA Project Equipment/Service Costs

ITEM NUMBER	EQUIPMENT/SERVICE	VENDOR	CURRENT COST/\$ RELEASE	PURCHASE ORDER NO.	\$ PAID THIS QUARTER	\$ PAID TO-DATE	BALANCE- UNLIQUIDATED OBLIGATIONS
127	Red Oxide Paint	Glidden	\$179	70031	\$0	\$179	\$0
128	Red oxide Paint	Glidden	\$268	70063	\$0	\$268	\$0
129	Red oxide paint	Glidden	\$358	70095	\$0	\$358	\$0
130	Paint	Glidden	\$81	70211	\$0	\$81	\$0
131	Sump Pump & controls	Grainger	\$209	70116	\$0	\$209	\$0
132	Sump pump and controls	Grainger	\$276	70134	\$0	\$276	\$0
133	2-Way radio yellow DOT 6T469-1	Grainger	\$574	70179	\$0	\$574	\$0
134	2-Way radio yellow DOT 6T469-2	Grainger	\$574	70180	\$0	\$574	\$0
135	Boiler Trim - contact blocks	Heim Co. Edwin	\$29	70144	\$0	\$29	\$0
136	Actuated Valves (2) 4" and (1) 2"	Herman Goldner Co.	\$5,095	70196	\$0	\$5,095	\$0
137	Instruments: Pressure Transmitters	Honeywell Inc.	\$12,569	70010	\$0	\$12,569	\$0
138	Start-up Burner (Mod. Motor)	Honeywell Inc.	\$266	70014	\$0	\$266	\$0
139	Instruments: Pressure Transmitters (Additional)	Honeywell Inc.	\$4,097	70045	\$0	\$4,097	\$0
140	Honeywell-Equipment checkout & training	Honeywell Inc.	\$17,268	70181	\$0	\$17,268	\$0
141	4-20mA Analog Board	Honeywell Inc.	\$1,032	70190	\$0	\$1,032	\$0
142	(3) Transmitters & (3) Valve Bypasses	Honeywell Inc.	\$4,961	70194	\$0	\$4,961	\$0
143	Honeywell training for LVA electrical engr/operator	Honeywell Inc.	\$3,300	70221	\$0	\$0	\$3,300
144	Controls Computer Package	Honeywell Inc.	\$97,001	42190B	\$0	\$97,001	\$0

Lebanon VA Project Equipment/Service Costs

ITEM NUMBER	EQUIPMENT/SERVICE	VENDOR	CURRENT COST/\$ RELEASE	PURCHASE ORDER NO.	\$ PAID THIS QUARTER	\$ PAID TO-DATE	BALANCE- UNLIQUIDATED OBLIGATIONS
145	Honeywell training - Expense Check Mike Mazur LVA	Honeywell Inc.	\$2,495	Check Request	\$0	\$0	\$2,495
146	Transmitters/Flanges	Honeywell, Inc.	\$2,577	70153	\$0	\$2,577	\$0
147	Ceramic Rope-400' KAO-Tex 1/2", 100' high density	Hostetter Supply Co., Inc.	\$589	70166	\$0	\$589	\$0
148	Onsite refractory cure	Hotwork Corp.	\$6,950	70081	\$0	\$6,950	\$0
149	Shredder Hydraulic/Gear Oils	Industrial Lubricants	\$1,520	70111	\$0	\$1,520	\$0
150	Valves & Dampers	Industrial Piping Systems	\$26,065	70044	\$0	\$26,065	\$0
151	Steam/Feedwater Valves	Industrial Piping Systems	\$2,313	70092	\$0	\$2,313	\$0
152	Instrumentation Ball Valves	Industrial Piping Systems	\$152	70109	\$0	\$152	\$0
153	Pressure Gauges	Industrial Piping Systems	\$646	70115	\$0	\$646	\$0
154	Pressure Gauges	Industrial Piping Systems	\$74	70121	\$0	\$74	\$0
155	3" Steam Vent Valve	Industrial Piping Systems	\$488	70135	\$0	\$488	\$0
156	Natural Gas Gauges	Industrial Piping Systems	\$84	70149	\$0	\$84	\$0
157	Analyzers - Water Pressure Regulator	Industrial Piping Systems	\$88	70156	\$0	\$88	\$0
158	Orifices and venturis	Ives Equipment	\$12,932	70093	\$0	\$12,932	\$0
159	Solenoid	Ives Equipment	\$482	70110	\$0	\$482	\$0
160	Solenoids	Ives Equipment	\$675	70131	\$0	\$675	\$0
161	Refractory Materials & Installation: Materials	J. T. Thorpe	\$88,007	70002	\$0	\$88,413	\$0
162	Sink/Shower Decontamination Stations	Lab Safety	\$353	70126	\$0	\$353	\$0

Lebanon VA Project Equipment/Service Costs

ITEM NUMBER	EQUIPMENT/SERVICE	VENDOR	CURRENT COST/\$ RELEASE	PURCHASE ORDER NO.	\$ PAID THIS QUARTER	\$ PAID TO-DATE	BALANCE- UNLIQUIDATED OBLIGATIONS
163	Lightning Protection	Larson Lightning Protection	\$2,198	70157	\$0	\$2,198	\$0
164	Oil for Roots Blowers	Leffler	\$25	70127	\$0	\$25	\$0
165	Beams for coal bin structure	Levinson-Borger	\$8,579	70039	\$0	\$8,579	\$0
166	Steel grating & beams	Levinson-Borger	\$5,745	70089	\$0	\$5,745	\$0
167	Beam, W14 x 90, 239" (911-3-30)	Levinson-Borger	\$3,052	70090	\$0	\$3,052	\$0
168	Sterilization System/Tanks & Pumps	M.Glosser & Sons	\$1,648	70067	\$0	\$1,648	\$0
169	Sterilization Equipment	M.Glosser & Sons	\$3,602	70122	\$0	\$3,602	\$0
170	Ash Handling: Storage and Screw	Macawber Systems, Inc.		70046	\$0	\$0	\$0
171	Limestone/Ash Equipment checkout & training	Macawber Systems, Inc.	\$2,345	70172	\$0	\$2,345	\$0
172	Ash Handling: Storage and Screw	Macawber Systems, Inc.	\$152,292	13456B	\$0	\$152,292	\$0
173	Limestone Storage, Handling & Feeding	Macawber Systems, Inc.	\$60,881	41684B	\$0	\$60,881	\$0
174	Ducting & Piping	McClure Company, Inc.	\$427,034	70085	\$58,368	\$403,217	\$23,817
175	Contract for Hydraulic Piping Work-shredder system	McClure Company, Inc.	\$15,847	70203	\$0	\$15,847	\$0
176	Boiler Trim - LWCO & pump control	McDonnell & Miller	\$277	70145	\$0	\$277	\$0
177	LVA Telephone	MCI			\$34	\$34	
178	Sterilization Liquid Mixer	McMaster-Carr Supply Co.	\$354	70117	\$0	\$354	\$0
179	Filters/Oilers, Regulators	McMaster-Carr Supply Co.	\$373	70154	\$0	\$373	\$0
180	(24) Ear Muffs and ear plugs, & replacements	McMaster-Carr Supply Co.	\$654	70170	\$0	\$654	\$0

Lebanon VA Project Equipment/Service Costs

ITEM NUMBER	EQUIPMENT/SERVICE	VENDOR	CURRENT COST/\$ RELEASE	PURCHASE ORDER NO.	\$ PAID THIS QUARTER	\$ PAID TO-DATE	BALANCE- UNLIQUIDATED OBLIGATIONS
181	LVA Structural Review	Nutec Design Assc., Inc.	\$8,700	70142	\$0	\$8,700	\$0
182	Design Structural Revisions	Nutec Design Assc., Inc.	\$29,800	70148	\$270	\$27,200	\$2,600
183	Chemical Feedwater System	Nutmeg Technologies	\$1,305	70112	\$0	\$1,305	\$0
184	Sample Cooler	Nutmeg Technologies	\$307	70139	\$0	\$307	\$0
185	1/4" 304SS Tubing	Penn Stainless	\$192	70137	\$0	\$192	\$0
186	Refrigerated Room	Perley-Hallday	\$15,407	70012	\$0	\$15,407	\$0
187	Transmation Calibration	Philip R. Walker	\$961	70193	\$0	\$961	\$0
188	Orifice Plates ACB, dipleg, Sluice	Proconex	\$128	70186	\$0	\$128	\$0
189	Flyash Reinjection System: Bed Mat'l Blowers	R.M. Associates	\$10,025	41810	\$0	\$10,025	\$0
190	Volume switch for ID fan inlet, -50 IWC	R.M. Associates	\$200	70162	\$0	\$200	\$0
191	Pressure switch for 80-100 psig - Baghouse Air	R.M. Associates	\$175	70173	\$0	\$175	\$0
192	Startup Assistance - Time & Materials	Raeden, Inc.	\$68,057	70202	\$27,885	\$68,057	\$0
193	Propane Heaters - Rental	Rentals Unlimited	\$1,875	70125	\$0	\$1,875	\$0
194	Fans & Blowers: Primary & ID	Robinson	\$54,608	41811	\$0	\$54,608	\$0
195	Shredder Blower	Robinson	\$3,140	38764B	\$0	\$3,140	\$0
196	R-Thermocouple Alarm with Fixed Dead Bands	Rochester Instru. Systems	\$691	70201	\$0	\$691	\$0
197	Tee, T6 x 32 5"/ft, 18" long	Roltech Industries	\$340	18878	\$0	\$340	\$0
198	Beams & Tees	Roltech Industries	\$4,388	18343	\$0	\$4,388	\$0

Lebanon VA Project Equipment/Service Costs

ITEM NUMBER	EQUIPMENT/SERVICE	VENDOR	CURRENT COST/\$ RELEASE	PURCHASE ORDER NO.	\$ PAID THIS QUARTER	\$ PAID TO-DATE	BALANCE- UNLIQUIDATED OBLIGATIONS
199	Tee, T6 x 32.5#/ft, 18" long	Roltech Industries	\$443	70097	\$0	\$443	\$0
200	LVA Control System	Roth Enterprises	\$14,053	70152	\$0	\$14,053	\$0
201	Slide Gates	Rovalve/Technaflow	\$52,664	70007	\$0	\$52,665	\$0
202	Plant Encl./Site Prep/Foundation: Geotechnical Engr.	Schnabel	\$9,512	70027	\$0	\$9,512	\$0
203	Soil Borings	Schnabel	\$5,850		\$0	\$5,850	\$0
204	Cal Gases and Regulators	Scott Specialty	\$5,384	70119	\$0	\$5,384	\$0
205	Cal Gases	Scott Specialty	\$2,596	70209	\$932	\$2,596	\$0
206	Expansion Joints	Senior Flexonics	\$25,862	70011	\$0	\$25,862	\$0
207	Dew Point Monitor - Rental	Solomat	\$344	70114	\$0	\$344	\$0
208	Fans & Blowers: ACB & LCB	Spencer Turbine	\$13,060	41809	\$0	\$13,060	\$0
209	Stack Testing Protocol	Spotts, Stevens & McCoy	\$2,000	70151	\$0	\$2,000	\$0
210	Sterilization Testing Nozzles	Spray Systems	\$888	70049	\$0	\$888	\$0
211	Sterilization Nozzle, 1/2"	Spray Systems	\$51	70132	\$0	\$51	\$0
212	Shredder Hydraulic Filter	SSI Shredding Systems	\$489	70094	\$0	\$489	\$0
213	Pressure Filters	SSI Shredding Systems	\$275	70133	\$0	\$275	\$0
214	Startup Assistance	SSI Shredding Systems	\$1,367	70208	\$1,367	\$1,367	\$0
215	Shredder	SSI Shredding Systems	\$0		\$0	\$0	\$0
216	Office Supplies for Trailer	Staples	\$480	Cash Advance	\$0	\$480	\$0

Lebanon VA Project Equipment/Service Costs

FILM NUMBER	EQUIPMENT/SERVICE	VENDOR	CURRENT COST/\$ RELEASE	PURCHASE ORDER NO.	\$ PAID THIS QUARTER	\$ PAID TO-DATE	BALANCE- UNLIQUIDATED OBLIGATIONS
217	Plant Encl/Site Prep/Foundation: Design	Steckbeck Engineering	\$29,128	41232	\$0	\$29,128	\$0
218	Plant Encl/Site Prep/Foundation: Engineer	Steckbeck Engineering	\$8,911	70026	\$0	\$8,911	\$0
219	Review of Building & Foundation	Steckbeck Engineering	\$312		\$0	\$312	\$0
220	Silencer for LVA Stack	Stoddard Silencers	\$1,268	70206	\$128	\$1,268	\$0
221	Startup Calibration of 2 Coal Weighbelts & training	Thayer Scale-Hyer Industries, Inc.	\$4,207	70184	\$0	\$4,207	\$0
222	Stack (Chimney)	Tri Fab, Inc.	\$19,428	41819	\$0	\$19,428	\$0
223	Golz handheld core drill & 3 bits	Tri-boro Concrete	\$165	70056	\$0	\$165	\$0
224	Makita grinder diamond tip drill (refractory grinding)	Tri-boro Concrete	\$248	70060	\$0	\$248	\$0
225	Diamond impregnated grinding wheel;	Tri-Boro Concrete	\$278	70066	\$0	\$278	\$0
226	Automax Actuator for FD Fan	Tristate Technical Sales	\$1,672	70188	\$0	\$1,672	\$0
227	Sand for Beds	U.S. Silica Sand	\$2,447	70080	\$0	\$2,447	\$0
228	Natural Gas line moved	UGI	\$0	70028	\$0	\$0	\$0
229	Steam Silencer	Vibration & Noise Engr.	\$3,065	70070	\$0	\$3,065	\$0
230	Emissions Monitoring Equipment: Oxygen	W. A. Gregory, Inc	\$6,548	70040	\$0	\$6,548	\$0
231	Two (2) Current Isolators	WGS Equipment & Controls	\$467	70204	\$0	\$467	\$0
232	(20) Cubic Yard Containers & (5) Pickups	Whitman Warren	\$861	70195	\$288	\$287	\$574
233	Belden 1064A Multiconductor Cable	York Electric Supply Co.	\$97	70155	\$0	\$97	\$0
234	Panel Push-Pull Buttons, Timers & Relays	York Electric Supply Co.	\$1,038	70176	\$0	\$1,038	\$0

Lebanon VA Project Equipment/Service Costs

ITEM NUMBER	EQUIPMENT/SERVICE	VENDOR	CURRENT COST/\$ RELEASE	PURCHASE ORDER NO.	\$ PAID THIS QUARTER	\$ PAID TO-DATE	BALANCE- UNLIQUIDATED OBLIGATIONS
235	Start-up Burner (Eclipse)	Yorkaire Inc.	\$9,242	70013	\$0	\$9,242	\$0
236	Burner Parts	Yorkaire Inc.	\$122	70107	\$0	\$122	\$0
237	Gas Heaters/ Valves, Regulators	Yorkaire Inc.	\$1,467	70140	\$0	\$1,467	\$0
238	Service for Startup Burner	Yorkaire Inc.	\$743	70199	\$0	\$743	\$0
239	K01 Switch for Eclipse burner	Yorkaire, Inc.	\$117	70178	\$0	\$117	\$0
PROJECT EQUIPMENT/SERVICE TOTAL			\$4,523,012		\$186,874	\$3,931,247	\$67,774