LG&E - KU- Ghent Unit 2 PJFF (Without SCR) Rev.B

B&V PROJECT #: 168908

PROJECT ESTIMATOR: Ron Fields

PROJECT MANAGER: Tim Hillman

PURPOSE OF ESTIMATE: Budgetary

ESTIMATE DATE: April-11

LOCATION: PLANT TYPE: CLIENT: Carroll County, KY PC Fired Boiler LG&E - KU N/A US Dollars

PARTNER: CURRENCY: BLACK AND VEATCH CONFIDENTIAL AND PROPRIETARY INFORMATION

			PROJECT - TOTAL COSTS						
Contract		Engr Equip	Commodities					% OF	\$ PER
Number	Description	Material \$	Material \$	Labor \$	Manhours	Other	TOTAL \$	TOTAL C.V.	KW 517
ESTIMATE	SUMMARY								
ESTIMATE	2 SOMMAN I								
Purchase C	ontracts:								
61.0000	Civil / Structural	\$1,541,040	\$36,000	\$0	0	\$0	\$1,577,040	1.23%	\$3.05
61.3801	Ductwork and breeching	\$2,231,400	\$0	\$0	0	\$0	\$2,231,400	1.74%	\$4.32
62.0000	Mechanical - Balance of Plant (BOP)	\$0	\$0	\$0	0	\$50,000	\$50,000	0.04%	\$0.10
63.0000	Electrical - BOP. Equipment, Raceway	\$315,000	\$3,468,810	\$0	0	\$0	\$3,783,810	2.96%	\$7.32
63.3002	VFDs, Motors and Couplings	\$2,778,000	\$0	\$0	0	\$0	\$2,778,000	2.17%	\$5.37
63.3603	Switchgear and MCCs	\$1,722,000	\$0	\$0	0	\$0	\$1,722,000	1.35%	\$3.33
63.3802	SUS Transformers	\$308,752	\$0	\$0	0	\$0	\$308,752	0.24%	\$0.60
63.3803	Aux Transformer	\$562,000	\$0	\$0	0	\$0	\$562,000	0.44%	\$1.09
64.0000	Control - DCS, Instrumentation	\$876,000	\$64,350	\$0	0	\$0	\$940,350	0.73%	\$1.82
64.0407	On-line Performance Monitoring - Neural Network	\$0	\$0	\$0	0	\$570,000	\$570,000	0.45%	\$1.10
65.3120	Fabric Filter	\$14,000,000	\$0	\$0	0	\$0	\$14,000,000	10.94%	\$27.08
65.3210	Sorbent Injection	\$2,000,000	\$0	\$0	0	\$0	\$2,000,000	1.56%	\$3.87
65.3500	H-PAC Mercury Control	\$1,000,000	\$0	\$0	0	\$0	\$1,000,000	0.78%	\$1.93
66.1000	Piping and Tubing	\$0	\$375,818	\$0	0	\$495,000	\$870,818	0.68%	\$1.68
66.2070	Pipe Supports	\$0	\$434,438	\$0	0	\$0	\$434,438	0.34%	\$0.84
66.3000	Valves and Accessories	\$0	\$23,200	\$0	0	\$0	\$23,200	0.02%	\$0.04
67.9300	Compressors	\$250,000	\$0	\$0	0	\$0	\$250,000	0.20%	\$0.48
67.9532	ID Fans	\$1,990,000	\$0	\$0	0	\$0	\$1,990,000	1.56%	\$3.85
	Subtotal Purchase Contracts:	\$29,574,192	\$4,402,616	\$0	0	\$1,115,000	\$35,091,808	27.43%	\$67.88
	_								
	on Contracts:	•	•	•					
71.0100	Demolition Works	\$0	\$0	\$0	0	\$350,000	\$350,000	0.27%	\$0.68
	Civil / Structural Construction - Cast in-place Piling	\$0	\$0	\$0	0	\$1,456,000	\$1,456,000	1.14%	\$2.82
	Civil / Structural Construction - Super Structures	\$0	\$15,000	\$2,703,813	39,067	\$1,323,000	\$4,041,813	3.16%	\$7.82
71.0403	Civil / Structural Construction - Sub-Structures	\$0	\$572,119	\$1,885,302	32,924	\$140,598	\$2,598,019	2.03%	\$5.03
72.0000	Mechanical / Chemical Construction	\$0	\$0	\$13,250,572	215,392	\$2,793,250	\$16,043,822	12.54%	\$31.03
73.0000	Electrical / Control Construction	\$0 \$0	\$534,212	\$8,232,423	131,761	\$26,100	\$8,792,735	6.87%	\$17.01
78.0000	Service Contracts & Construction Indirects	\$0	\$3,234,022	\$3,725,428	79,934	\$11,577,017	\$18,536,467	14.49%	\$35.85
	Subtotal Construction Contracts:	\$0	\$4,355,353	\$29,797,538	499,078	\$17,665,965	\$51,818,855	40.50%	\$100.23
	Total Direct Costs	\$29,574,192	\$8,757,969	\$29,797,538	499,078	\$18,780,965	\$86,910,664	67.93%	\$168.11
Indirect Cos	sts:								
99.1100	Engineering Costs (Includes G&A)	\$0	\$0	\$2,706,000	66,000	\$4,021,116	\$6,727,116	5.26%	\$13.01
99.1200	EPC Construction Management (Includes G&A)	\$0	\$68,907	\$5,379,063	117,964	\$7,512,409	\$12,960,379	10.13%	\$25.07
99.1500	Project Insurance	\$0	\$0	\$0	0	\$1,435,858	\$1,435,858	1.12%	\$2.78
99.1600	Performance Bond	\$0	\$0	\$0	0	\$615,368	\$615,368	0.48%	\$1.19
99.1900	Sales Tax 6% of Indirect materials and Services	\$0	\$59,263	\$0	0	\$0	\$59,263	0.05%	\$0.11
99.2500	Project Contingency 10%	\$0	\$0	\$0	0	\$10,870,865	\$10,870,865	8.50%	\$21.03
99.2600	EPC Profit	\$0	\$0	\$0	0	\$8,371,000	\$8,371,000	6.54%	\$16.19
	Total Indirect Costs	\$0	\$128,170	\$8,085,063	183,964	\$32,826,615	\$41,039,848	32.07%	\$79.38
	Total Overnight (April 2011) EPC Capital Costs:	\$29,574,192	\$8,886,138	\$37,882,601	683,042	\$51,607,580	\$127,950,512	100.00%	\$247.49
		\$0	\$0	\$0	0	\$0	\$0	0.00%	\$0.00

LG&E - KU- Ghent Unit 2 PJFF (Without SCR) Rev.B B&V PROJECT #: 168908 PROJECT ESTIMATOR: Ron Fields

B&V PROJECT #: 168908
PROJECT ESTIMATOR: Ron Fields
PROJECT MANAGER: Tim Hillman
PURPOSE OF ESTIMATE: Budgetary
ESTIMATE DATE: April-11

LOCATION:
PLANT TYPE:
CLIENT:
PARTNER:
CURRENCY:

Carroll County, KY PC Fired Boiler LG&E - KU N/A US Dollars

BLACK AND VEATCH CONFIDENTIAL AND PROPRIETARY INFORMATION

Contract Number	Description	Engr Equip	0						
Number	Description		Commodities					% OF	\$ PER
	2 000. p. 0							TOTAL C.V.	KW
		Material \$	Material \$	Labor \$	Manhours	Other	TOTAL \$		517
ECTIMATI	E SUMMARY								
ESTIMATI	ESUMMART								
Purchase C	contracts:								
61.0000	Civil / Structural	\$3,772,440	\$36,000	\$0	0	\$0	\$3,808,440	2.98%	\$7.37
62.0000	Mechanical	\$2,240,000	\$833,456	\$0	0	\$545,000	\$3,618,456	2.83%	\$7.00
63.0000	Electrical	\$5,685,752	\$3,468,810	\$0	0	\$0	\$9,154,562	7.15%	\$17.7°
64.0000	Control	\$876,000	\$64,350	\$0	0	\$570,000	\$1,510,350	1.18%	\$2.92
65.0000	Chemical	\$17,000,000	\$0	\$0	0	\$0	\$17,000,000	13.29%	\$32.88
	Subtotal Purchase Contracts:	\$29,574,192	\$4,402,616	\$0	0	\$1,115,000	\$35,091,808	27.43%	\$67.88
Construction	on Contracts:								
71.0402	Civil / Structural Construction -Substructures	\$0	\$587,119	\$4,589,115	71,990	\$3,269,598	\$8,445,832	6.60%	\$16.34
71.0403	Civil / Structural Construction -Superstructures	\$0	\$0	\$0	0	\$0	\$0	0.00%	\$0.00
72.0000	Mechanical / Chemical Construction	\$0	\$0	\$13,250,572	215,392	\$2,793,250	\$16,043,822	12.54%	\$31.03
73.0000	Electrical / Control Construction	\$0	\$534,212	\$8,232,423	131,761	\$26,100	\$8,792,735	6.87%	\$17.0
78.0000	Service Contracts & Construction Indirects	\$0	\$3,234,022	\$3,725,428	79,934	\$11,577,017	\$18,536,467	14.49%	\$35.85
	Subtotal Construction Contracts:	\$0	\$4,355,353	\$29,797,538	499,078	\$17,665,965	\$51,818,855	40.50%	\$100.23
	Total Direct Costs	\$29,574,192	\$8,757,969	\$29,797,538	499,078	\$18,780,965	\$86,910,664	67.93%	\$168.11
In disease Co.									
Indirect Co		Φ0	ም ስ	\$2,706,000	66,000	¢4.004.446	PC 707 446	F 260/	\$13.01
99.1100 99.1200	Engineering Costs (With G&A) Construction Management (With G&A)	\$0 \$0	\$0 \$68,907	\$5,379,063	66,000 117,964	\$4,021,116 \$7,512,409	\$6,727,116 \$12,960,379	5.26% 10.13%	\$13.0 \$25.07
99.1500	Project Insurance	\$0 \$0	\$00,90 <i>7</i>	\$0,379,003	117,904	\$1,435,858	\$1,435,858	1.12%	\$2.78
99.1600	Performance Bond	\$0 \$0	\$0 \$0	\$0 \$0	0	\$615,368	\$615,368	0.48%	\$1.19
99.1900	Sales Tax 6% of Indirect materials and Services	\$0	\$59,263	\$0	0	\$0	\$59,263	0.05%	\$0.1
99.2500	Project Contingency @ 10%	\$0	\$0	\$0	0	\$10,870,865	\$10,870,865	8.50%	\$21.0
99.2600	EPC profit @ 7%	\$0	\$0	\$0	0	\$8,371,000	\$8,371,000	6.54%	\$16.19
	Total Indirect Costs	\$0	\$128,170	\$8,085,063	183,964	\$32,826,615	\$41,039,848	32.07%	\$79.38
	Total Overnight (April 2011) EPC Capital Costs:	\$29,574,192	\$8,886,138	\$37,882,601	683,042	\$51,607,580	\$127,950,512	100.00%	\$247.49

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PROJECT ESTIMATOR: Ron Fields
PROJECT MANAGER: Tim Hillman
PURPOSE OF ESTIMATE: Budgetary
ESTIMATE DATE: April-11

LOCATION:
PLANT TYPE:
CLIENT:
PARTNER:
CURRENCY:

Carroll County, KY PC Fired Boiler LG&E - KU N/A US Dollars

BLACK AND VEATCH CONFIDENTIAL AND PROPRIETARY INFORMATION

		PROJECT - TOTAL COSTS						T I	
Contract	Description	Engr Equip	Commodities					% OF	\$ PER
Number		Material \$	Material \$	Labor \$	Manhours	Other	TOTAL \$	TOTAL C.V.	KW 517
Civil / Struc	tural Purchase Contracts:								
61.0200	Buildings - Insulated panels	\$0	\$0	\$0	0	\$0	\$0	0.00%	\$0.00
61.0300	Grating	\$0	\$6,750	\$0	0	\$0	\$6,750	0.01%	\$0.01
61.3801	Ductwork and Breeching	\$2,231,400	\$0	\$0	0	\$0	\$2,231,400	1.74%	\$4.32
61.4001	Structural Steel	\$1,541,040	\$0	\$0	0	\$0	\$1,541,040	1.20%	\$2.98
61.4015	Handrail and stairs	\$0	\$29,250	\$0	0	\$0	\$29,250	0.02%	\$0.06
61.4052	Sheet Piling and Coffer Dam	\$0	\$0	\$0	0	\$0	\$0	0.00%	\$0.00
	Subtotal - Civil / Structural Purchase Contracts:	\$3,772,440	\$36,000	\$0	0	\$0	\$3,808,440	2.98%	\$7.37
Mechanical	Purchase Contracts:	\$0	\$0	\$0	0	\$0			
62.0205	Continuous Emissions Monitoring (CEM)	\$0	\$0	\$0	0	\$50,000	\$50,000	0.04%	\$0.10
62.2418	Primary Flow elements	\$0	\$0	\$0	0	\$0	\$0	0.00%	\$0.00
66.1000	Piping and Tubing	\$0	\$375,818	\$0	0	\$495,000	\$870,818	0.68%	\$1.68
66.2070	Pipe Supports	\$0	\$434,438	\$0	0	\$0	\$434,438	0.34%	\$0.84
66.3000	Valves and Accessories	\$0	\$23,200	\$0	0	\$0	\$23,200	0.02%	\$0.04
67.0414	Fly Ash Handling System	\$0	\$0	\$0	0	\$0	\$0	0.00%	\$0.00
67.9300	Air Compressors, Dryers, & Air receivers	\$250,000	\$0	\$0	0	\$0	\$250,000	0.20%	\$0.48
67.9532	ID Fans	\$1,990,000	\$0	\$0	0	\$0	\$1,990,000	1.56%	\$3.85
	Subtotal - Mechanical Purchase Contracts:	\$2,240,000	\$833,456	\$0	0	\$545,000	\$3,618,456	2.83%	\$7.00
Electrical P	urchase Contracts:	\$0	\$0	\$0	0	\$0			
63.0000	Electrical Equipment & Materials	\$0	\$2,000	\$0	0	\$0	\$2,000	0.00%	\$0.00
63.0500	Lightning Protection Equipment and Materials	\$0	\$2,220	\$0	0	\$0	\$2,220	0.00%	\$0.00
63.0601	Plant Communication System	\$0	\$105,993	\$0	0	\$0	\$105,993	0.08%	\$0.21
63.0801	Cable - 8-15KV Power	\$0	\$677,700	\$0	0	\$0	\$677,700	0.53%	\$1.31
63.0804	Cable - 300-600V Instrument & T/C	\$0	\$24,750	\$0	0	\$0	\$24,750	0.02%	\$0.05
63.0802	Cable and Raceway	\$0	\$1,345,918	\$0	0	\$0	\$1,345,918	1.05%	\$2.60
63.1201	Iso-Phase Bus Duct	\$255,000	\$0	\$0	0	\$0	\$255,000	0.20%	\$0.49
63.1201	Cable Bus	\$0	\$496,686	\$0 \$0	0	\$0 \$0	\$496,686	0.39%	\$0.96
63.2000	Metering & Relaying	\$60,000	\$490,000	\$0 \$0	0	\$0 \$0	\$60,000	0.05%	\$0.30
63.2802	Batteries - DC Equipment	\$0	\$442,750	\$0 \$0	0	\$0 \$0	\$442,750	0.35%	\$0.86
63.2805	PanelBoards	\$0 \$0	\$60,000	\$0 \$0	0	\$0 \$0	\$60,000	0.05%	\$0.00
63.3002	Variable Frequency Drives	\$2,778,000	\$00,000	\$0 \$0	0	\$0 \$0	\$2,778,000	2.17%	\$5.37
63.3603	Switchgear & MCCs	\$1,722,000	\$0 \$0	\$0 \$0	0	\$0 \$0	\$1,722,000	1.35%	\$3.33
63.3802	SUS Transformers		\$0 \$0	\$0 \$0	0			0.24%	\$0.60
		\$308,752	·			\$0 \$0	\$308,752		
63.3803	Aux Transformer	\$562,000	\$0	\$0	0	\$0	\$562,000	0.44%	\$1.09
63.5000	Junction Boxes	\$0	\$20,000	\$0	0	\$0	\$20,000	0.02%	\$0.04
63.5010	Grounding Materials and Equipment	\$0	\$105,993	\$0	0	\$0	\$105,993	0.08%	\$0.21
63.5021	Raceway - Cable Tray	\$0	\$0	\$0	0	\$0	\$0	0.00%	\$0.00
63.5022	Raceway - General	\$0	\$184,800	\$0	0	\$0	\$184,800	0.14%	\$0.36
	Subtotal - Electrical Purchase Contracts:	\$5,685,752	\$3,468,810	\$0	0	\$0	\$9,154,562	7.15%	\$17.71
Control Pur	chase Contracts:	\$0	\$0	\$0	0	\$0			
64.0202	DCS / PLC mods	\$576,000	\$0	\$0	0	\$0	\$576,000	0.45%	\$1.11
64.0407	On-line Performance Monitoring - Neural Network	\$0	\$0	\$0	0	\$570,000	\$570,000	0.45%	\$1.10
64.1003	Instrumentation	\$300,000	\$0	\$0	0	\$0	\$300,000	0.23%	\$0.58
64.1602	Instr. Racks and Enclosures	\$0	\$0	\$0	0	\$0	\$0	0.00%	\$0.00
64.5010	Tubing	\$0	\$64,350	\$0	0	\$0	\$64,350	0.05%	\$0.12
	Subtotal - Control Purchase Contracts:	\$876,000	\$64,350	\$0	0	\$570,000	\$1,510,350	1.18%	\$2.92
Chemical P	urchase Contracts:	\$0	\$0	\$0	0	\$0			
65.3120	Fabric Filter	\$14,000,000	\$0	\$0	0	\$0	\$14,000,000	10.94%	\$27.08
65.3210	Sorbent Injection	\$2,000,000	\$0	\$0	0	\$0	\$2,000,000	1.56%	\$3.87
65.3310	Selective Catalytic Redcution system	\$0	\$0 \$0	\$0	0	\$0	\$0	0.00%	\$0.00
65.3500	H -PAC Mecury Control	\$1,000,000	\$0 \$0	\$0 \$0	0	\$0 \$0	\$1,000,000	0.78%	\$1.93
	Subtotal - Chemical Purchase Contracts:	\$17,000,000	\$0	\$0	0	\$0	\$17,000,000	13.29%	\$32.88
	Subtotal Purchase Contracts:	\$29,574,192	\$4,402,616	\$0	0	\$1,115,000	\$35,091,808	27.43%	\$67.88

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Carroll County, KY PC Fired Boiler LG&E - KU N/A US Dollars

BLACK AND VEATCH CONFIDENTIAL AND PROPRIETARY INFORMATION

1		PROJECT - TOTAL COSTS						T	
Contract Number	Description	Engr Equip	Commodities					% OF TOTAL C.V.	\$ PER KW
	·	Material \$	Material \$	Labor \$	Manhours	Other	TOTAL \$		517
ivil / Struc	etural Construction Contracts:	\$0	\$0	\$0	0	\$0			
71.0100	Demolition Works	\$0	\$0	\$0	0	\$350,000	\$350,000	0.27%	\$0.68
71.0401	Cast In place Piling	\$0	\$0	\$0	0	\$1,456,000	\$1,456,000	1.14%	\$2.82
71.0402	General Construction - Substructures	\$0	\$572,119	\$1,885,302	32,924	\$140,598	\$2,598,019	2.03%	\$5.03
71.0403	General Construction - Superstructures	\$0	\$15,000	\$2,703,813	39,067	\$1,323,000	\$4,041,813	3.16%	\$7.82
	Subtotal - Civil / Structural Construction Contracts:	\$0	\$587,119	\$4,589,115	71,990	\$3,269,598	\$8,445,832	6.60%	\$16.34
/lechanical	Construction Contracts:	\$0	\$0	\$0	0	\$0			
72.0401	Plant Piping Installation	\$0	\$0	\$2,659,881	42,200	\$0	\$2.659.881	2.08%	\$5.14
72.0403	Duct and Reactor Insulation	\$0	\$0	\$0	0	\$2,000,000	\$2,000,000	1.56%	\$3.87
72.0800	Fire Protection & Detection Systems	\$0	\$0	\$0	0	\$793,250	\$793,250	0.62%	\$1.53
77.0000	Mechanical Construction	\$0	\$0	\$10,590,691	173,192	\$0	\$10,590,691	8.28%	\$20.48
	Subtotal - Mechanical Construction Contracts:	\$0	\$0	\$13,250,572	215,392	\$2,793,250	\$16,043,822	12.54%	\$31.03
lectrical /	Control Construction Contracts:	\$0	\$0	\$0	0	\$0			
73.0201	Electrical Equipment Erection	\$0	\$534,212	\$7,560,638	121,009	\$26,100	\$8,120,950	6.35%	\$15.71
74.0201	Control & Instrumentation Installation	\$0 \$0	\$0	\$671,785	10,752	\$20,100	\$671,785	0.53%	\$1.30
74.0201	Control & Histration Histaliation	ΨΟ	ΨΟ	ψ071,700	10,702	ΨΟ	ψ071,700	0.0070	ψ1.00
	Subtotal - Electrical / Control Construction Contracts:	\$0	\$534,212	\$8,232,423	131,761	\$26,100	\$8,792,735	6.87%	\$17.01
Constructio	on Indirects & Service Contracts:	\$0	\$0	\$0	0	\$0			
78.0000	Service Contracts & Construction Indirects	\$0	\$3,234,022	\$3,725,428	79,934	\$11,334,717	\$18,294,167	14.30%	\$35.39
78.4000	Warranty	\$0	\$0	\$0	0	\$242,300	\$242,300	0.19%	\$0.47
	Subtotal - Construction Indirects & Service Contracts:	\$0	\$3,234,022	\$3,725,428	79,934	\$11,577,017	\$18,536,467	14.49%	\$35.85
	Subtotal - Construction Costs:	\$0	\$4,355,353	\$29,797,538	499,078	\$17,665,965	\$51,818,855	40.50%	\$100.23
	Subtotal - Direct Costs:	\$29,574,192	\$8,757,969	\$29,797,538	499,078	\$18,780,965	\$86,910,664	67.93%	\$168.11
ndirect Co	sts:	\$0	\$0	\$0	0	\$0			
99.1100	Engineering Costs (Includes G&A)	\$0	\$0	\$2,706,000	66,000	\$4,021,116	\$6,727,116	5.26%	\$13.01
99.1200	EPC Construction Management (Includes G&A)	\$0	\$68,907	\$5,379,063	117,964	\$7,512,409	\$12,960,379	10.13%	\$25.07
99.1500	Project Insurance	\$0	\$0	\$0	0	\$1,435,858	\$1,435,858	1.12%	\$2.78
99.1600	Performance Bond	\$0	\$0	\$0	0	\$615,368	\$615,368	0.48%	\$1.19
99.1900	Sales Tax 6% of Indirect materials and Services	\$0	\$59,263	\$0	0	\$0	\$59,263	0.05%	\$0.11
99.2500	Project Contingency	\$0	\$0	\$0	0	\$10,870,865	\$10,870,865	8.50%	\$21.03
99.2600	EPC Profit	\$0	\$0	\$0	0	\$8,371,000	\$8,371,000	6.54%	\$16.19
	Subtotal - Indirect Costs:	\$0	\$128,170	\$8,085,063	183,964	\$32,826,615	\$41,039,848	32.07%	\$79.38
	Total Overnight (April 2011) EPC Capital Costs:	\$29.574.192	\$8.886.138	\$37.882.601	683.042	\$51.607.580	\$127.950.512	100.00%	\$247.4