

April 30, 2013

Mr. Sean Spain
Empire Generating Co, LLC
P.O. Box 350
Rensselaer, New York 12144

Reevaluation of Decommissioning Study

Dear Mr. Spain:

Lummus Consultants International, Inc. ("Lummus Consultants") is pleased to provide this letter report to support Empire Generating Co, LLC ("Empire" or "Project") requirement to have the decommissioning study reevaluated every two years pursuant to Condition XIV of Empire's Article X Certificate issued by the New York Board on Electric Generation Siting and the Environment ("Siting Board") dated September 24, 2004. Condition XIV specifies:

At the time commercial operation begins, the amount of the financial security shall be increased to \$7,000,000. Thereafter the fund shall be increased every two years, as necessary, to reflect inflation of labor and all other relevant decommissioning costs, and reexamination of costs by an experienced demolition expert.

Lummus Consultants conducted a reevaluation of the existing decommissioning study that was approved by the Siting Board as part of Empire's Article X Certificate. The study was provided as part of the Pre-filed Direct Testimony of John H. Shafer, Exhibit 2. The study included the buildup of demolition costs of the buildings including turbine and heat recovery steam generator, sub-surface concrete, slabs and mechanical equipment pads, landscaping and roads, dumping fees, hauling, removal and backfill of utility lines. The demolition costs were estimated to be \$6,254,889.

Pursuant to the Article X Certificate, Empire provided a financial security of \$4.05 million prior to concrete pour, which was increased to \$6.250 million prior to commencing the steel erection. To account for contingency and inflation, the financial security was increased to \$7 million at the commercial operation date ("COD"), August 31, 2010.

As part of our review, we conducted a site visit on February 20-21, 2013. This allowed us to determine if the decommissioning study method and approach was reasonable. Our review found the study adequately captured the dismantling of the equipment and structures at the Empire facility. We do note that we found the cost estimate on the high side as we have seen benchmark studies for 60 year old coal plants with asbestos with decommissioned cost estimates as low as \$6 million. However, Lummus Consultants did not generate a new decommissioning study for Empire; we reviewed the study only for significant material changes.

Demolition is labor intensive and therefore we address the inflation of labor on the \$7 million from the COD of August 31, 2010. Based on the RS Means Labor Rates for the Construction Industry, the skilled trade average total hourly wage rate for Albany, NY from September 1, 2010 through March 2013 has increased by 12.12%. Therefore we escalated the \$7 million by 12.12% for an increase of \$848,628.

It is our experience with decommissioning power plants that components and equipment that cannot be resold can be salvaged and sold as scrap metal. It is our understanding that because the salvage value of

the metals removed from the decommissioned plant was thought to be uncertain at the time, salvage value was not taken into account in the initial decommissioning study that produced Condition XIV(a) of the Article X Certificate. Ten years later, the industry has much more experience with power plant decommissioning estimates as a result of the retirement of numerous coal-fired power plants. Thus, salvage costs appropriately can factor into decommissioning costs today. Lummus Consultants did an extensive evaluation of the salvage value of scrap metal, which should be used to offset the demolition cost. We note that our sister company, CB&I Environmental and Infrastructure is currently involved in the decommissioning of two coal-fired plants, and excluding the cost of asbestos removal, the salvage value of scrap metal essentially offsets the cost of the demolition. Because there is no asbestos abatement at Empire, we would expect the salvage value to be enough to offset the demolition costs.

During our site visit, we conducted a conference call with the Engineering, Procurement, and Construction (“EPC”) contractor, CH2M HILL’s Project Manager, John Wanalista, about getting all the shipping weights for everything that came to the site in order to accurately calculate salvage value estimate to be deducted from the demolition estimate for a more accurate cost to decommission the facility.

We received the shipping documents (truck delivery tickets) for the following:

- Buildings structural steel (columns, floor joists, roof members, interstitial levels, catwalks, etc.)
- Floor bar grating
- Building wall sheathing and roof deck steel
- Internal & External Piping & Related Valves
- Piping supports/stands steel
- All Equipment (turbine/generator, boilers, condensers, boiler feed pumps, fans, motors, air compressors, etc.)
- Tanks/vessels
- Steel plate – tanks, stacks fabricated on site
- MCCs, Circuit Breakers, Switchgear
- Transformers
- Electrical Conduit/Cable Tray
- Wire & Cable
- Traveling OH Cranes
- Ready Mixed Concrete
- Asphalt
- Facility Equipment – forklifts, tools, etc.

Based on the weights for all equipment and steel delivered to Empire and current metal prices for mill grade material delivered to a Philadelphia, PA mill, we estimate the salvage value and the resale value of the trucks and forklifts at \$7,444,747. The build-up to total salvage and equipment resale value estimate is provided in Attachment I. While we note that the demolition cost of \$7 million in 2010 is high with enough margin to account for hauling the scrap steel by rail to a Philadelphia mill, we conservatively reduced the salvage value by \$600,000 to account for hauling expense.

We recognize that scrap metal prices are volatile and the revenue from salvaged metal can vary. We looked at scrap metal price indices for the last five years and observed price swings of plus or minus 50%, depending on the metal. We find the last five years a good representation of the swings that can occur over time driven by demand, economic conditions and global influences. The last five years captures the global recession and should be a good indicator of the bottoming of prices. Thus, depending on the

timing of decommissioning, one could expect that the salvage value of the Empire facility track a similar trend in price swings with a low of \$3.7 million to a high of \$11.1 million.

We conservatively did not account for the potential resale value of the GE 7FA.3 combustion turbines (“CTs”) that are installed at Empire. We conducted a market assessment of GE 7FAs, a new CT is approximately \$35 million. The market for used 7FA is not robust as the CTs are a highly desirable engine and are in use at power plants. Based on other technologies we were able to estimate the current value of the CTs at Empire to be in the range of \$15 to \$20 million per unit for a total of \$30 to \$40 million.

Based on our review of the decommissioning cost study approved by the Siting Board we find the inflation of labor has increased by \$848,628 and the salvage value that was not captured previously is \$7,444,747, which should be used to offset the demolition costs. While we believe the estimated demolition costs is sufficient to capture the costs of hauling the scrap steel to the mill, we conservatively included the hauling costs as shown in the table below. As noted above, the cost of scrap metal varies, represented below is the salvage value based on the high and low price swings over the last five years.

Table 1 Empire Decommissioning Costs

		COD	March 2013	5-Year Low	5-Year High
Demolition Costs	\$6,250,000	\$7,000,000	\$7,848,628	\$7,848,628	\$7,848,628
Salvage Value	-	-	\$7,444,747	\$3,722,373	\$11,167,120
Hauling Costs			\$600,000	\$600,000	\$600,000
Total Decommissioning Cost (cost)/revenue	(\$6,250,000)	(\$7,000,000)	(\$1,003,881)	(\$4,726,255)	\$2,718,492

If you have any questions, please contact Mary Sheridan at (617) 589-2005.

Very truly yours,

Lummus Consultants International, Inc.



Mary Sheridan
Executive Consultant

Mr. Sean Spain
Empire Generating Co, LLC

Attachment I

Attachment I

Total Salvage and Equipment Resale Value

**Empire Generating Plant
Rensselaer, NY**

Description	QTY		Weight/Unit		Facility Total Weight (lbs)	Ferrous Total Weight (lbs)	Stainless Total Weight (lbs)	CU Total Weight (lbs)	AL Total Weight (lbs)	Alloy Total Weight (lbs)
Concrete	30,129	cu yds	4,050	lbs/CY	122,022,450					
Rebar	3,032	tons	2,000	lbs/ton	6,064,000	3,032,000				
Structural Steel	2,011	tons	2,000	lbs/ton	4,022,000	4,022,000				
Piping - Alloy (Avg. Size: Schedule 80, 20")	6,418	ft	208	lbs/ft	1,334,944					1,334,944
Piping - CS (Avg. Size: Schedule 80, 4")	48,554	ft	16.4	lbs/ft	796,286	796,286				
Piping - SS (Avg. Size: Schedule 40, 4")	18,538	ft	10.79	lbs/ft	200,025		200,025			
Wire and Cable (Copper) Avg. Size #6	796,822	ft	0.28	lbs/ft	223,110			223,110		
Cable Tray - AL (Avg. Size: 30" W x 6" D)	16,657	ft	3.5	lbs/ft	58,300				58,300	
Conduit (RGS) Avg. Size 2"	11,560	ft	3.5	lbs/ft	40,460	40,460				
Insulation (CalSil)	13,302	cu ft	22.0	lbs/ft ³	292,644					
GTG Iso-Phase Bus Duct - AL	336	ft (total)	128	lbs/ft	43,008				43,008	
STG Iso-Phase Bus Duct - AL	83	ft	165	lbs/ft	13,695				13,695	
Gas Turbine Generator (GTG) & Equipment	2	ea	2,637,219	lbs	5,274,438	5,139,870		134,568		
Steam Turbine Generator (STG) & Equipment	1	ea	2,115,059	lbs	2,115,059	2,080,139		34,920		
Heat Recovery Steam Generator (HRSG)	2	ea	5,200,000	lbs	10,400,000	10,400,000				
Exhaust Stack	2	ea	527,000	lbs	1,054,000	1,054,000				
Condenser	1	ea	673,000	lbs	673,000	673,000	26,784			
Boiler Feed Pumps	4	ea	41,167	lbs	164,668	164,668				
Circulating Water Pump	2	ea	38,915	lbs	77,830	77,830				
Air Compressor Skid	1	ea	27,396	lbs	27,396	27,396				
Emergency Diesel Generator	1	ea	21,163	lbs	21,163	21,163				
Power Distribution Center #1 Enclosure Only	1	ea	107,000	lbs	107,000	107,000				
Power Distribution Center #2 Enclosure Only	1	ea	86,500	lbs	86,500	86,500				
Power Distribution Center #3 Enclosure Only	1	ea	65,500	lbs	65,500	65,500				
Power Distribution Center #4 Enclosure Only	1	ea	127,400	lbs	127,400	127,400				
Power Distribution Center #5 Enclosure Only	1	ea	24,500	lbs	24,500	24,500				
GT Generator Circuit Breaker	2	ea	7,700	lbs	15,400	15,400				
ST Generator Circuit Breaker	1	ea	8,404	lbs	8,404	8,404				
GT Generator Stepup Transformer (w/o Oil)	2	ea	402,500	lbs	805,000	789,340		15,660		
ST Generator Stepup Transformer (w/o Oil)	1	ea	511,100	lbs	511,100	500,648		10,452		
Large Auxiliary Transformer (w/o Oil)	2	ea	46,153	lbs	92,306	90,460		1,846		
Small Auxiliary Transformer (w/o Oil)	2	ea	34,261	lbs	68,522	67,174		1,348		
Station Service Transformer (w/o Oil)	6	ea	14,293	lbs	85,758	84,120		1,638		
Fuel Oil Tank (empty)	1	ea	732,500	lbs	732,500	732,500				

**Empire Generating Plant
Rensselaer, NY**

Description	QTY		Weight/Unit		Facility Total Weight (lbs)	Ferrous Total Weight (lbs)	Stainless Total Weight (lbs)	CU Total Weight (lbs)	AL Total Weight (lbs)	Alloy Total Weight (lbs)
Service Water/Fire Water Tank (empty)	1	ea	118,000	lbs	118,000	118,000				
Demineralized Water Tank (empty)	1	ea	11,800	lbs	11,800	11,800				
Condensate Tank (empty)	1	ea	42,389	lbs	42,389	42,389				
Chlorine Contact Tank	1	ea	120,875	lbs	120,875	120,875				
Aqueous Ammonia Tank	1	ea	33,039	lbs	33,039	33,039				
Fuel Gas Drains Tank	2	ea	1,250	lbs	2,500	2,500				
Closed Cooling Water Expansion Tank	1	ea	1,000	lbs	1,000	1,000				
HRSB Blowdown Tanks	2	ea	4,379	lbs	8,758	8,758				
Water Treatment Equipment	1	ea	15,000	lbs	15,000	15,000				
Cooling Tower	1	ea	2,475,020	lbs	2,475,020	2,475,020				
Closed Cooling Water Pump	2	ea	9,420	lbs	18,840	18,840				
Closed Cooling Water Heat Exchanger	2	ea	18,090	lbs	36,180	36,180				
STG Crane	1	ea	132,400	lbs	132,400	132,400				
CTG Crane	1	ea	72,650	lbs	72,650	72,650				
CEMS Enclosure	2	ea	8,100	lbs	16,200	16,200				
			TOTAL WEIGHTS:		160,753,016	33,332,409	226,809	423,542	115,003	1,334,944
TOTAL FERROUS WEIGHT: 33,332,409 LBS = 16,666 Regular Tons; 14,880 Gross Tons X \$360.00/GT =						\$ 5,356,800.00				
TOTAL ALLOY WEIGHT: 1,334,944 LBS = 667 Regular Tons; 596 Gross Tons X 360.00/GT =						\$ 214,560.00				
TOTAL STAINLESS STEEL WEIGHT: 226,809 LBS = 113 Regular Tons; 101 Gross Tons						\$ 288,047.43				
TOTAL COPPER WEIGHT: 423,542 LBS = 212 Regular Tons; 189 Gross Tons						\$ 1,427,336.54				
TOTAL ALUMINUM WEIGHT: 115,003 LBS = 57 Regular Tons; 51 Gross Tons						\$ 115,003.00				
			TOTAL SALVAGE VALUE:			\$ 7,401,746.97				
ASSUMPTIONS/CLARIFICATIONS:										
1. Above metal prices are March, 2013 prices for mill grade material (sized) delivered to a Philadelphia, PA mill.										
2. Alloy salvage price is assumed to be the same as ferrous since the element different from carbon is not known.										
3. All ferrous and alloy tons for pricing are gross tons (2240 LBS/GT); All other non-ferrous weights for pricing are LBS.										
4. Total rebar weight reduced by 50% to account for rebar remaining with subsurface foundations (not demolished)										

**Empire Generating Plant
Rensselaer, NY**

Description	QTY	Weight/Unit	Facility Total Weight (lbs)	Ferrous Total Weight (lbs)	Stainless Total Weight (lbs)	CU Total Weight (lbs)	AL Total Weight (lbs)	Alloy Total Weight (lbs)
ESTIMATED MOBILE EQUIPMENT RESALE VALUES:								
1. Pickup Truck (9,400 LBS)	\$5,000.00							
2. Forklift (10,820 LBS)	\$8,000.00							
3. Lull Forklift (32,000 LBS)	\$15,000.00							
4. Aerial Lift (26,800 LBS)	\$10,000.00							
5. Scissor Lift (5,150 LBS)	\$5,000.00							
TOTAL EQUIPMENT RESALE VALUE:	\$43,000.00							
TOTAL SALVAGE AND EQUIPMENT RESALE VALUE:		\$7,444,746.97						