DOCKETED

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Jackson, Cenne@Energy

From: Jackson, Cenne@Energy
Sent: Friday, August 14, 2015 2:07 PM
To: Jackson, Cenne@Energy
Subject: FW: RBEP - Noise information request
Attachments: SiteLayout.kmz; ModelData.xlsx

From: Cindy.Salazar@CH2M.com [mailto:Cindy.Salazar@CH2M.com]
Sent: Wednesday, July 29, 2015 12:39 PM
To: Khoshmashrab, Shahab@Energy
Cc: stephen.okane@aes.com; Jerry.Salamy@CH2M.com; Mark.Bastasch@CH2M.com
Subject: RBEP - Noise information request

Hi Shahab,

Per our conversation, please see attached information. I have attached a Google Earth KMZ file of the site plan and also the noise modeling data spreadsheet.

Please let us know if you have any questions.

Thanks,
Cindy

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Name	M.	ID	Result. PWL Day (dBA)	Evening (dBA)	Night (dBA)	Lw / Li Type	Value	norm.	Correction Day dB(A)	Evening dB(A)	Night dB(A)	Sound Reduction R	Area (m²)	Attenuatio	Operating Time Day (min)	Special (min)	Night (min)	K0 (dB)	Freq. (Hz)	Direct.	Height (m)		Coordinates X (m)	Y (m)	Z (m)
Stack		Stack	116.6	116.6	116.6	Lw	StkExitR1-4		0	0	0								0	Air Exhaust	40	r	371091.5	3746529	44.36
Stack		Stack	116.6	116.6	116.6	Lw	StkExitR1-4		0	0	0								0	Air Exhaust	40	r	371055.7	3746524	44.33
Stack		Stack	116.6	116.6	116.6	Lw	StkExitR1-4		0	0	0								0	Air Exhaust	40	r	371126.3	3746534	44.47
StackCasing		StackBO	63.1	63.1	63.1	Lw	Stack_BO		0	0	0								0	(none)	20	r	371056.1	3746524	24.37
StackCasing		StackBO	63.1	63.1	63.1	Lw	Stack_BO		0	0	0								0	(none)	20	r	371091.9	3746529	24.38
StackCasing		StackBO	63.1	63.1	63.1	Lw	Stack_BO		0	0	0								0	(none)	20	r	371126.7	3746534	24.46
GT Transformer		GTTrans	98.3	98.3	98.3	Lw	GT_Trans		0	0	0								0	(none)	7	r	371056.5	3746435	11.27
GT Transformer		GTTrans	98.3	98.3	98.3	Lw	GT_Trans		0	0	0								0	(none)	7	r	371093.3	3746439	11.27
GT Transformer		GTTrans	98.3	98.3	98.3	Lw	GT_Trans		0	0	0								0	(none)	7	r	371128	3746444	11.27
Aux Transformer		AuxTrans	94.7	94.7	94.7	Lw	AuxTrans		0	0	0								0	(none)	4	r	371061.3	3746445	8.27
Aux Transformer		AuxTrans	94.7	94.7	94.7	Lw	AuxTrans		0	0	0								0	(none)	4	r	371060.7	3746449	8.27
Aux Transformer		AuxTrans	94.7	94.7	94.7	Lw	AuxTrans		0	0	0								0	(none)	4	r	371097.4	3746453	8.27
Aux Transformer		AuxTrans	94.7	94.7	94.7	Lw	AuxTrans		0	0	0								0	(none)	4	r	371096.6	3746458	8.36
Aux Transformer		AuxTrans	94.7	94.7	94.7	Lw	AuxTrans		0	0	0								0	(none)	4	r	371132.6	3746458	8.29
Aux Transformer		AuxTrans	94.7	94.7	94.7	Lw	AuxTrans		0	0	0								0	(none)	4	r	371131.9	3746463	8.36
Aux Transformer		AuxTrans	94.7	94.7	94.7	Lw	AuxTrans		0	0	0								0	(none)	4	r	371103.8	3746550	8.27
STG Trans		STGTrans	101.3	101.3	101.3	Lw	ST_Trans		0	0	0								0	(none)	8	r	371097.3	3746549	12.27
FinFan		FinFan	100.2	100.2	100.2	Lw	FinF		0	0	0								0	(none)	5	r	371080.8	3746570	9.27
FinFan		FinFan	100.2	100.2	100.2	Lw	FinF		0	0	0								0	(none)	5	r	371081.5	3746565	9.27
FinFan		FinFan	100.2	100.2	100.2	Lw	FinF		0	0	0								0	(none)	5	r	371082.5	3746560	9.27
FinFan		FinFan	100.2	100.2	100.2	Lw	FinF		0	0	0								0	(none)	5	r	371089	3746571	9.27
FinFan		FinFan	100.2	100.2	100.2	Lw	FinF		0	0	0								0	(none)	5	r	371089.7	3746566	9.27
FinFan		FinFan	100.2	100.2	100.2	Lw	FinF		0	0	0								0	(none)	5	r	371090.5	3746561	9.27
FinFan		FinFan	100.2	100.2	100.2	Lw	FinF		0	0	0								0	(none)	5	r	371097.8	3746572	9.27
FinFan		FinFan	100.2	100.2	100.2	Lw	FinF		0	0	0								0	(none)	5	r	371098.6	3746567	9.27
FinFan		FinFan	100.2	100.2	100.2	Lw	FinF		0	0	0								0	(none)	5	r	371099.2	3746563	9.27

Name	M.	ID	Result. PWL			Result. PWL'			Lw / Li			Correction			Sound Reduction		Attenuatio	Operating Time			K0	Freq.	Direct.	Moving Pt. Src			
			Day (dBA)	Evening (dBA)	Night (dBA)	Day (dBA)	Evening (dBA)	Night (dBA)	Type	Value	norm. dB(A)	Day dB(A)	Evening dB(A)	Night dB(A)	R	Area (m²)		Day (min)	Special (min)	Night (min)	(dB)	(Hz)		Number Day	Evening	Night	Speed (km/h)
Pipe Rack		PipeRack	60.5	60.5	60.5	46.6	46.6	46.6	Lw	PipeRack-5		0	0	0			STC45				0	(none)				
Pipe Rack		PipeRack	60.5	60.5	60.5	46.7	46.7	46.7	Lw	PipeRack-5		0	0	0			STC45				0	(none)				
Pipe Rack		PipeRack	60.5	60.5	60.5	46.6	46.6	46.6	Lw	PipeRack-5		0	0	0			STC45				0	(none)				
ACC Main Duct		ACCDuct	60.2	60.2	60.2	42.6	42.6	42.6	Lw'	ACCDuct		0	0	0			STC45				0	(none)				

Name	M.	ID	Result. PWL			Result. PWL''			Lw / Li			Correction			Sound Reduction		Attenuatio	Operating Time		K0	Freq.	Direct.	Moving Pt. Src		
			Day (dBA)	Evening (dBA)	Night (dBA)	Day (dBA)	Evening (dBA)	Night (dBA)	Type	Value	norm. dB(A)	Day dB(A)	Evening dB(A)	Night dB(A)	R	Area (m²)		Day (min)	Special (min)	Night (min)	(dB)	(Hz)		Number Day	Evening	Night
HRSG Building		HRSGB	70.9	70.9	70.9	35.7	35.7	35.7	Li	HRSGB		0	0	0	STC45	3305.96					0	(none)			
CTGBuilding		CTGB	83.1	83.1	83.1	47.7	47.7	47.7	Li	CTGB		0	0	0	STC45	3453.92					0	(none)			
STGBuilding		STGB	74.8	74.8	74.8	48.5	48.5	48.5	Li	STGB		0	0	0	STC45	420.68					0	(none)			
GCBuilding		GCB	84.6	84.6	84.6	56.3	56.3	56.3	Li	GCB		0	0	0	STC45	673.06					0	(none)			
Fuel Gas Conditioning		FuelSkid	99	99	99	75.8	75.8	75.8	PWL-Pt	FGC		0	0	0							0	(none)	5	5	5
ACCFan_Inlet		ACCInlet	100.1	100.1	100.1	65.3	65.3	65.3	Lw	ACCFan		0	0	0							0	(none)			
ACCFan_Outlet		ACCOutlet	97.1	97.1	97.1	62.6	62.6	62.6	Lw	ACCFan-3		0	0	0							0	(none)			

Name	M.	ID	Result. PWL			Result. PWL''			Lw / Li			Correction			Sound Reduction			Attenuatio	Operating Time			K0	Freq.	Direct.
			Day (dBA)	Evening (dBA)	Night (dBA)	Day (dBA)	Evening (dBA)	Night (dBA)	Type	Value	norm. dB(A)	Day dB(A)	Evening dB(A)	Night dB(A)	R	Area (m²)			Day (min)	Special (min)	Night (min)	(dB)	(Hz)	
CTGBuilding		CTGB	80.5	80.5	80.5	47.7	47.7	47.7	Li	CTGB		0	0	0	STC45	1897.41							3	(none)
CTGBuilding		CTGB	75.7	75.7	75.7	47.7	47.7	47.7	Li	CTGB		0	0	0	STC45	628.1							3	(none)
CTGBuilding		CTGBOpenWall	98.9	98.9	98.9	71	71	71	Li	CTGB-10		0	0	0		0	614.41						3	Opening (ÖAL28)
HRSG Building		HRSGB	64.9	64.9	64.9	35.7	35.7	35.7	Li	HRSGB		0	0	0	STC45	825.93							3	(none)
HRSG Building		HRSGB	69.9	69.9	69.9	35.7	35.7	35.7	Li	HRSGB		0	0	0	STC45	2648.65							3	(none)
HRSG Building		HRSGB	64.8	64.8	64.8	35.7	35.7	35.7	Li	HRSGB		0	0	0	STC45	817.3							3	(none)
HRSG Building		HRSGB	64.3	64.3	64.3	35.7	35.7	35.7	Li	HRSGB		0	0	0	STC45	721.38							3	(none)
STGBuilding		STGB	72.4	72.4	72.4	48.5	48.5	48.5	Li	STGB		0	0	0	STC45	242.57							3	(none)
STGBuilding		STGB	72.7	72.7	72.7	48.5	48.5	48.5	Li	STGB		0	0	0	STC45	259.59							3	(none)
STGBuilding		STGB	72.5	72.5	72.5	48.5	48.5	48.5	Li	STGB		0	0	0	STC45	247.99							3	(none)
STGBuilding		STGB	72.7	72.7	72.7	48.5	48.5	48.5	Li	STGB		0	0	0	STC45	261							3	(none)
GCBuilding		GCB	80.9	80.9	80.9	56.3	56.3	56.3	Li	GCB		0	0	0	STC45	288.31							3	(none)
GCBuilding		GCB	77.6	77.6	77.6	56.3	56.3	56.3	Li	GCB		0	0	0	STC45	136.53							3	(none)
GCBuilding		GCB	80.9	80.9	80.9	56.3	56.3	56.3	Li	GCB		0	0	0	STC45	289.52							3	(none)
GCBuilding		GCB	77.6	77.6	77.6	56.3	56.3	56.3	Li	GCB		0	0	0	STC45	137.04							3	(none)
CTGAirInlet		CTGAirInlet	105.6	105.6	105.6	85.1	85.1	85.1	Lw	AES2		0	0	0									3	Air Inlet

Name	M.	ID	Absorption left	Absorption right	Z-Ext. (m)	Cantilever horz. (m)	Cantilever vert. (m)	Height Begin (m)		Height End (m)	
ACCWindWall		ACCSkin	0.21	0.37	13.1			25.3	r		
WylandWall		WyWall	Conc	IAC_C38				27.1	r		
TransWall		TransWall	0.21	0.21				9.1	r		
TransWall		TransWall	0.21	0.21				9.1	r		
TransWall		TransWall	0.21	0.21				9.1	r		
TransWall		TransWall	0.21	0.6				9.1	r		
FinFanWall		FFWall	0.21	0.21				9.1	r		
EastPL_2		EastPL_2	Conc	Conc				9.1	r	9.1	r
CTGAirInlet		CTGAirInlet	Conc	Conc				9.7	r		

Name	M.	ID	RB	Residents	Absorption	Height Begin (m)	
CTGBuilding		CTGB		0		18.4	r
HRSG Building		HRSGB		0		25.5	r
STGBuilding		STGB		0		12.2	r
GCBuilding		GCB		0		7.6	r
Warehouse		Warehouse		0	0.37	5.8	r
Bldg1		Bldg1		0	Conc	9.1	r
Bldg1		Bldg1		0	Conc	5	r
Bldg1		Bldg1		0	Conc	5	r

Name	M.	ID	Absorption	Center		Radius	Height	
				x	y			
				(m)	(m)	(m)	(m)	
				371056	3746524	3.2	40	r
				371092	3746529	3.2	40	r
				371126	3746534	3.2	40	r

Name	ID	Type	Oktave Spectrum (dB)										Source	
			Weight.	31.5	63	125	250	500	1000	2000	4000	8000	A	lin	
Gas Compressor Building	GCB	Li		100	100	100	100	100	100	92	92	92	103	108	
Steam Turbine Building	STGB	Li		100	95	90	90	90	90	90	90	90	97	103	
CTG_Building	CTGB	Li		99	96	89	84	82	82	80	78	69	87	101	
HRSG Building	HRSGB	Li		89	82	79	70	73	73	73	71	64	79	91	
Stack w 90 directivity	Stack_90	Li		111	107	93	76	71	68	65	58	52	83	113	
Stack breakout	Stack_BO	Li		92	88	71	49	41	36	35	30	26	63	94	
HRSG Main Body	HRSG	Li		114	111	110	103	93	91	96	98	78	103	117	
HRSG Transition	HRSGTrans	Li		116	106	95	82	66	59	59	61	38	84	116	
GT Generator	AES1	Li		118	118	113	105	108	100	97	91	78	107	122	
GT Inlet Filter	AES2	Li		106	106	109	99	98	101	100	97	88	106	113	
GT Inlet Air Duct-I	AES3	Li		96	96	99	89	88	91	90	87	78	96	103	
GT Inlet Air Duct (Silencer)	AES4	Li		104	104	107	97	96	99	98	95	86	104	111	
GT Inlet Air Duct-II	AES5	Li		103	103	106	96	95	98	97	94	85	103	110	
Gas Turbine Enclosure	AES6	Li		121	121	110	108	105	108	105	103	94	112	124	
GT Exhaust Expansion Joint	AES7	Li		93	93	91	91	88	92	92	92	86	98	101	
GT Exhaust Duct	AES8	Li		101	101	99	100	94	94	94	92	81	100	107	
GT Ventilation Fan	AES9	Li		93	93	89	86	85	81	81	78	69	88	98	
GT Cooler	AES10	Li		109	109	107	102	99	96	88	84	80	101	113	
GT Lube Oil	AES11	Li		105	105	110	110	106	105	99	89	77	109	115	
GT Fuel Gas	AES12	Li		115	115	104	102	99	102	99	97	88	106	118	
GT Transformer	GT_Trans	Li		95	101	103	98	98	91	88	83	71	98	107	
STG Transformer	ST_Trans	Li		98	104	106	101	101	94	91	86	74	101	110	
Fin Fan Cooler per Fan	FinF	Li		106	106	105	102	97	95	89	83	77	100	112	
Aux Transformer	AuxTrans	Li		95	95	95	97	95	87	80	73	66	95	103	
PipeRack_100m	PipeRack	Li		96	100	102	102	107	103	96	95	93	108	111	
ACC Main Duct	ACCDuct	Li		80	80	80	80	80	80	80	80	80	87	90	
Fuel Gas Conditioning Skid	FGC	Li		85	85	85	85	85	85	85	85	85	92	95	
ACC FanInlet	ACCFan	Lw		106	103	103	99	97	95	92	85	78	100	110	
Stack Rev1	StkExitR1	Lw		128	113	97	94	90	103	113	118	110	121	129	

Name	ID	Oktave Spectrum (dB)										Source
		31.5	63	125	250	500	1000	2000	4000	8000	Rw	
8" wall system	STC45	17	18	26	38	42	49	52	54	56	46	
Stack Exit Directivity Adj - 90 degree	Dir90	2	3	4	6	8	11	13	15	17	11	

Name	ID	Oktave Spectrum (dB)									Source
		31.5	63	125	250	500	1000	2000	4000	8000	Aw
Concrete	Conc	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.05
IAC C38	IAC_C38	0.15	0.34	0.68	0.95	0.95	0.95	0.9	0.81	0.75	0.95
steel	Steel	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0
InsideBldg	InBldg	0.02	0.05	0.1	0.2	0.03	0.35	0.4	0.4	0.4	0.1

Directivity

Name: Air Exhaust normalized

	31.5	63	125	250	500	1000	2000	4000	8000
0°	8.0	8.0	8.0	8.0	9.0	9.0	10.0	10.0	10.0
15°	7.0	7.0	7.0	7.3	8.0	8.0	9.0	9.0	9.0
30°	6.0	6.0	6.0	6.7	7.0	7.0	8.0	8.0	8.0
45°	5.0	5.0	5.0	6.0	6.0	6.0	7.0	7.0	7.0
60°	2.0	2.0	2.0	2.0	2.0	1.0	0.0	-1.0	-2.0
75°	0.0	-0.5	-1.0	-2.0	-3.0	-4.5	-6.0	-7.5	-9.0
90°	-2.0	-3.0	-4.0	-6.0	-8.0	-10.0	-12.0	-14.0	-16.0
105°	-2.3	-3.3	-4.7	-6.7	-8.7	-11.0	-13.3	-15.3	-17.3
120°	-2.7	-3.7	-5.3	-7.3	-9.3	-12.0	-14.7	-16.7	-18.7
135°	-3.0	-4.0	-6.0	-8.0	-10.0	-13.0	-16.0	-18.0	-20.0
150°	-3.0	-4.0	-6.0	-8.0	-10.0	-13.0	-16.0	-18.0	-20.0
165°	-3.0	-4.0	-6.0	-8.0	-10.0	-13.0	-16.0	-18.0	-20.0
180°	-3.0	-4.0	-6.0	-8.0	-10.0	-13.0	-16.0	-18.0	-20.0

Directivity

Name: Air Inlet normalized

	31.5	63	125	250	500	1000	2000	4000	8000
0°	8.0	8.0	8.0	8.0	9.0	9.0	10.0	10.0	10.0
15°	7.0	7.0	7.0	7.3	8.0	8.0	9.0	9.0	9.0
30°	6.0	6.0	6.0	6.7	7.0	7.0	8.0	8.0	8.0
45°	5.0	5.0	5.0	6.0	6.0	6.0	7.0	7.0	7.0
60°	2.0	2.0	2.0	2.0	2.0	1.0	0.0	-1.0	-1.0
75°	-1.5	-2.0	-2.5	-3.5	-4.5	-6.0	-7.5	-9.0	-10.0
90°	-5.0	-6.0	-7.0	-9.0	-11.0	-13.0	-15.0	-17.0	-19.0
105°	-5.3	-6.3	-7.7	-9.7	-11.7	-14.0	-16.3	-18.3	-20.3
120°	-5.7	-6.7	-8.3	-10.3	-12.3	-15.0	-17.7	-19.7	-21.7
135°	-6.0	-7.0	-9.0	-11.0	-13.0	-16.0	-19.0	-21.0	-23.0
150°	-6.0	-7.0	-9.0	-11.0	-13.0	-16.0	-19.0	-21.0	-23.0
165°	-6.0	-7.0	-9.0	-11.0	-13.0	-16.0	-19.0	-21.0	-23.0
180°	-6.0	-7.0	-9.0	-11.0	-13.0	-16.0	-19.0	-21.0	-23.0