Pico Power Project

Appendix 8.7-A
Noise Modeling Parameters

October 2002

Pico Power Project
Noise Sources

Horizontal Area Sources (roofs)

Name	ID	Result. PWL Day (dBA)	Result. PWL Night (dBA)	Result. PWL" Day (dBA)	Result. PWL" Night (dBA)	PWL / SPLi Type	PWL / SPLi Value	norm. dB(A)	Correction Day dB(A)	Correction Night dB(A)	Sound Reduction R	Sound Reduction Area (m²)	Attenuatio	Operating Time Day (min)	Operating Time Special (min)	Operating Time Night (min)	K0 (dB)	Freq. (Hz)
CTG 1R	CTG 1	99.5	99.5	80.9	80.9	Lw"	CTG		0	0								0
CTG 2R	CTG 1	99.5	99.5	80.9	80.9	Lw"	CTG		0	0								0
DUCT 1R	CENT	94.2	94.2	76.1	76.1	Lw"	DUCT		0	0								0
DUCT 2R	CENT	94.2	94.2	76.1	76.1	Lw"	DUCT		0	0								0
GAS COMP R	GASCOMP	87.8	87.8	61.8	61.8	Lw"	GASCOMPBLDG		0	0			GASCOMPBLDG					0
HRSG 1R	CENT	94.9	94.9	74.7	74.7	Lw"	HRSG		0	0								0
HRSG 2R	CENT	94.9	94.9	74.7	74.7	Lw"	HRSG		0	0								0
STG-COND R	STGCOND	93.4	93.4	70.3	70.3	Lw"	STGCOND2		0	0								0

Vertical Area Sources (walls)

Name	ID	Result. PWL Day (dBA)	Result. PWL Night (dBA)	Result. PWL" Day (dBA)	Result. PWL" Night (dBA)	PWL / SPLi Type	PWL / SPLi Value	norm. dB(A)	Correction Day dB(A)	Correction Night dB(A)	Sound Reduction R	Sound Reduction Area (m²)	Attenuatio	Operating Time Day (min)
CTG 1E	CTG 1	103.5	103.5	80.9	80.9	Lw"	CTG		0	0				
CTG 1N	CTG 1	97.5	97.5	80.9	80.9	Lw"	CTG		0	0				
CTG 1S	CTG 1	97.5	97.5	80.9	80.9	Lw"	CTG		0	0				
CTG 1W	CTG 1	103.5	103.5	80.9	80.9	Lw"	CTG		0	0				
CTG 2E	CTG 1	103.5	103.5	80.9	80.9	Lw"	CTG		0	0				
CTG 2N	CTG 1	97.5	97.5	80.9	80.9	Lw"	CTG		0	0				
CTG 2S	CTG 1	97.5	97.5	80.9	80.9	Lw"	CTG		0	0				
CTG 2W	CTG 1	103.5	103.5	80.9	80.9	Lw"	CTG		0	0				
DRY INLET 1W	CTG 1	105.5	105.5	83.7	83.7	Lw"	DRYIN		0	0				
DRY INLET 2E	DRYIN	99.7	99.7	77.9	77.9	Lw"	DRYIN		0	0			DRYINATT	
DUCT 1E	CENT	98	98	76.1	76.1	Lw"	DUCT		0	0				
DUCT 1N	CENT	90.8	90.8	76.1	76.1	Lw"	DUCT		0	0				
DUCT 1NE	CENT	94.5	94.5	76.1	76.1	Lw"	DUCT		0	0				
DUCT 1NW	CENT	94.5	94.5	76.1	76.1	Lw"	DUCT		0	0				
DUCT 1W	CENT	98	98	76.1	76.1	Lw"	DUCT		0	0				
DUCT 2E	CENT	98	98	76.1	76.1	Lw"	DUCT		0	0				
DUCT 2N	CENT	90.8	90.8	76.1	76.1	Lw"	DUCT		0	0				
DUCT 2NE	CENT	94.5	94.5	76.1	76.1	Lw"	DUCT		0	0				
DUCT 2NW	CENT	94.5	94.5	76.1	76.1	Lw"	DUCT		0	0				
DUCT 2W	CENT	98	98	76.1	76.1	Lw"	DUCT		0	0				
HRSG 1E	CENT	99.5	99.5	74.7	74.7	Lw"	HRSG		0	0				
HRSG 1S	CENT	95.6	95.6	74.7	74.7	Lw"	HRSG		0	0				
HRSG 1W	CENT	99.5	99.5	74.7	74.7	Lw"	HRSG		0	0				
HRSG 2E	CENT	99.5	99.5	74.7	74.7	Lw"	HRSG		0	0				
HRSG 2S	CENT	95.6	95.6	74.7	74.7	Lw"	HRSG		0	0				
HRSG 2W	CENT	99.5	99.5	74.7	74.7	Lw"	HRSG		0	0				
STG-COND N	STGCOND	87	87	70.3	70.3	Lw"	STGCOND2		0	0				
STG-COND S	STGCOND	87	87	70.3	70.3	Lw"	STGCOND2		0	0				
STG-COND W	STGCOND	90.2	90.2	70.3	70.3	Lw"	STGCOND2		0	0				
WET INLET 1W	CTG 1	105	105	83.4	83.4	Lw"	WETIN		0	0				
WET INLET 2E	CTG 1	105	105	83.4	83.4	Lw"	WETIN		0	0				
WET INLET 3N	CTG 1	104.3	104.3	87.4	87.4	Lw"	WETIN		0	0				
WET INLET 4S	CTG 1	104.3	104.3	87.4	87.4	Lw"	WETIN		0	0				
GAS COMP N	GASCOMP	81.3	81.3	61.8	61.8	Lw"	GASCOMPBLDG		0	0			GASCOMPBLDG	
GAS COMP E	GASCOMP	79.7	79.7	61.8	61.8	Lw"	GASCOMPBLDG		0	0			GASCOMPBLDG	
GAS COMP S	GASCOMP	81.3	81.3	61.8	61.8	Lw"	GASCOMPBLDG		0	0			GASCOMPBLDG	
GAS COMP W	GASCOMP	79.7	79.7	61.8	61.8	Lw"	GASCOMPBLDG		0	0			GASCOMPBLDG	

Point Sources

Name	ID	Result. PWL Day (dBA)	Result. PWL Night (dBA)	PWL / SPLi Type	PWL / SPLi Value	norm. dB(A)	Correction Day dB(A)	Correction Night dB(A)	Sound Reduction R	Sound Reduction Area (m²)	Attenuatio	Operating Time Day (min)	Operating Time Special (min)	Operating Time Night (min)	K0 (dB)	Freq. (Hz)	Direct.	Height (m)	Coordinates X (m)	Coordinates Y (m)	Coordinates Z (m)
BFP 1		103.9	103.9	Lw	BFP		0	0								0	(none)	2 r	346.46	328.49	2
BFP 2		103.9	103.9	Lw	BFP		0	0								0	(none)	2 r	358.26	328.6	2
CIRC PUMP 1		101	101	Lw	CIRCPUMP		0	0								0	(none)	3.05 r	403.91	338.62	3.05
CIRC PUMP 2		101	101	Lw	CIRCPUMP		0	0								0	(none)	3.05 r	403.92	334.58	3.05
CIRC PUMP 3		101	101	Lw	CIRCPUMP		0	0								0	(none)	3.05 r	404.13	331.26	3.05
CONDENS 1		104.1	104.1	Lw	CONDENS		0	0								0	(none)	4.52 r	398.15	324.08	4.52
FAN 1		104.5	104.5	Lw	FAN		0	0								0	(none)	18.75 r	390.75	362.83	18.75
FAN 2		104.5	104.5	Lw	FAN		0	0								0	(none)	18.75 r	390.75	350.12	18.75
FAN 3		104.5	104.5	Lw	FAN		0	0								0	(none)	18.75 r	390.79	337.22	18.75
GAS COMP 1	GASCOMP	112	112	Lw	GASCOMP		0	0								0	(none)	2.5 r	445.98	156.3	2.5
GAS COMP 2	GASCOMP	112	112	Lw	GASCOMP		0	0								0	(none)	2.5 r	452.45	156.34	2.5
STACK 1		100.7	100.7	Lw	STACK		0	0								0	(none)	28.8 r	340.46	315.78	28.8
STACK 2		100.7	100.7	Lw	STACK		0	0								0	(none)	28.8 r	364.22	315.78	28.8
STEAM 1		108.5	108.5	Lw	STEAM		0	0								0	(none)	4.52 r	398.23	312.68	4.52
TRANS 1		98.4	98.4	Lw	TRANS		0	0								0	(none)	3 r	316.07	337.14	3
TRANS 2		98.4	98.4	Lw	TRANS		0	0								0	(none)	3 r	316.07	319.97	3

Pico Power Project
Noise Source Spectra

Name	ID	Sound Power Level Octave Spectrum (dB) 31.5	63	125	250	500	1000	2000	4000	8000	A	lin
Boiler Feed Pump	BFP	97	103	101	100	99	98	97	96	92	103.9	108.6
Circulating Water Pump	CIRCPUMP	88	90	92	93	93	93	98	88	81	101	102.1
Condenser	CONDENS	100	106	105	103	104	98	93	88	84	104.1	111.3
Cooling Fan	FAN	111	109	108	104	101	100	96	90	83	104.5	115.1
Dry Inlet	DRYIN	94	90	88	83	80	79	76	68	61	83.7	96.6
Duct	DUCT	95	90	84	82	72	61	57	47	29	76.1	96.6
Gas Compressor	GASCOMP	113	113	110	105	106	103	106	105	104	112	118.4
Gas Compressor Bldg	GASCOMPBLDG2	87	81	72	61	56	47	44	37	30	60.8	88.1
HRSG	HRSG	82	82	79	80	74	60	52	47	33	74.7	87.2
LM6000	CTG	89	88	84	83	76	73	72	73	63	80.9	93
Stack	STACK	123	118	110	106	96	79	70	65	55	100.7	124.4
Steam Turbine	STEAM	111	117	115	110	106	102	99	91	85	108.5	120.4
Transformer	TRANS	95	101	103	98	98	92	87	82	75	98.4	107
Wet Inlet	WETIN	84	82	81	76	76	77	77	76	75	83.4	89

(Note: Area source power levels are on a per square meter basis.)

Pico Power Project
Obstructions to noise

Sound Walls

Name	M.	Absorption left	Absorption right	Z-Ext. (m)	Height Begin (m)	
BARRIER E	-	0.99	0.99		5.7	r
BARRIER N		0.99	0.99		7.6	r
BARRIER NE1		0.99	0.99		6.1	r
BARRIER NE2		0.99	0.99		6.1	r
BARRIER SE1	-	0.99	0.99		7	r
BARRIER W		0.99	0.99		4.57	r
BARRIER SE2		0.99	0.99		6.6	r
BARRIER COOL E		0.99	0.99		6.7	r
BARRIER N2	-	0.99	0.99		7.6	r

Buildings/Structures

Name	M.	ID	RB	Absorption	Height (m)	
BLDG 1		CTG 1			6.1	r
BLDG 2		CTG 1			12.8	r
BLDG 3		CTG 1			11.89	r
COOL TWR 1		CTG 1			15.85	r
CTG 1		CTG 1			10.45	r
CTG 2		CTG 1			10.45	r
CTRL ROOM		CTG 1			7.6	r
DUCT 1		CENT			13	r
DUCT 2		CENT			13	r
ELEC BLDG 1		CTG 1			4.5	r
ELEC BLDG 2		CTG 1			4.5	r
GAS COMP BLDG		GASCOMP			3.7	r
HRSG 1		CENT			18.3	r
HRSG 2		CENT			18.3	r
STG BLDG	-	STG			4.67	r
STG-COND	-	STGCOND			4.67	r

Cylindrical Structures

Name	M.	ID	Absorption	Center x (m)	Center y (m)	Radius (m)	Height (m)	
STACK 1				340.46	315.77	1.52	28.96	r
STACK 1				364.22	315.77	1.52	28.96	r
FAN 1				390.72	362.8	4.67	3.05	g
FAN 2				390.63	349.99	4.67	3.05	g
FAN 3				390.68	337.23	4.67	3.05	g
WATER TANK 1				452.65	309.87	9.14	9.15	r
DEMIN WATER				438.1	291.46	3.65	9.15	r

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Appendix 8.7

Specific Attenuations

Name	ID	Octave Spectrum (dB)									
		31.5	63	125	250	500	1000	2000	4000	8000	Rw
Dry Inlet E Attenuation	DRYINATT	0	1	2	4	5	7	9	11	13	8
Gas Compressor Building	GASCOMPBLDG	2	8	14	20	26	32	38	44	50	30

Pico Power Project
Modeled Results at Receptor Locations

Sound Source Name	ID	Receptor Locations School	Residence	Apartment
Plant Total		**42.2**	**41**	**45**
BFP 1		11.2	18.1	13
BFP 2		12.1	17.9	18.4
CIRC PUMP 1		6.1	5.2	8.3
CIRC PUMP 2		6.2	7.9	8.2
CIRC PUMP 3		6.1	9.9	8.2
CONDENS 1		17.1	15.2	15.4
FAN 1		32.1	30.6	34.3
FAN 2		32.1	30.5	34.1
FAN 3		32.1	30.3	34
STACK 1		31.1	28.6	32.3
STACK 2		30.4	28.6	32
STEAM 1		19.8	21.9	33.7
TRANS 1		17.5	24.5	29.1
TRANS 2		17.5	24.6	28.9
CTG 1R	CTG 1	27.4	25.2	29.4
CTG 2R	CTG 1	27.1	25.1	29.1
DUCT 1R	CENT	24.3	22	25.8
DUCT 2R	CENT	24	22.1	25.6
GAS COMP R	GASCOMP	16.3	13.9	16.5
HRSG 1R	CENT	24.8	22.4	26.2
HRSG 2R	CENT	24.5	22.4	25.9
CTG 1E	CTG 1	18.4	27.9	21.3
CTG 1N	CTG 1	24.4	21.2	25.4
CTG 1S	CTG 1	22.8	11.5	17.1
CTG 1W	CTG 1	30.5	24	32.1
CTG 2E	CTG 1	16.8	20.1	20.8
CTG 2N	CTG 1	22	17.3	25.2
CTG 2S	CTG 1	20.5	9.4	16.7
CTG 2W	CTG 1	27	25.4	31.8
DRY INLET 1W	CTG 1	33	31.5	35.6
DRY INLET 2E	DRYIN	14.8	19.7	16.1
DUCT 1E	CENT	14.3	25.6	18.7
DUCT 1N	CENT	19.5	13.3	17.7
DUCT 1NE	CENT	11.8	18.4	16.8
DUCT 1NW	CENT	23	18.3	25.4
DUCT 1W	CENT	26.5	21.2	29.5
DUCT 2E	CENT	13.9	18.6	18.4
DUCT 2N	CENT	17.9	13	17.4
DUCT 2NE	CENT	11.2	17.3	16.5
DUCT 2NW	CENT	19.8	18.2	24.7
DUCT 2W	CENT	23	24.5	27.3
HRSG 1E	CENT	16	26.9	18.3
HRSG 1S	CENT	17.5	10.8	16.6
HRSG 1W	CENT	28.3	23.4	31
HRSG 2E	CENT	14.6	21.5	17.9
HRSG 2S	CENT	13.9	10.2	14.9
HRSG 2W	CENT	23.2	26.9	28.8
WET INLET 1W	CTG 1	16.4	20.2	27.3
WET INLET 2E	CTG 1	10.7	10.6	12.5
GAS COMP N	GASCOMP	9.9	7.5	9.7
GAS COMP E	GASCOMP	2.1	-0.7	-1.3
GAS COMP S	GASCOMP	6.6	-0.3	2
GAS COMP W	GASCOMP	8.4	5.9	8.6