

# **APPENDIX 6A**

**Equipment Sound Data Used  
in the Noise Model**

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### APPENDIX 6A EQUIPMENT SOUND DATA USED IN THE NOISE MODEL

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**Table 6A-1 Wellpad**

TAG NO.	Source Name	Quantity	Sound Power Level (dB)								
			Octave Band Centre Frequency (Hz)								
			31.5	63	125	250	500	1000	2000	4000	8000
<b>Pumps</b>											
101-P-101	Group pump	1	80.7	81.7	82.7	84.7	84.7	87.7	84.7	80.7	74.7
101-P-102	Test pump	1	75.5	76.5	77.5	79.5	79.5	82.5	79.5	75.5	69.5
101-P-103	Test pump	1	75.5	76.5	77.5	79.5	79.5	82.5	79.5	75.5	69.5
101-P-101	Group pump - motor	1	82.3	82.3	85.3	87.3	90.3	90.3	89.3	84.3	76.3
101-P-102	Test pump - motor	1	73.4	73.4	76.4	78.4	81.4	81.4	80.4	75.4	67.4
101-P-103	Test pump - motor	1	73.4	73.4	76.4	78.4	81.4	81.4	80.4	75.4	67.4
	Generator exhaust (unmitigated)	1	123.75	123.75	129.75	125.75	119.75	113.75	107.75	97.75	89.75
	Generator casing (indoors)	1	104.0	104	108	108	107	107	106	100	93
NOTE: Sound sources above were modelled at each of the wellpads.											

**Table 6A-2 Pump and Vapour Recovery Unit (VRU)**

TAG NO.	Source Name	Quantity	Sound Power Level (dB)								
			Octave Band Centre Frequency (Hz)								
			31.5	63	125	250	500	1000	2000	4000	8000
<b>Pumps</b>											
3UU-P-101A	Dilbit pump	1	101.7	102.7	103.7	105.7	105.7	108.7	105.7	101.7	95.7
3UU-P-102A	Diluent pump	1	97.7	98.7	99.7	101.7	101.7	104.7	101.7	97.7	91.7
3UU-P-105	Recycle pump	1	76.7	77.7	78.7	80.7	80.7	83.7	80.7	76.7	70.7
3UU-P-106	Exchanger wash recycle pump	1	76.7	77.7	78.7	80.7	80.7	83.7	80.7	76.7	70.7
9UU-P-103	LP flare KO pump	1	63.7	64.7	65.7	67.7	67.7	70.7	67.7	63.7	57.7
9UU-P-104	HP flare KO pump	1	70.7	71.7	72.7	74.7	74.7	77.7	74.7	70.7	64.7
9UU-P-106	VRU liquids pump	1	63.7	64.7	65.7	67.7	67.7	70.7	67.7	63.7	57.7
<b>Motors</b>											
3UU-P-101A	Dilbit Pump	1	89.3	89.3	92.3	94.3	97.3	97.3	96.3	91.3	83.3
3UU-P-102A	Diluent Pump	1	85.4	85.4	88.4	90.4	93.4	93.4	92.4	87.4	79.4
3UU-P-105	Recycle Pump	1	75.6	75.6	78.6	80.6	83.6	83.6	82.6	77.6	69.6
3UU-P-106	Exchanger Wash Recycle Pump	1	75.6	75.6	78.6	80.6	83.6	83.6	82.6	77.6	69.6
9UU-P-103	LP Flare KO Pump	1	83.7	83.7	86.7	88.7	91.7	91.7	90.7	85.7	77.7
9UU-P-104	HP Flare KO Pump	1	96.7	96.7	99.7	101.7	104.7	104.7	103.7	98.7	90.7
9UU-P-106	VRU Liquids Pump	1	70.5	70.5	73.5	75.5	78.5	78.5	77.5	72.5	64.5
<b>VRU Compressor</b>											
9UU-C-101	VRU Compressor	1	96.8	96.8	95.8	93.8	93.8	95.8	99.8	98.8	94.8

**Table 6A-3 Lease Automatic Custody Transfer (LACT)**

TAG NO.	Source Name	Quantity	Sound Power Level (dB)								
			Octave Band Centre Frequency (Hz)								
			31.5	63	125	250	500	1000	2000	4000	8000
<b>Pumps</b>											
3UU-P-104A	Shipping Pump	1	110.7	111.7	112.7	114.7	114.7	117.7	114.7	110.7	104.7
<b>Motors</b>											
3UU-P-104A	Shipping Pump	1	98.3	98.3	101.3	103.3	106.3	106.3	105.3	100.3	92.3

**Table 6A-4 De-oiling Building**

TAG NO.	Source Name	Quantity	Sound Power Level (dB)								
			Octave Band Centre Frequency (Hz)								
			31.5	63	125	250	500	1000	2000	4000	8000
<b>Pumps</b>											
4UU-P-101A	Skim Pump	1	70.7	71.7	72.7	74.7	74.7	77.7	74.7	70.7	64.7
4UU-P-102A	Eductor Supply Pump	1	82.5	83.5	84.5	86.5	86.5	89.5	86.5	82.5	76.5
4UU-P-103A	IGF Froth Pump	1	75.4	76.4	77.4	79.4	79.4	82.4	79.4	75.4	69.4
4UU-P-104A	IGF Discharge Pump	1	98.7	99.7	100.7	102.7	102.7	105.7	102.7	98.7	92.7
4UU-P-112	Slop Tank Pump	1	73.7	74.7	75.7	77.7	77.7	80.7	77.7	73.7	67.7
4UU-P-202A	Eductor Supply Pump	1	82.5	83.5	84.5	86.5	86.5	89.5	86.5	82.5	76.5
4UU-P-203A	IGF Froth Pump	1	75.4	76.4	77.4	79.4	79.4	82.4	79.4	75.4	69.4
4UU-P-204A	IGF Discharge Pump	1	98.7	99.7	100.7	102.7	102.7	105.7	102.7	98.7	92.7
<b>Motors</b>											
4UU-P-101A	Skim Pump	1	65.3	65.3	68.3	70.3	73.3	73.3	72.3	67.3	59.3
4UU-P-102A	Eductor Supply Pump	1	84.1	84.1	87.1	89.1	92.1	92.1	91.1	86.1	78.1
4UU-P-103A	IGF Froth Pump	1	73.4	73.4	76.4	78.4	81.4	81.4	80.4	75.4	67.4
4UU-P-104A	IGF Discharge Pump	1	86.3	86.3	89.3	91.3	94.3	94.3	93.3	88.3	80.3
4UU-P-112	Slop Tank Pump	1	70.5	70.5	73.5	75.5	78.5	78.5	77.5	72.5	64.5
4UU-P-202A	Eductor Supply Pump	1	84.1	84.1	87.1	89.1	92.1	92.1	91.1	86.1	78.1
4UU-P-203A	IGF Froth Pump	1	73.4	73.4	76.4	78.4	81.4	81.4	80.4	75.4	67.4
4UU-P-204A	IGF Discharge Pump	1	86.3	86.3	89.3	91.3	94.3	94.3	93.3	88.3	80.3

**Table 6A-5 Water Treatment Building**

TAG NO.	Source Name	Quantity	Sound Power Level (dB)								
			Octave Band Centre Frequency (Hz)								
			31.5	63	125	250	500	1000	2000	4000	8000
<b>Pumps</b>											
4UU-P-105A/B	HLS Feed Pump	2	99.5	100.5	101.5	103.5	103.5	106.5	103.5	99.5	93.5
4UU-P-106A	Backwash Transfer Pump	1	77.7	78.7	79.7	81.7	81.7	84.7	81.7	77.7	71.7
4UU-P-107A	Slurry Recirc. Pump	1	76.7	77.7	78.7	80.7	80.7	83.7	80.7	76.7	70.7
4UU-P-108A	Backwash Pump	1	65.4	66.4	67.4	69.4	69.4	72.4	69.4	65.4	59.4
4UU-P-109A	WAC Regen Waste Pump	1	73.7	74.7	75.7	77.7	77.7	80.7	77.7	73.7	67.7
4UU-P-110	Centrate Recycle Pump	1	73.7	74.7	75.7	77.7	77.7	80.7	77.7	73.7	67.7
4UU-P-111A/B	HLS Outlet Booster Pump	2	99.5	100.5	101.5	103.5	103.5	106.5	103.5	99.5	93.5
4UU-P-206A	Backwash Transfer Pump	1	77.7	78.7	79.7	81.7	81.7	84.7	81.7	77.7	71.7
4UU-P-207A	Slurry Recirc. Pump	1	76.7	77.7	78.7	80.7	80.7	83.7	80.7	76.7	70.7
5UU-P-105A	Backwash/Dilution Water Pump	1	65.4	66.4	67.4	69.4	69.4	72.4	69.4	65.4	59.4
9UU-P-107	Utility/Makeup Water Pump	1	77.7	78.7	79.7	81.7	81.7	84.7	81.7	77.7	71.7
9UU-P-108	Quench/Flush Water Pump	1	80.7	81.7	82.7	84.7	84.7	87.7	84.7	80.7	74.7
<b>Motors</b>											
4UU-P-105A/B	HLS Feed Pump	2	87.1	87.1	90.1	92.1	95.1	95.1	94.1	89.1	81.1
4UU-P-106A	Backwash Transfer Pump	1	77.2	77.2	80.2	82.2	85.2	85.2	84.2	79.2	71.2
4UU-P-107A	Slurry Recirc. Pump	1	75.6	75.6	78.6	80.6	83.6	83.6	82.6	77.6	69.6
4UU-P-108A	Backwash Pump	1	56.3	56.3	59.3	61.3	64.3	64.3	63.3	58.3	50.3
4UU-P-109A	WAC Regen Waste Pump	1	70.5	70.5	73.5	75.5	78.5	78.5	77.5	72.5	64.5
4UU-P-110	Centrate Recycle Pump	1	70.5	70.5	73.5	75.5	78.5	78.5	77.5	72.5	64.5
4UU-P-111A/B	HLS Outlet Booster Pump	2	87.1	87.1	90.1	92.1	95.1	95.1	94.1	89.1	81.1
4UU-P-206A	Backwash Transfer Pump	1	77.2	77.2	80.2	82.2	85.2	85.2	84.2	79.2	71.2

**Table 6A-5 Water Treatment Building (cont'd)**

TAG NO.	Source Name	Quantity	Sound Power Level (dB)								
			Octave Band Centre Frequency (Hz)								
			31.5	63	125	250	500	1000	2000	4000	8000
<b>Motors (cont'd)</b>											
4UU-P-207A	Slurry Recirc. Pump	1	75.6	75.6	78.6	80.6	83.6	83.6	82.6	77.6	69.6
5UU-P-105A	Backwash/Dilution Water Pump	1	56.3	56.3	59.3	61.3	64.3	64.3	63.3	58.3	50.3
9UU-P-107	Utility/Makeup Water Pump	1	77.2	77.2	80.2	82.2	85.2	85.2	84.2	79.2	71.2
9UU-P-108	Quench/Flush Water Pump	1	70.5	70.5	73.5	75.5	78.5	78.5	77.5	72.5	64.5
<b>Sludge Centrifuge</b>											
4UU-SE-103	Sludge Centrifuge	1	78.6	78.6	81.6	83.6	86.6	86.6	85.6	80.6	72.6
4UU-SE-203	Sludge Centrifuge	1	78.6	78.6	81.6	83.6	86.6	86.6	85.6	80.6	72.6
4UU-SE-106A	WAC Regen Vessel	1	75.6	75.6	78.6	80.6	83.6	83.6	82.6	77.6	69.6
4UU-SE-106B	WAC Regen Vessel	1	75.6	75.6	78.6	80.6	83.6	83.6	82.6	77.6	69.6

**Table 6A-6 Steam Generation Building**

TAG NO.	Source Name	Quantity	Sound Power Level (dB)								
			Octave Band Centre Frequency (Hz)								
			31.5	63	125	250	500	1000	2000	4000	8000
<b>Pumps</b>											
5UU-P-101A/B/C	BFW Booster Pump	3	87.7	88.7	89.7	91.7	91.7	94.7	91.7	87.7	81.7
5UU-P-102A/B/C	BFW Pump	3	112.1	113.1	114.1	116.1	116.1	119.1	116.1	112.1	106.1
<b>Motors</b>											
5UU-P-101A/B/C	BFW Booster Pump	3	89.3	89.3	92.3	94.3	97.3	97.3	96.3	91.3	83.3
5UU-P-102A/B/C	BFW Pump	3	99.7	99.7	102.7	104.7	107.7	107.7	106.7	101.7	93.7
5UU-C-101-07	Steam Gen. Blower	7	89.3	89.3	92.3	94.3	97.3	97.3	96.3	91.3	83.3
Air Makeup Units	Air Makeup Units	2	84.1	84.1	87.1	89.1	92.1	92.1	91.1	86.1	78.1

**Table 6A-7 Blowdown and Evaporation Building**

TAG NO.	Source Name	Quantity	Sound Power Level (dB)								
			Octave Band Centre Frequency (Hz)								
			31.5	63	125	250	500	1000	2000	4000	8000
<b>Pumps</b>											
5UU-P-103A	Evap. Distillate Pump	1	81.5	82.5	83.5	85.5	85.5	88.5	85.5	81.5	75.5
5UU-P-104A	Evaporator Recirc. Pump	1	103.1	104.1	105.1	107.1	107.1	110.1	107.1	103.1	97.1
5UU-P-106	Disposal Injection Pump	1	85.5	86.5	87.5	89.5	89.5	92.5	89.5	85.5	79.5
<b>Motors</b>											
5UU-P-103A	Evap. Distillate Pump	1	83.1	83.1	86.1	88.1	91.1	91.1	90.1	85.1	77.1
5UU-P-104A	Evaporator Recirc. Pump	1	90.8	90.8	93.8	95.8	98.8	98.8	97.8	92.8	84.8
5UU-P-106	Disposal Injection Pump	1	87.1	87.1	90.1	92.1	95.1	95.1	94.1	89.1	81.1
<b>Evaporator Compressor</b>											
5UU-C-109	Evaporator Compressor	1	103.2	103.2	102.2	100.2	100.2	102.2	106.2	105.2	101.2

**Table 6A-8 Utility Building**

TAG NO.	Source Name	Quantity	Sound Power Level (dB)									
			Octave Band Centre Frequency (Hz)									
			31.5	63	125	250	500	1000	2000	4000	8000	
<b>Pumps</b>												
9UU-P-101A	Cooling Medium Pump	1	78.5	79.5	80.5	82.5	82.5	85.5	82.5	78.5	72.5	
9UU-P-102A	Heating Medium Pump	1	99.5	100.5	101.5	103.5	103.5	106.5	103.5	99.5	93.5	
<b>Motors</b>												
9UU-P-101A	Cooling Medium Pump	1	87.4	87.4	90.4	92.4	95.4	95.4	94.4	89.4	81.4	
9UU-P-102A	Heating Medium Pump	1	82.3	82.3	85.3	87.3	90.3	90.3	89.3	84.3	76.3	
<b>Instrument Air Compressor</b>												
9UU-C-102	Instrument Air Compressor and Associated Motors	1	87.1	87.1	90.1	92.1	95.1	95.1	94.1	89.1	81.1	
9UU-C-103	Instrument Air Compressor and Associated Motors	1	87.1	87.1	90.1	92.1	95.1	95.1	94.1	89.1	81.1	
<b>Emergency Generator Casing</b>												
	Power Generator (indoors)	1	112	112	116	116	115	115	114	108	101	
	Power Generator Exhaust (unmitigated)	1	131.8	131.8	137.8	133.8	127.8	121.8	115.8	105.8	97.8	

**Table 6A-9 Outdoor Sources**

TAG NO.	Source Name	Quantity	Sound Power Level (dB)								
			Octave Band Centre Frequency (Hz)								
			31.5	63	125	250	500	1000	2000	4000	8000
<b>Pumps</b>											
5UU-P-107	Process Water Recycle Pump	1	80.7	81.7	82.7	84.7	84.7	87.7	84.7	80.7	74.7
9UU-P-110	Jockey Pump	1	73.8	74.8	75.8	77.8	77.8	80.8	77.8	73.8	67.8
<b>Motors</b>											
5UU-P-107	Blowdown Pond Pump	1	82.3	82.3	85.3	87.3	90.3	90.3	89.3	84.3	76.3
9UU-P-110	Jockey Pump	1	78.6	78.6	81.6	83.6	86.6	86.6	85.6	80.6	72.6
<b>Heaters and OTSG</b>											
5UU-B-101 - 07	Steam Generators - OTSG1 - Stack	7	105.2	105.2	104.2	102.2	99.2	96.2	93.2	90.2	87.2
5UU-B-101 - 07	Steam Generators - OTSG1 - Base	7	105.2	105.2	104.2	102.2	99.2	96.2	93.2	90.2	87.2
9UU-HT-101A	Heating Medium Heater - stack	1	101.1	101.1	100.1	98.1	95.1	92.1	89.1	86.1	83.1
9UU-HT-101A	Heating Medium Heater - base	1	101.1	101.1	100.1	98.1	95.1	92.1	89.1	86.1	83.1
9UU-HT-101a	Heating Medium Heater - stack	1	101.1	101.1	100.1	98.1	95.1	92.1	89.1	86.1	83.1
9UU-HT-101b	Heating Medium Heater - base	1	101.1	101.1	100.1	98.1	95.1	92.1	89.1	86.1	83.1
<b>Aerial Coolers</b>											
3UU-AC-101	Dilbit Cooler (12 fans in 6 bays)	12	104	104	102	109	107	106	103	97	93
5UU-AC-101	BFW Cooler (20 fans in 10 bays)	20	104	104	102	109	107	106	103	97	93
5UU-AC-102	Disposal Water Cooler (1 fan in 1 bay)	1	104	104	102	109	107	106	103	97	93
9UU-AC-101	Cooling Medium Cooler (6 fans in 3 bays)	6	104	104	102	109	107	106	103	97	93
9UU-AC-102	VRU After Cooler (1 fan in 1 bay)	1	101	101	101	91	86	84	79	74	69
9UU-AC-103	VRU Inlet Cooler (1 fan in 1 bay)	1	101	101	101	91	86	84	79	74	69

**Table 6A-9 Outdoor Sources (cont'd)**

TAG NO.	Source Name	Quantity	Sound Power Level (dB)								
			Octave Band Centre Frequency (Hz)								
			31.5	63	125	250	500	1000	2000	4000	8000
Emergency Generator Exhaust			131.75	131.75	137.75	133.75	127.75	121.75	115.75	105.75	97.75
Steam Venting	Steam Venting from HLS vent	2	84.3	87.3	90.3	93.3	96.3	101.3	106.3	102.8	99.3