

CLIENT:	Skye Resources Inc.
PROJECT:	FENIX Hydrometallurgical Expansion
PROJECT NO.:	321898

PROCESS PLANT EQUIPMENT LIST  
OCTOBER 10, 2006

WBS	CLASS	MATRIX	EQUIP No.	PFD No.	DESCRIPTION	QTY	UNIT	SIZE (primary dimensions)	DESIGN DATA			MOTOR		
									DESIGN BASIS (Capacity)	EQUIP TYPE	SIZE (kW)	TOTAL MOTOR (kW)	VSD	
200	PROC				<b>LIMONITE FEED SLURRY PREPARATION</b>									
200	PROC	M	210-MSCS-001		Stationary Grizzly	1	ea	6 m x 12 m	930t/h solids	Grizzly				
200	PROC	M	210-MCHU-001		Grizzly OS Chute	1	ea		930t/h solids	Chute				
200	PROC	M	210-MHOP-001		Dump Hopper	1	ea	6 m x 12 m x 14 m H	2 Trucks (120 tonnes)	Hopper				
200	PROC	M	210-MFEA-001		Apron Feeder	1	ea	1524 mm x 4 m	930t/h solids	Apron Feeder	18.5	18.5	y	
200	PROC	M	210-MCVB-001		Transfer Conveyor	1	ea	1050 mm x 10 m	930t/h solids	Conveyor	7.5	8		
200	PROC	M	210-MCVB-002		Stockpile Tripper Conveyor	1	ea	1050 mm x 210 m	930t/h solids	Conveyor	55	55		
200	PROC	M	210-MBMS-001		Travelling Stacker	1	ea	1220 mm x 37 m Boom	930t/h solids	Stacker	95.0	95	y	
200	PROC	M	210-MHOP-002		Reclaim Hopper	1	ea	3 m x 3 m x 1 m H	460t/h solids	Hopper				
200	PROC	M	210-MHOP-003		Reclaim Hopper	1	ea	3 m x 3 m x 1 m H	460t/h solids	Hopper				
200	PROC	M	210-MFEB-001		Reclaim Feed Conveyor	1	ea	914 mm x 2 m	460t/h solids	Belt Feeder	1	1		
200	PROC	M	210-MFEB-002		Reclaim Feed Conveyor	1	ea	914 mm x 2 m	460t/h solids	Belt Feeder	1	1		
200	PROC	M	210-MCVB-003		Reclaim Belt Conveyor	1	ea	1050 mm x 210 m	930t/h solids	Conveyor	55	55		
200	PROC	M	210-MCHU-002		Lump Breaker Feed Chute	1	ea		460t/h solids	Chute				
200	PROC	M	210-MMLO-001		Lump Breaker	1	ea	1 m D x 5.5 m L	460t/h solids	Lump Breaker	150	150		
200	PROC	M	210-MCHU-003		Lump Breaker Discharge Chute	1	ea		460t/h solids	Chute				
200	PROC	M	210-MFEB-003		Scrubber Feed Conveyor	1	ea	914 mm x 4 m	460t/h solids	Belt Feeder	2.2	2.2		
200	PROC	M	210-MSLO-001		Weigh Scale	1	ea	914 mm belt width	460t/h solids	Scale				
200	PROC	M	210-MCHU-004		Scrubber Feed Chute	1	ea		460t/h solids	Chute				
200	PROC	M	210-MPUL-001		Ore Scrubber	1	ea	3m D x 10m L	280t/h dry solids	Pulper	220.0	220.0		
200	PROC	M	210-MCHU-005		Trommel OS Chute	1	ea		460t/h solids	Chute				
200	PROC	M	210-MCVB-004		Trommel OS Conveyor	1	ea	225 mm x 10 m	2.3t/h solids	Conveyor	2.2	2		
200	PROC	M	210-MMAG-001		Crusher Tramp Iron Magnet	1	ea							
200	PROC	M	210-MMDT-001		Crusher Metal Detector	1	ea							
200	PROC	M	210-MCRR-001		Oversize Cone Crusher	1	ea	0.7 m ID x 1.7 m H	7.9t/h solids	Waterflush Cone Crusher	75	75		
200	PROC	M	210-MCHU-006		Trommel US Chute	1	ea		780t/h solids	Chute				
200	PROC	M	210-MPBX-001		Pump Box, Ore Scrubber	1	ea	3.1 m D x 3.6 m H	0.033 hr, 20 m <sup>3</sup>	Pump Box				
200	PROC	M	210-MPPS-001		Pump, Scrubbed Ore	1	ea	300x250-625mm	635 m <sup>3</sup> /h @ 20 m H	SLURRY	110	110	y	
200	PROC	M	210-MPPS-002		Pump, Scrubbed Ore Standby	1	ea	300x250-625mm	635 m <sup>3</sup> /h @ 20 m H	SLURRY	110	110	y	
200	PROC	M	210-MSCR-001		Ore Vibrating Screen	1	ea	1.8 m x 6 m	270t/h solids	Grizzly	15.0	15.0		
200	PROC	M	210-MPBX-002		Vibrating Screen Pump Box	1	ea	3.5 m D x 4.1 m H	0.033 hr, 30 m <sup>3</sup>	Pump Box				
200	PROC	M	210-MPPS-003		Pump, Vibrating Screen US Pump	1	ea	350x300-725mm	955 m <sup>3</sup> /h @ 20 m H	SLURRY	150	150	y	
200	PROC	M	210-MPPS-004		Pump, Vibrating Screen US Pump, Standby	1	ea	350x300-725mm	955 m <sup>3</sup> /h @ 20 m H	SLURRY	150	150	y	
200	PROC	M	210-MCVB-005		Vibrating Screen OS Conveyor	1	ea	225 mm x 10 m	0t/h solids	Conveyor	2.2	2		
200	PROC	M	210-MCHU-007		Ball Mill Feed Chute	1	ea		10t/h solids	Chute				
200	PROC	M	210-MMCB-001		Oversize Ball Mill	1	ea	1.83 m ID x 3.05 m L	12t/h solids	Ball Mill	110	110		
200	PROC	M	210-MHST-001		Ball Mill Charge Hoist	1	ea				0.37	0.37		
200	PROC	M	210-MPBX-003		Ball Mill Pump Box	1	ea	2.5 m D x 2.9 m H	0.033 hr, 10 m <sup>3</sup>	Pump Box				
200	PROC	M	210-MPPS-005		Pump, Cyclone Feed	1	ea	350x300-725mm	1049 m <sup>3</sup> /h @ 20 m H	SLURRY	150	150	y	
200	PROC	M	210-MPPS-006		Pump, Cyclone Feed Standby	1	ea	350x300-725mm	1049 m <sup>3</sup> /h @ 20 m H	SLURRY	150	150	y	

WBS	CLASS	MATRIX	EQUIP No.	PFD No.	DESCRIPTION	QTY	UNIT	DESIGN DATA			MOTOR		
								SIZE (primary dimensions)	DESIGN BASIS (Capacity)	EQUIP TYPE	SIZE (kW)	TOTAL MOTOR (kW)	VSD
200	PROC	M	210-MCYC-001		Ball Mill Cyclo-Pac (4 op. 1 sb)	1	ea	5 x 840 mm D	320t/h solids	Five-Krebs Cyclone Cyclo-Pac			
200	PROC	M	210-MTNK-003		Thickener Feed Transfer Tank	1	ea	2.4 m D x 2.8 m H	0.033 hr, 10 m3	Transfer Tank			
200	PROC	M	210-MPPS-007		Pump, Thickener Feed	1	ea	350x300-725mm	1010 m3/h @ 20 m H	SLURRY	150	150	y
200	PROC	M	210-MPPS-008		Pump, Thickener Feed Standby	1	ea	350x300-725mm	1010 m3/h @ 20 m H	SLURRY	150	150	y
200	PROC	M	210-MTHK-001		Limonite Thickener	1	ea	52.6 m D	0.3 m2/tpd, 302 t/h	Thickener			
200	PROC	M	210-MTHM-001		Limonite Thickener: Mechanism, supports, etc.	1	ea	52.6 m D	0.3 m2/tpd, 302 t/h	Thickener	18.5	18.5	
200	PROC	M	210-MTNK-001		Limonite Thickener Feedpot	1	ea	4.7 m D x 5.5 m H	0.08 hr, 70 m3	Covered Stirred Tank			
200	PROC	M	210-MTNK-002		Limonite Thickener O/F Tank	1	ea	6.7 m D x 4.4 m H	0.33 hr, 120 m3	Covered Stirred Tank			
200	PROC	M	210-MPPP-001		Limonite Thickener O/F Pump	1	ea	250x200-375mm	757 m3/h @ 20 m H	Centrifugal	75.0	75.0	y
200	PROC	M	210-MPPP-002		Limonite Thickener O/F Pump Stand-by	1	ea	250x200-375mm	757 m3/h @ 20 m H	Centrifugal	75.0	75.0	y
200	PROC	M	210-MPPS-009		Limonite Thickener U/F Pump	1	ea	300x250-625mm	673 m3/h @ 20 m H	SLURRY	110	110	y
200	PROC	M	210-MPPS-010		Limonite Thickener U/F Pump Stand-by	1	ea	300x250-625mm	673 m3/h @ 20 m H	SLURRY	110	110	y
200	PROC	M	210-MCHA-001		Chute Allowance	1	ea						
200	PROC	M	210-MPPM-001		Area Sump Pump - Grinding Area 1	1	ea	100 x 75 mm	68 m3/h	Vertical Cantilevered Sump	7.5	7.5	
200	PROC	M	210-MPPM-002		Area Sump Pump - Grinding Area 2	1	ea	100 x 75 mm	68 m3/h	Vertical Cantilevered Sump	7.5	7.5	
<b>200</b>	<b>PROC</b>				<b>HIGH PRESSURE ACID LEACH</b>								
200	PROC	M	220-MTNK-001		Storage TNK #1	1	ea	16.4 m D x 17.5 m H	12 hr, 2890 m3	Covered Stirred Tank			
200	PROC	M	220-MTNK-002		Storage TNK #2	1	ea	16.4 m D x 17.5 m H	12 hr, 2890 m3	Covered Stirred Tank			
200	PROC	M	220-MAGP-001		Storage TNK #1 AGT	1	ea	6.6 m D x 17.5 m L	Uniform Distribution	Single - Lightnin A510	55	55	y
200	PROC	M	220-MAGP-002		Storage TNK #2 AGT	1	ea	6.6 m D x 17.5 m L	Uniform Distribution	Single - Lightnin A510	55	55	y
200	PROC	M	220-MTNK-011		Conc Acid Steady Head TNK	1	ea	4 m D x 4.5 m H	1 hr, 40 m3	Covered Stirred Tank			
					<b>AUTOCLAVE TRAIN #1</b>								
200	PROC	M	220-MSAO-001		Leach Feed Sampler	1	ea						
200	PROC	M	220-MPPS-001		LT Heater Feed Pump #1, Operating	1	ea	150x150-375mm	301 m3/h @ 35 m H	SLURRY	90	90	y
200	PROC	M	220-MPPS-002		LT Heater Feed Pump #2, Operating	1	ea	150x150-375mm	301 m3/h @ 35 m H	SLURRY	90	90	y
200	PROC	M	220-MPPS-003		LT Heater Feed Pump #1, Standby	1	ea	150x150-375mm	301 m3/h @ 35 m H	SLURRY	90	90	y
200	PROC	M	220-MPPS-004		LT Heater Feed Pump #2, Standby	1	ea	150x150-375mm	301 m3/h @ 35 m H	SLURRY	90	90	y
200	PROC	M	220-MHTR-001		LT Slurry Heater	1	ea	2.690 m ID process x 9.34 m tan to tan					
200	PROC	M	220-MHTR-001		LT Slurry Heater Insulation	1	ea						
200	PROC	M	220-MPPS-005		MT Heater Feed Pump #1, Operating	1	ea	200x150-450mm	345 m3/h @ 32 m H	SLURRY	90	90	y
200	PROC	M	220-MPPS-006		MT Heater Feed Pump #2, Operating	1	ea	200x150-450mm	345 m3/h @ 32 m H	SLURRY	90	90	y
200	PROC	M	220-MPPS-007		MT Heater Feed Pump #1, Standby	1	ea	200x150-450mm	345 m3/h @ 32 m H	SLURRY	90	90	y
200	PROC	M	220-MPPS-008		MT Heater Feed Pump #2, Standby	1	ea	200x150-450mm	345 m3/h @ 32 m H	SLURRY	90	90	y
200	PROC	M	220-MHTR-002		MT Slurry Heater	1	ea	3.74 m ID process x 9.46 m tan to tan					
200	PROC	M	220-MHTR-002		MT Slurry Heater Insulation	1	ea						
200	PROC	M	220-MPPS-009		HT Heater Feed Pump #1, Operating	1	ea	200x150-450mm	393 m3/h @ 61 m H	SLURRY	185	185	y
200	PROC	M	220-MPPS-010		HT Heater Feed Pump #2, Operating	1	ea	200x150-450mm	393 m3/h @ 61 m H	SLURRY	185	185	y
200	PROC	M	220-MPPS-011		HT Heater Feed Pump #3, Operating	1	ea	200x150-450mm	393 m3/h @ 61 m H	SLURRY	185	185	y
200	PROC	M	220-MPPS-012		HT Heater Feed Pump #1, Standby	1	ea	200x150-450mm	393 m3/h @ 61 m H	SLURRY	185	185	y
200	PROC	M	220-MPPS-013		HT Heater Feed Pump #2, Standby	1	ea	200x150-450mm	393 m3/h @ 61 m H	SLURRY	185	185	y

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								SIZE (primary dimensions)	DESIGN BASIS (Capacity)	EQUIP TYPE	SIZE (kW)	TOTAL MOTOR (kW)	VSD
200	PROC	M	220-MPPS-014		HT Heater Feed Pump #3, Standby	1	ea	200x150-450mm	393 m3/h @ 61 m H	SLURRY	185	185	y
200	PROC	M	220-MHTR-003		HT Slurry Heater	1		3.61 m ID process x 9.96 m tan to tan					
200	PROC	M	220-MHTR-003		HT Slurry Heater Insulation	1	ea						
200	PROC	M	220-MPPD-001		Autoclave GEHO Feed Pump, Operating 65%	1	ea	ZPM 500	237.1 m3/hr @ 4625 Kpa(g)	Double Acting Diaphragm Pump	500	500	y
200	PROC	M	220-MPPD-002		Autoclave GEHO Feed Pump, Operating 65%	1	ea	ZPM 500	237.1 m3/hr @ 4625 Kpa(g)	Double Acting Diaphragm Pump	500	500	y
200	PROC	M	220-MSRN-001		Autoclave Feed Pump Suction Strainer	1	ea						
200	PROC	M	220-MSRN-002		Autoclave Feed Pump Suction Strainer	1	ea						
200	PROC	M	220-MCNG-001		Feed Pump Crane	1	ea	----	10 tonne	Crane/Hoist	15	15	--
200	PROC	M	220-MPPD-003		Pump - Acid Injection #1	1	ea	G3G/M514S/100mm	24 m3/h @ 500 m H	Triple Diaphragm	90.0	90.0	y
200	PROC	M	220-MPPD-004		Pump - Acid Injection #2	1	ea	G3G/M514S/100mm	24 m3/h @ 500 m H	Triple Diaphragm	90.0	90.0	y
200	PROC	M	220-MPPD-005		Pump - Acid Injection #3	1	ea	G3S/M511S/85mm	8 m3/h @ 500 m H	Triple Diaphragm	30.0	30.0	y
200	PROC	M	220-MPVO-001		Steam Blowback Vessel	1	ea			Pressure Vessel			
200	PROC	M	220-MPVO-001		Steam Blowback Vessel Insulation	1	ea						
200	PROC	M	220-MPVO-002		Acid Spillback Vessel	1	ea	0.6 m D x 2 m H		Pressure Vessel			
200	PROC	M	220-MALV-001		Autoclave Vessel #1	1	ea	4.62 OD x 25.21 tan to tan	RT=45 min	6 Compartment Horizontal Autoclave			
200	PROC	M	220-MALV-001		Autoclave Vessel #1 Insulation	1	ea						
200	PROC	M	220-MALV-001		Autoclave Ti Gr. 2 Dip Pipes And Nozzle Inserts	1	LOT						
200	PROC	M	220-MALV-001		Autoclave Acid Spargers	3	ea						
200	PROC	M	220-MALV-001		Autoclave Internals	1	LOT						
200	PROC	M	220-MAGP-003		Agitator #1 - Autoclave Compartment #1	1	ea	1.76 D m x 3.83 m H	torque per unit volume	Dual Axial - Lightnin A320	75	75	y
200	PROC	M	220-MAGP-004		Agitator #2 - Autoclave Compartment #2	1	ea	1.76 D m x 3.83 m H	torque per unit volume	Dual Axial - Lightnin A320	75	75	y
200	PROC	M	220-MAGP-005		Agitator #3 - Autoclave Compartment #3	1	ea	1.76 D m x 3.83 m H	torque per unit volume	Dual Axial - Lightnin A320	75	75	y
200	PROC	M	220-MAGP-006		Agitator #4 - Autoclave Compartment #4	1	ea	1.76 D m x 3.83 m H	torque per unit volume	Single Axial - Lightnin A320	75	75	y
200	PROC	M	220-MAGP-007		Agitator #5 - Autoclave Compartment #5	1	ea	1.76 D m x 3.83 m H	torque per unit volume	Single Axial - Lightnin A320	37	37	y
200	PROC	M	220-MAGP-008		Agitator #6 - Autoclave Compartment #6	1	ea	1.76 D m x 3.83 m H	torque per unit volume	Single Axial - Lightnin A320	37	37	y
200	PROC	M	220-MLUB-001		Autoclave Agitator Lube Reservoirs	1	PKG						
200	PROC	M	220-MPPD-006		Autoclave Seal Water Pump, Operating	1	PKG	100x800-200mm	16 m3/h @ 788 m H	Autoclave Seal Pump	45	45	y
200	PROC	M	220-MPPD-007		Autoclave Seal Water Pump, Standby	1	PKG	100x800-200mm	16 m3/h @ 788 m H	Autoclave Seal Pump	45	45	y
200	PROC	M	220-MVEA-001		Autoclave Agitator Seal Water Accumulator	1	PKG						
200	PROC	M	220-MFLO-001		Autoclave Seal Cooling Water Filter	1	PKG						
200	PROC	M	220-MHXO-001		Autoclave Agitator Seal Water Cooler	1	PKG						
200	PROC	M	220-MCPR-001		Autoclave Agitator Seal System HP Air Receiver	1	PKG						
200	PROC	M	220-MCRN-001		Autoclave Deck Crane#1	1	ea	----		Crane/Hoist	55	55	--
200	PROC	M	220-MPRV-001		HP Flash Vessel	1	ea	4.40m OD x 4.62m H T-T"		Autoclave Flash Vessel			
200	PROC	M	220-MPRV-001		HP Flash Refractory Lining	1	ea	112 m2					
200	PROC	M	220-MPRV-001		HP Flash Vessel Dip Pipes & Nozzle Inserts	1	LOT						
200	PROC	M	220-MPRV-001		HP Engineered Ceramics	1	LOT			Blast Shroud			
200	PROC	M	220-MPRV-002		MP Autoclave Flash Vessel	1	ea	6.2m OD x 4.52m H T-T"		Autoclave Flash Vessel			
200	PROC	M	220-MPRV-002		MP Flash Refractory Lining	1	ea	147 m2					
200	PROC	M	220-MPRV-002		MP Flash Vessel Dip Pipes & Nozzle Inserts	1	LOT						
200	PROC	M	220-MPRV-002		MP Engineered Ceramics	1	LOT			Blast Shroud			
200	PROC	M	220-MPRV-003		LP Autoclave Flash Vessel	1	ea	6.32m OD x 4.21m H T-T"		Autoclave Flash Vessel			

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								SIZE (primary dimensions)	DESIGN BASIS (Capacity)	EQUIP TYPE	SIZE (kW)	TOTAL MOTOR (kW)	VSD
200	PROC	M	220-MPRV-003		LP Flash Vessel Dip Pipes & Nozzle Inserts	1	LOT						
200	PROC	M	220-MPRV-003		LP Engineered Ceramics	1	LOT			Blast Shroud			
200	PROC	M	220-MHST-001		Autoclave Area LP Flash Vessel Hoist #1	1	ea	----		Crane/Hoist	55	55	--
200	PROC	M	220-MHST-002		Autoclave Area MP Flash Vessel Hoist #2	1	ea	----		Crane/Hoist	55	55	--
200	PROC	M	220-MHST-003		Autoclave Area HP Flash Vessel Hoist #3	1	ea	----		Crane/Hoist	55	55	--
200	PROC	M	220-MSAO-003		Leached Slurry Sampler	1	ea						
200	PROC	M	220-MTNK-004		Leached Discharge Pump Tank	1	ea	2.4 m D x 2.8 m H	0.033 hr, 10 m3	Covered Stirred Tank			
200	PROC	M	220-MPPS-015		Leached Slurry Transfer Pump, Operating	1	ea	200x150-450mm	344 m3/h @ 20 m H	SLURRY	55	55	y
200	PROC	M	220-MPPS-016		Leached Slurry Transfer Pump, Standby	1	ea	200x150-450mm	344 m3/h @ 20 m H	SLURRY	55	55	y
200	PROC	M	220-MCPS-001		HP Air Compressor	1	ea				75	75	--
200	PROC	M	220-MCPR-002		HP Air Receiver & Knockout Pot	1	ea						
200	PROC	M	220-MZOO-001		Certified Safety Shutdown Panel	1	LOT	----					
					<b>AUTOCLAVE TRAIN #2</b>								
200	PROC	M	220-MSAO-002		Leach Feed Sampler	1	ea						
200	PROC	M	220-MPPS-017		LT Heater Feed Pump #1, Operating	1	ea	150x150-375mm	301 m3/h @ 35 m H	SLURRY	90	90	y
200	PROC	M	220-MPPS-018		LT Heater Feed Pump #2, Operating	1	ea	150x150-375mm	301 m3/h @ 35 m H	SLURRY	90	90	y
200	PROC	M	220-MPPS-019		LT Heater Feed Pump #1, Standby	1	ea	150x150-375mm	301 m3/h @ 35 m H	SLURRY	90	90	y
200	PROC	M	220-MPPS-020		LT Heater Feed Pump #2, Standby	1	ea	150x150-375mm	301 m3/h @ 35 m H	SLURRY	90	90	y
200	PROC	M	220-MHTR-004		LT Slurry Heater	1		2.690 m ID process x 9.34 m tan to tan					
200	PROC	M	220-MHTR-4		LT Slurry Heater Insulation	1	ea						
200	PROC	M	220-MPPS-021		MT Heater Feed Pump #1, Operating	1	ea	200x150-450mm	345 m3/h @ 32.4899047580201 m H	SLURRY	90	90	y
200	PROC	M	220-MPPS-022		MT Heater Feed Pump #2, Operating	1	ea	200x150-450mm	345 m3/h @ 32.4899047580201 m H	SLURRY	90	90	y
200	PROC	M	220-MPPS-023		MT Heater Feed Pump #1, Standby	1	ea	200x150-450mm	345 m3/h @ 32.4899047580201 m H	SLURRY	90	90	y
200	PROC	M	220-MPPS-024		MT Heater Feed Pump #2, Standby	1	ea	200x150-450mm	345 m3/h @ 32.4899047580201 m H	SLURRY	90	90	y
200	PROC	M	220-MHTR-005		MT Slurry Heater	1		3.74 m ID process x 9.46 m tan to tan					
200	PROC	M	220-MHTR-005		MT Slurry Heater Insulation	1	ea						
200	PROC	M	220-MPPS-025		HT Heater Feed Pump #1, Operating	1	ea	200x150-450mm	393 m3/h @ 60.7832480166419 m H	SLURRY	185	185	y
200	PROC	M	220-MPPS-026		HT Heater Feed Pump #2, Operating	1	ea	200x150-450mm	393 m3/h @ 60.7832480166419 m H	SLURRY	185	185	y
200	PROC	M	220-MPPS-027		HT Heater Feed Pump #3, Operating	1	ea	200x150-450mm	393 m3/h @ 60.7832480166419 m H	SLURRY	185	185	y
200	PROC	M	220-MPPS-028		HT Heater Feed Pump #1, Standby	1	ea	200x150-450mm	393 m3/h @ 60.7832480166419 m H	SLURRY	185	185	y
200	PROC	M	220-MPPS-029		HT Heater Feed Pump #2, Standby	1	ea	200x150-450mm	393 m3/h @ 60.7832480166419 m H	SLURRY	185	185	y
200	PROC	M	220-MPPS-030		HT Heater Feed Pump #3, Standby	1	ea	200x150-450mm	393 m3/h @ 60.7832480166419 m H	SLURRY	185	185	y
200	PROC	M	220-MHTR-006		HT Slurry Heater	1		3.61 m ID process x 9.96 m tan to tan					
200	PROC	M	220-MHTR-006		HT Slurry Heater Insulation	1	ea						
200	PROC	M	220-MPPD-008		Autoclave GEHO Feed Pump, Operating 65%	1	ea	ZPM 500	237.1 m3/hr @ 4625 Kpa(g)	Double Acting Diaphragm Pump	500	500	y
200	PROC	M	220-MPPD-009		Autoclave GEHO Feed Pump, Operating 65%	1	ea	ZPM 500	237.1 m3/hr @ 4625 Kpa(g)	Double Acting Diaphragm Pump	500	500	y
200	PROC	M	220-MSRN-003		Autoclave Feed Pump Suction Strainer	1	ea						
200	PROC	M	220-MSRN-004		Autoclave Feed Pump Suction Strainer	1	ea						
200	PROC	M	220-MCNG-002		Feed Pump Crane	1	ea	----	10 tonne	Crane/Hoist	15	15	--
200	PROC	M	220-MPPD-010		Pump - Acid Injection #4	1	ea	G3G/M514S/100mm	24 m3/h @ 500 m H	Triple Diaphragm	90.0	90.0	y
200	PROC	M	220-MPPD-011		Pump - Acid Injection #5	1	ea	G3G/M514S/100mm	24 m3/h @ 500 m H	Triple Diaphragm	90.0	90.0	y
200	PROC	M	220-MPPD-012		Pump - Acid Injection #6	1	ea	G3S/M511S/85mm	8 m3/h @ 500 m H	Triple Diaphragm	30.0	30.0	y

WBS	CLASS	MATRIX	EQUIP No.	PFD No.	DESCRIPTION	QTY	UNIT	DESIGN DATA			MOTOR		
								SIZE (primary dimensions)	DESIGN BASIS (Capacity)	EQUIP TYPE	SIZE (kW)	TOTAL MOTOR (kW)	VSD
200	PROC	M	220-MPVO-003		Steam Blowback Vessel	1	ea			Pressure Vessel			
200	PROC	M	220-MPVO-003		Steam Blowback Vessel Insulation	1	ea						
200	PROC	M	220-MPVO-004		Acid Spillback Vessel	1	ea	0.6 m D x 2 m H		Pressure Vessel			
200	PROC	M	220-MALV-002		Autoclave Vessel #2	1	ea	4.62 OD x 25.21 tan to tan	RT=45 min	6 Compartment Horizontal Autoclave			
200	PROC	M	220-MALV-001		Autoclave Vessel #2 Insulation	1	ea						
200	PROC	M	220-MALV-002		Autoclave Ti Gr. 2 Dip Pipes And Nozzle Inserts	1	LOT						
200	PROC	M	220-MALV-001		Autoclave Acid Spargers	3	ea						
200	PROC	M	220-MALV-002		Autoclave Internals	1	LOT						
200	PROC	M	220-MAGP-009		Agitator #1 - Autoclave Compartment #1	1	ea	1.76 D m x 3.83 m H	torque per unit volume	Dual Axial - Lightnin A320	75	74.73029455	y
200	PROC	M	220-MAGP-010		Agitator #2 - Autoclave Compartment #2	1	ea	1.76 D m x 3.83 m H	torque per unit volume	Dual Axial - Lightnin A320	75	74.73029455	y
200	PROC	M	220-MAGP-011		Agitator #3 - Autoclave Compartment #3	1	ea	1.76 D m x 3.83 m H	torque per unit volume	Dual Axial - Lightnin A320	75	74.73029455	y
200	PROC	M	220-MAGP-012		Agitator #4 - Autoclave Compartment #4	1	ea	1.76 D m x 3.83 m H	torque per unit volume	Single Axial - Lightnin A320	75	74.73029455	y
200	PROC	M	220-MAGP-013		Agitator #5 - Autoclave Compartment #5	1	ea	1.76 D m x 3.83 m H	torque per unit volume	Single Axial - Lightnin A320	37	37.36514728	y
200	PROC	M	220-MAGP-014		Agitator #6 - Autoclave Compartment #6	1	ea	1.76 D m x 3.83 m H	torque per unit volume	Single Axial - Lightnin A320	37	37.36514728	y
200	PROC	M	220-MLUB-002		Autoclave Agitator Lube Reservoirs	1	PKG						
200	PROC	M	220-MPPD-013		Autoclave Seal Water Pump, Operating	1	PKG	100x800-200mm	16 m3/h @ 788 m H	Autoclave Seal Pump	45	45	y
200	PROC	M	220-MPPD-014		Autoclave Seal Water Pump, Standby	1	PKG	100x800-200mm	16 m3/h @ 788 m H	Autoclave Seal Pump	45	45	y
200	PROC	M	220-MVEA-002		Autoclave Agitator Seal Water Accumulator	1	PKG						
200	PROC	M	220-MFLO-002		Autoclave Seal Cooling Water Filter	1	PKG						
200	PROC	M	220-MHXO-002		Autoclave Agitator Seal Water Cooler	1	PKG						
200	PROC	M	220-MCPR-003		Autoclave Agitator Seal System HP Air Receiver	1	PKG						
200	PROC	M	220-MCRN-002		Autoclave Deck Crane #2	1	ea	----		Crane/Hoist	55	55	--
200	PROC	M	220-MPRV-004		HP Flash Vessel	1	ea	4.40m OD x 4.62m H T-T"		Autoclave Flash Vessel			
200	PROC	M	220-MPRV-004		HP Flash Refractory Lining	1	ea	112 m2					
200	PROC	M	220-MPRV-004		HP Flash Vessel Dip Pipes & Nozzle Inserts	1	LOT						
200	PROC	M	220-MPRV-004		HP Engineered Ceramics	1	LOT			Blast Shroud			
200	PROC	M	220-MPRV-005		MP Autoclave Flash Vessel	1	ea	6.2m OD x 4.52m H T-T"		Autoclave Flash Vessel			
200	PROC	M	220-MPRV-005		MP Flash Refractory Lining	1	ea	147 m2					
200	PROC	M	220-MPRV-005		MP Flash Vessel Dip Pipes & Nozzle Inserts	1	LOT						
200	PROC	M	220-MPRV-005		MP Engineered Ceramics	1	LOT			Blast Shroud			
200	PROC	M	220-MPRV-006		LP Autoclave Flash Vessel	1	ea	6.32m OD x 4.21m H T-T"		Autoclave Flash Vessel			
200	PROC	M	220-MPRV-006		LP Flash Vessel Dip Pipes & Nozzle Inserts	1	LOT						
200	PROC	M	220-MPRV-006		LP Engineered Ceramics	1	LOT			Blast Shroud			
200	PROC	M	220-MHST-004		Autoclave Area LP Flash Vessel Hoist #4	1	ea	----		Crane/Hoist	55	55	--
200	PROC	M	220-MHST-005		Autoclave Area MP Flash Vessel Hoist #5	1	ea	----		Crane/Hoist	55	55	--
200	PROC	M	220-MHST-006		Autoclave Area HP Flash Vessel Hoist #6	1	ea	----		Crane/Hoist	55	55	--
200	PROC	M	220-MSAO-004		Leached Slurry Sampler	1	ea						
200	PROC	M	220-MTNK-006		Leached Discharge Pump Tank	1	ea	2.4 m D x 2.8 m H	0.033 hr, 10 m3	Covered Stirred Tank			
200	PROC	M	220-MPPS-031		Leached Slurry Transfer Pump, Operating	1	ea	200x150-450mm	344 m3/h @ 20 m H	SLURRY	55	55	y
200	PROC	M	220-MPPS-032		Leached Slurry Transfer Pump, Standby	1	ea	200x150-450mm	344 m3/h @ 20 m H	SLURRY	55	55	y
200	PROC	M	220-MCPS-002		HP Air Compressor	1	ea				75	75	--
200	PROC	M	220-MCPR-004		HP Air Receiver & Knockout Pot	1	ea						

WBS	CLASS	MATRIX	EQUIP No.	PFD No.	DESCRIPTION	QTY	UNIT	DESIGN DATA			MOTOR			
								SIZE (primary dimensions)	DESIGN BASIS (Capacity)	EQUIP TYPE	SIZE (kW)	TOTAL MOTOR (kW)	VSD	
200	PROC	M	220-MZOO-002		Certified Safety Shutdown Panel	1	LOT	-----						
					<b>VENT GAS SCRUBBING CIRCUIT: TRAIN 1</b>									
200	PROC	M	220-MSBR-001		Venturi Scrubber	1	ea			Wet Scrubber	37.0	75		
200	PROC	M	220-MSBL-002		Pressure Relief Blast Spool	1	ea							
200	PROC	M	220-MTNK-007		Autoclave Quench Tank	1	ea	6.8 m D x 3 m TL - TL	110 m3					
200	PROC	M	220-MPPS-033		Quench Tank Pump (Operating)	1	ea	150x100-300mm	754 m3/h @ 20 m H	SLURRY	90	90	y	
200	PROC	M	220-MPPS-034		Quench Tank Pump (Standby)	1	ea	150x100-300mm	754 m3/h @ 20 m H	SLURRY	90	90	y	
200	PROC	M	220-MSTK-001		EXHAUST STACK - PRESSURE LEACH BUILDING	1	ea	0.5 m D x 30 m H		Exhaust Stack				
					<b>VENT GAS SCRUBBING CIRCUIT: TRAIN 2</b>									
200	PROC	M	220-MSBR-002		Venturi Scrubber	1	PKG			Wet Scrubber	37.0	37		
200	PROC	M	220-MSBL-004		Pressure Relief Blast Spool	1	ea							
200	PROC	M	220-MTNK-008		Autoclave Quench Tank	1	ea	6.8 m D x 3 m TL - TL	110 m3					
200	PROC	M	220-MPPS-035		Quench Tank Pump (Operating)	1	ea	150x100-300mm	754 m3/h @ 20 m H	SLURRY	90	90	y	
200	PROC	M	220-MPPS-036		Quench Tank Pump (Standby)	1	ea	150x100-300mm	754 m3/h @ 20 m H	SLURRY	90	90	y	
200	PROC	M	220-MSTK-002		EXHAUST STACK - PRESSURE LEACH BUILDING	1	ea	0.5 m D x 30 m H						
					<b>COMMON TO BOTH TRAINS</b>									
200	PROC	M	220-MCZO-001		Cooling Tower	1	ea		447 m3/h, 95-45°C	6-cell FRP cooling tower (13m x 34m x 9m H)	110.0	110.0	y	
200	PROC	M	220-MPPS-039		Scrubber Cooling Recirc Pump (Operating)	1	ea	200x150-450mm	1509 m3/h @ 20 m H	SLURRY	185	185	y	
200	PROC	M	220-MPPS-040		Scrubber Cooling Recirc Pump (Standby)	1	ea	200x150-450mm	1509 m3/h @ 20 m H	SLURRY	185	185	y	
200	PROC	J			Autoclave Emergency System	1	PKG							
200	PROC	M	220-MHBT-001		Autoclave Hydraulic Bolt Tensioner	1	ea	-----	1000 Nm	Hydraulic Bolt Tensioner				
200	PROC	M	220-MTNK-003		Autoclave Agitator Seal Water Tank	1	PKG	1.5 m D x 1.7 m H	1 hr, 0 m3	Covered Stirred Tank				
200	PROC	M	220-MTNK-005		Autoclave Agitator Seal Flush Water Tank	1	PKG	1.5 m D x 1.7 m H	1 hr, 0 m3	Covered Stirred Tank				
200	PROC	M	220-MTNK-009		Glycol Storage Tank	1	ea	2 m D x 2.3 m H	1 hr, 10 m3	Covered Stirred Tank				
200	PROC	M	220-MPPP-015		Glycol Distribution Pump	1	ea	40x25-200mm	6 m3/h @ 20 m H	Centrifugal	0.8	0.8	y	
200	PROC	M	220-MPPD-015		Autoclave Seal Water Pump, Operating	1	PKG	100x800-200mm	16 m3/h @ 788 m H	Autoclave Seal Pump	45	45	y	
200	PROC	M	220-MPPD-016		Autoclave Seal Water Pump, Operating	1	PKG	100x800-200mm	16 m3/h @ 788 m H	Autoclave Seal Pump	45	45	y	
200	PROC	M	220-MPPD-017		Autoclave Seal Water Pump, Standby	1	PKG	100x800-200mm	16 m3/h @ 788 m H	Autoclave Seal Pump	45	45	y	
200	PROC	M	220-MTNK-010		Leached Slurry Surge Tank	1	ea	7.5 m D x 8.6 m H	1 hr, 280 m3	Covered Stirred Tank				
200	PROC	M	220-MAGP-015		Agitator - Leached Slurry Surge Tank	1	ea	3 m D x 8.6 m L	Uniform Distribution	Single - Lightnin A510	11	11	y	
200	PROC	M	220-MPPS-037		Pump #1 - PIR Feed, Operating	1	ea	300x250-625mm	689 m3/h @ 20 m H	SLURRY	110	110	y	
200	PROC	M	220-MPPS-038		Pump #2 - PIR Feed, Standby	1	ea	300x250-625mm	689 m3/h @ 20 m H	SLURRY	110	110	y	
200	PROC	M	220-MPPM-001		Area Sump Pump #1 - HPAL Area	1	ea	100 x 75 mm	68 m3/h	Vertical Cantilevered Sump	7.5	7.5		
200	PROC	M	220-MPPM-002		Area Sump Pump #2 - HPAL Area	1	ea	100 x 75 mm	68 m3/h	Vertical Cantilevered Sump	7.5	7.5		
200	PROC	M	220-MPPM-003		Area Sump Pump #3 - HPAL Area	1	ea	100 x 75 mm	68 m3/h	Vertical Cantilevered Sump	7.5	7.5		
					<b>PRIMARY IRON REMOVAL</b>									
200	PROC	M	225-MTNK-001		Cr Reduction Tank	1	ea	4.1 m D x 4.7 m H	0.0833 hr, 50 m3	Closed Tank				
200	PROC	M	225-MAGP-001		Cr Reduction Tank Agitator	1	ea	1.6 m D x 4.7 m L	Mass Transfer/ Gas sparging	315-Gas Sparging	22.0	22.00	y	
200	PROC	M	225-MSPG-001		Cr Reduction Tank Sparger	1	ea			Sparger				
200	PROC	M	225-MTNK-002		PIR TNK #1	1	ea	9 m D x 10.3 m H	0.75 hr, 570 m3	Closed Tank				

WBS	CLASS	MATRIX	EQUIP No.	PFD No.	DESCRIPTION	QTY	UNIT	DESIGN DATA			MOTOR		
								SIZE (primary dimensions)	DESIGN BASIS (Capacity)	EQUIP TYPE	SIZE (kW)	TOTAL MOTOR (kW)	VSD
200	PROC	M	225-MTNK-003		PIR TNK #2	1	ea	9 m D x 10.3 m H	0.75 hr, 570 m3	Closed Tank			
200	PROC	M	225-MTNK-004		PIR TNK #3	1	ea	9 m D x 10.3 m H	0.75 hr, 570 m3	Closed Tank			
200	PROC	M	225-MTNK-005		PIR TNK #4	1	ea	9 m D x 10.3 m H	0.75 hr, 570 m3	Closed Tank			
200	PROC	M	225-MAGP-002		PIR TNK #1 AGT	1	ea	3.6 m D x 10.3 m L	Uniform Distribution	310 - Solid Suspension	30.0	30.00	y
200	PROC	M	225-MAGP-003		PIR TNK #2 AGT	1	ea	3.6 m D x 10.3 m L	Uniform Distribution	310 - Solid Suspension	30.0	30.00	y
200	PROC	M	225-MAGP-004		PIR TNK #3 AGT	1	ea	3.6 m D x 10.3 m L	Uniform Distribution	310 - Solid Suspension	30.0	30.00	y
200	PROC	M	225-MAGP-005		PIR TNK #4 AGT	1	ea	3.6 m D x 10.3 m L	Uniform Distribution	310 - Solid Suspension	30.0	30.00	y
200	PROC	M	225-MSBR-001		Caustic Scrubber Package (c/w packed bed column, pumps, exhaust fans, stack)	1	pkg	3.1 m D x 6.6 m H	31142 Nm3/h	Packed Bed Scrubber	225.0	225.00	
200	PROC	M	225-MPPM-001		Area Sump Pump - Primary Iron Removal Area 1	1	ea	100 x 75 mm	68 m3/h	Vertical Cantilevered Sump	7.5	7.5	
200	PROC				CCD								
200	PROC	M	230-MTHK-001		CCD # 1	1	ea	52.1 m D	0.25 m2/tpd, 356 t/h	Thickener			
200	PROC	M	230-MTHM-001		CCD # 1: Mechanism, supports, etc.	1	ea	52.1 m D	0.25 m2/tpd, 356 t/h	Thickener	11	11	
200	PROC	M	230-MTHK-002		CCD # 2	1	ea	52.1 m D	0.25 m2/tpd, 356 t/h	Thickener			
200	PROC	M	230-MTHM-002		CCD # 2: Mechanism, supports, etc.	1	ea	52.1 m D	0.25 m2/tpd, 356 t/h	Thickener	11	11	
200	PROC	M	230-MTHK-003		CCD # 3	1	ea	52.1 m D	0.25 m2/tpd, 356 t/h	Thickener			
200	PROC	M	230-MTHM-003		CCD # 3: Mechanism, supports, etc.	1	ea	52.1 m D	0.25 m2/tpd, 356 t/h	Thickener	11	11	
200	PROC	M	230-MTHK-004		CCD # 4	1	ea	52.1 m D	0.25 m2/tpd, 356 t/h	Thickener			
200	PROC	M	230-MTHM-004		CCD # 4: Mechanism, supports, etc.	1	ea	52.1 m D	0.25 m2/tpd, 356 t/h	Thickener	11	11	
200	PROC	M	230-MTHK-005		CCD # 5	1	ea	52.1 m D	0.25 m2/tpd, 356 t/h	Thickener			
200	PROC	M	230-MTHM-005		CCD # 5: Mechanism, supports, etc.	1	ea	52.1 m D	0.25 m2/tpd, 356 t/h	Thickener	11	11	
200	PROC	M	230-MTHK-006		CCD # 6	1	ea	52.1 m D	0.25 m2/tpd, 356 t/h	Thickener			
200	PROC	M	230-MTHM-006		CCD # 6: Mechanism, supports, etc.	1	ea	52.1 m D	0.25 m2/tpd, 356 t/h	Thickener	11	11	
200	PROC	M	230-MTNK-001		Feed Pot #1	1	ea	5.4 m D x 6.2 m H	0.083 hr, 120 m3	Closed Tank			
200	PROC	M	230-MTNK-002		Feed Pot #2	1	ea	5 m D x 5.8 m H	0.083 hr, 100 m3	Closed Tank			
200	PROC	M	230-MTNK-003		Feed Pot #3	1	ea	5 m D x 5.8 m H	0.083 hr, 100 m3	Closed Tank			
200	PROC	M	230-MTNK-004		Feed Pot #4	1	ea	5.1 m D x 5.8 m H	0.083 hr, 100 m3	Closed Tank			
200	PROC	M	230-MTNK-005		Feed Pot #5	1	ea	5.1 m D x 5.8 m H	0.083 hr, 100 m3	Closed Tank			
200	PROC	M	230-MTNK-006		Feed Pot #6	1	ea	5.1 m D x 5.8 m H	0.083 hr, 100 m3	Closed Tank			
200	PROC	M	230-MTNK-007		CCD #1 O/F TNK	1	ea	3.9 m D x 4.5 m H	0.042 hr, 50 m3	Closed Tank			
200	PROC	M	230-MTNK-008		CCD #2 O/F TNK	1	ea	3.4 m D x 3.9 m H	0.042 hr, 30 m3	Closed Tank			
200	PROC	M	230-MTNK-009		CCD #3 O/F TNK	1	ea	3.4 m D x 3.9 m H	0.042 hr, 30 m3	Closed Tank			
200	PROC	M	230-MTNK-010		CCD #4 O/F TNK	1	ea	3.4 m D x 3.9 m H	0.042 hr, 30 m3	Closed Tank			
200	PROC	M	230-MTNK-011		CCD #5 O/F TNK	1	ea	3.4 m D x 3.9 m H	0.042 hr, 30 m3	Closed Tank			
200	PROC	M	230-MTNK-012		CCD #6 O/F TNK	1	ea	3.4 m D x 3.9 m H	0.042 hr, 30 m3	Closed Tank			
200	PROC	M	230-MAGP-001		Feed Pot #1 AGT	1	ea	1.8 m D x 6.2 m L	Uniform Distribution	310 - Solid Suspension	18.5	18.5	y
200	PROC	M	230-MAGP-002		Feed Pot #2 AGT	1	ea	1.7 m D x 5.8 m L	Uniform Distribution	310 - Solid Suspension	15	15	y
200	PROC	M	230-MAGP-003		Feed Pot #3 AGT	1	ea	1.7 m D x 5.8 m L	Uniform Distribution	310 - Solid Suspension	15	15	y
200	PROC	M	230-MAGP-004		Feed Pot #4 AGT	1	ea	1.7 m D x 5.8 m L	Uniform Distribution	310 - Solid Suspension	15	15	y
200	PROC	M	230-MAGP-005		Feed Pot #5 AGT	1	ea	1.7 m D x 5.8 m L	Uniform Distribution	310 - Solid Suspension	15	15	y
200	PROC	M	230-MAGP-006		Feed Pot #6 AGT	1	ea	1.7 m D x 5.8 m L	Uniform Distribution	310 - Solid Suspension	15	15	y

WBS	CLASS	MATRIX	EQUIP No.	PFD No.	DESCRIPTION	QTY	UNIT	DESIGN DATA			MOTOR		
								SIZE (primary dimensions)	DESIGN BASIS (Capacity)	EQUIP TYPE	SIZE (kW)	TOTAL MOTOR (kW)	VSD
200	PROC	M	230-MPPS-001		CCD #1 U/F Pump	1	ea	250x200-525mm	584 m3/h @ 20 m H	SLURRY	110	110	y
200	PROC	M	230-MPPS-002		CCD #1 U/F Pump Stand-by	1	ea	250x200-525mm	584 m3/h @ 20 m H	SLURRY	110	110	y
200	PROC	M	230-MPPS-003		CCD #2 U/F Pump	1	ea	250x200-525mm	593 m3/h @ 20 m H	SLURRY	110	110	y
200	PROC	M	230-MPPS-004		CCD #2 U/F Pump Stand-by	1	ea	250x200-525mm	593 m3/h @ 20 m H	SLURRY	110	110	y
200	PROC	M	230-MPPS-005		CCD #3 U/F Pump	1	ea	300x250-625mm	597 m3/h @ 20 m H	SLURRY	110	110	y
200	PROC	M	230-MPPS-006		CCD #3 U/F Pump Stand-by	1	ea	300x250-625mm	597 m3/h @ 20 m H	SLURRY	110	110	y
200	PROC	M	230-MPPS-007		CCD #4 U/F Pump	1	ea	300x250-625mm	600 m3/h @ 20 m H	SLURRY	110	110	y
200	PROC	M	230-MPPS-008		CCD #4 U/F Pump Stand-by	1	ea	300x250-625mm	600 m3/h @ 20 m H	SLURRY	110	110	y
200	PROC	M	230-MPPS-009		CCD #5 U/F Pump	1	ea	300x250-625mm	601 m3/h @ 20 m H	SLURRY	110	110	y
200	PROC	M	230-MPPS-010		CCD #5 U/F Pump Stand-by	1	ea	300x250-625mm	601 m3/h @ 20 m H	SLURRY	110	110	y
200	PROC	M	230-MPPS-011		CCD #6 U/F Pump	1	ea	300x250-625mm	602 m3/h @ 20 m H	SLURRY	110	110	y
200	PROC	M	230-MPPS-012		CCD #6 U/F Pump Stand-by	1	ea	300x250-625mm	602 m3/h @ 20 m H	SLURRY	110	110	y
200	PROC	M	230-MPPP-011		CCD #6 O/F Pump	1	ea	250x200-375mm	795 m3/h @ 20 m H	Centrifugal	75	75	y
200	PROC	M	230-MPPP-012		CCD #6 O/F Pump Stand-by	1	ea	250x200-375mm	795 m3/h @ 20 m H	Centrifugal	75	75	y
200	PROC	M	230-MPPP-009		CCD #5 O/F Pump	1	ea	250x200-375mm	795 m3/h @ 20 m H	Centrifugal	75	75	y
200	PROC	M	230-MPPP-010		CCD #5 O/F Pump Stand-by	1	ea	250x200-375mm	795 m3/h @ 20 m H	Centrifugal	75	75	y
200	PROC	M	230-MPPP-007		CCD #4 O/F Pump	1	ea	250x200-375mm	801 m3/h @ 20 m H	Centrifugal	75	75	y
200	PROC	M	230-MPPP-008		CCD #4 O/F Pump Stand-by	1	ea	250x200-375mm	801 m3/h @ 20 m H	Centrifugal	75	75	y
200	PROC	M	230-MPPP-005		CCD #3 O/F Pump	1	ea	250x200-375mm	807 m3/h @ 20 m H	Centrifugal	75	75	y
200	PROC	M	230-MPPP-006		CCD #3 O/F Pump Stand-by	1	ea	250x200-375mm	807 m3/h @ 20 m H	Centrifugal	75	75	y
200	PROC	M	230-MPPP-003		CCD #2 O/F Pump	1	ea	250x200-375mm	823 m3/h @ 20 m H	Centrifugal	75	75	y
200	PROC	M	230-MPPP-004		CCD #2 O/F Pump Stand-by	1	ea	250x200-375mm	823 m3/h @ 20 m H	Centrifugal	75	75	y
200	PROC	M	230-MPPP-001		CCD #1 O/F Pump	1	ea	250x200-375mm	1218 m3/h @ 20 m H	Centrifugal	110	110	y
200	PROC	M	230-MPPP-002		CCD #1 O/F Pump Stand-by	1	ea	250x200-375mm	1218 m3/h @ 20 m H	Centrifugal	110	110	y
200	PROC	M	230-MPPM-001		Area Sump Pump #1 - CCD Area	1	ea	100 x 75 mm	68 m3/h	Vertical Cantilevered Sump	7.5	7.5	
200	PROC	M	230-MPPM-002		Area Sump Pump #2 - CCD Area	1	ea	100 x 75 mm	68 m3/h	Vertical Cantilevered Sump	7.5	7.5	
200	PROC	M	230-MPPM-003		Area Sump Pump #3 - CCD Area	1	ea	100 x 75 mm	68 m3/h	Vertical Cantilevered Sump	7.5	7.5	
200	PROC	M	230-MPPM-004		Area Sump Pump #4 - CCD Area	1	ea	100 x 75 mm	68 m3/h	Vertical Cantilevered Sump	7.5	7.5	
200	PROC	M	230-MPPM-005		Area Sump Pump #5 - CCD Area	1	ea	100 x 75 mm	68 m3/h	Vertical Cantilevered Sump	7.5	7.5	
200	PROC	M	230-MPPM-006		Area Sump Pump #6 - CCD Area	1	ea	100 x 75 mm	68 m3/h	Vertical Cantilevered Sump	7.5	7.5	
200	PROC				<b>SECONDARY IRON REMOVAL</b>								
200	PROC	M	240-MTNK-001		SIR TNK #1	1	ea	11 m D x 12 m H	1 hr, 1030 m3	Closed Tank			
200	PROC	M	240-MTNK-002		SIR TNK #2	1	ea	11 m D x 12 m H	1 hr, 1030 m3	Closed Tank			
200	PROC	M	240-MTNK-003		SIR TNK #3	1	ea	11 m D x 12 m H	1 hr, 1030 m3	Closed Tank			
200	PROC	M	240-MTNK-004		SIR TNK #4	1	ea	11 m D x 12 m H	1 hr, 1030 m3	Closed Tank			
200	PROC	M	240-MTNK-005		SIR TNK #5	1	ea	11 m D x 12 m H	1 hr, 1030 m3	Closed Tank			
200	PROC	M	240-MTNK-006		SIR Feed Pot	1	ea	2.2 m D x 2.6 m H	0.008 hr, 8.6 m3	Closed Tank			
200	PROC	M	240-MTNK-007		SIR Thickener O/F TNK	1	ea	5.1 m D x 5.9 m H	0.083 hr, 83.3 m3	Closed Tank			
200	PROC	M	240-MTNK-008		Filter Feed Storage TNK	1	ea	13.8 m D x 15.2 m H	2 hr, 1740 m3	Closed Tank			
200	PROC	M	240-MTNK-009		SIR Backwash TNK	1	ea	6.3 m D x 7.3 m H	165.5 m3	Closed Tank			

WBS	CLASS	MATRIX	EQUIP No.	PFD No.	DESCRIPTION	QTY	UNIT	SIZE (primary dimensions)	DESIGN DATA			MOTOR		
									DESIGN BASIS (Capacity)	EQUIP TYPE	SIZE (kW)	TOTAL MOTOR (kW)	VSD	
200	PROC	M	240-MTNK-010		SIR Dirty Backwash TNK	1	ea	6.3 m D x 7.3 m H	165.5 m3	Closed Tank				
200	PROC	M	240-MTNK-011		SIR Surge TNK	1	ea	13.8 m D x 15.2 m H	2 hr, 1740 m3	Closed Tank				
200	PROC	M	240-MTHK-001		SIR Thickener	1	ea	20.7 m D	1 m2/tpd, 14 t/h	Clarifier				
200	PROC	M	240-MTHM-001		SIR Thickener: Mechanism, supports, etc.	1	ea	20.7 m D	1 m2/tpd, 14 t/h	Clarifier	5.5	5.5		
200	PROC	M	240-MAGP-001		SIR TNK #1 AGT	1	ea	4.4 m D x 12 m L	Mass Transfer/ Gas sparging	315-Gas Sparging	500.0	500.00	y	
200	PROC	M	240-MAGP-002		SIR TNK #2 AGT	1	ea	4.4 m D x 12 m L	Mass Transfer/ Gas sparging	315-Gas Sparging	500.0	500.00	y	
200	PROC	M	240-MAGP-003		SIR TNK #3 AGT	1	ea	4.4 m D x 12 m L	Mass Transfer/ Gas sparging	315-Gas Sparging	500.0	500.00	y	
200	PROC	M	240-MAGP-004		SIR TNK #4 AGT	1	ea	4.4 m D x 12 m L	Mass Transfer/ Gas sparging	315-Gas Sparging	500.0	500.00	y	
200	PROC	M	240-MAGP-005		SIR TNK #5 AGT	1	ea	4.4 m D x 12 m L	Mass Transfer/ Gas sparging	315-Gas Sparging	500.0	500.00	y	
200	PROC	M	240-MAGP-006		SIR Dirty Backwash TNK AGT	1	ea	2.5 m D x 7.3 m L	Uniform Distribution	310 - Solid Suspension	15.0	15.00	y	
200	PROC	M	240-MSPG-001		SIR TNK #1 Sparger	1	ea		1694 Nm3/h	Sparger				
200	PROC	M	240-MSPG-002		SIR TNK #2 Sparger	1	ea		1694 Nm3/h	Sparger				
200	PROC	M	240-MSPG-003		SIR TNK #3 Sparger	1	ea		1694 Nm3/h	Sparger				
200	PROC	M	240-MSPG-004		SIR TNK #4 Sparger	1	ea		1694 Nm3/h	Sparger				
200	PROC	M	240-MSPG-005		SIR TNK #5 Sparger	1	ea		1694 Nm3/h	Sparger				
200	PROC	M	240-MPPS-001		SIR Slurry Transfer Pump	1	ea	350x300-725mm	1121 m3/h @ 20 m H	SLURRY	150.0	150.0	y	
200	PROC	M	240-MPPS-002		SIR Slurry Transfer Pump Stand-by	1	ea	350x300-725mm	1121 m3/h @ 20 m H	SLURRY	150.0	150.0	y	
200	PROC	M	240-MPPS-003		SIR Thickener U/F Pump	1	ea	75x50-375mm	42 m3/h @ 20 m H	SLURRY	7.5	7.5	y	
200	PROC	M	240-MPPS-004		SIR Thickener U/F Pump Stand-by	1	ea	75x50-375mm	42 m3/h @ 20 m H	SLURRY	7.5	7.5	y	
200	PROC	M	240-MPPS-005		SIR Backwash Slurry Transfer Pump	1	ea	350x300-725mm	827 m3/h @ 20 m H	SLURRY	110	110	--	
200	PROC	M	240-MPPS-006		SIR Backwash Slurry Transfer Pump Stand-by	1	ea	350x300-725mm	827 m3/h @ 20 m H	SLURRY	110	110	--	
200	PROC	M	240-MPPP-001		SIR Thickener O/F Pump	1	ea	250x200-375mm	1087 m3/h @ 20 m H	Centrifugal	110.0	110.0	y	
200	PROC	M	240-MPPP-002		SIR Thickener O/F Pump Stand-by	1	ea	250x200-375mm	1087 m3/h @ 20 m H	Centrifugal	110.0	110.0	y	
200	PROC	M	240-MPPP-003		SIR Filter Feed Pump	1	ea	250x200-375mm	1217 m3/h @ 40 m H	Centrifugal	225.0	225.0	y	
200	PROC	M	240-MPPP-004		SIR Filter Feed Pump Stand-by	1	ea	250x200-375mm	1217 m3/h @ 40 m H	Centrifugal	225.0	225.0	y	
200	PROC	M	240-MPPP-005		SIR Backwash Pump	1	ea	250x200-375mm	827 m3/h @ 40 m H	Centrifugal	150	150	y	
200	PROC	M	240-MPPP-006		SIR Backwash Pump Stand-by	1	ea	250x200-375mm	827 m3/h @ 40 m H	Centrifugal	150	150	y	
200	PROC	M	240-MPPP-007		SIR Surge Pump	1	ea	250x200-375mm	1086 m3/h @ 20 m H	Centrifugal	110.0	110.0	y	
200	PROC	M	240-MPPP-008		SIR Surge Pump Stand-by	1	ea	250x200-375mm	1086 m3/h @ 20 m H	Centrifugal	110.0	110.0	y	
200	PROC	M	240-MFLS-001		SIR Sand Filter #1	1	ea	3 m D x 1.5 m H	84m3/h	Sand Filter				
200	PROC	M	240-MFLS-002		SIR Sand Filter #2	1	ea	3 m D x 1.5 m H	84m3/h	Sand Filter				
200	PROC	M	240-MFLS-003		SIR Sand Filter #3	1	ea	3 m D x 1.5 m H	84m3/h	Sand Filter				
200	PROC	M	240-MFLS-004		SIR Sand Filter #4	1	ea	3 m D x 1.5 m H	84m3/h	Sand Filter				
200	PROC	M	240-MFLS-005		SIR Sand Filter #5	1	ea	3 m D x 1.5 m H	84m3/h	Sand Filter				
200	PROC	M	240-MFLS-006		SIR Sand Filter #6	1	ea	3 m D x 1.5 m H	84m3/h	Sand Filter				
200	PROC	M	240-MFLS-007		SIR Sand Filter #7	1	ea	3 m D x 1.5 m H	84m3/h	Sand Filter				
200	PROC	M	240-MFLS-008		SIR Sand Filter #8	1	ea	3 m D x 1.5 m H	84m3/h	Sand Filter				
200	PROC	M	240-MFLS-009		SIR Sand Filter #9	1	ea	3 m D x 1.5 m H	84m3/h	Sand Filter				
200	PROC	M	240-MFLS-010		SIR Sand Filter #10	1	ea	3 m D x 1.5 m H	84m3/h	Sand Filter				
200	PROC	M	240-MFLS-011		SIR Sand Filter #11	1	ea	3 m D x 1.5 m H	84m3/h	Sand Filter				
200	PROC	M	240-MFLS-012		SIR Sand Filter #12	1	ea	3 m D x 1.5 m H	84m3/h	Sand Filter				
200	PROC	M	240-MFLS-013		SIR Sand Filter #13	1	ea	3 m D x 1.5 m H	84m3/h	Sand Filter				

WBS	CLASS	MATRIX	EQUIP No.	PFD No.	DESCRIPTION	QTY	UNIT	DESIGN DATA			MOTOR		
								SIZE (primary dimensions)	DESIGN BASIS (Capacity)	EQUIP TYPE	SIZE (kW)	TOTAL MOTOR (kW)	VSD
200	PROC	M	240-MFAB-001		SIR Tank Blower 1	1	ea		3682Nm <sup>3</sup> /h	Air Blower	225.0	225	
200	PROC	M	240-MFAB-002		SIR Tank Blower 2	1	ea		3682Nm <sup>3</sup> /h	Air Blower	225.0	225	
200	PROC	M	240-MFAB-003		SIR Tank Blower, Standby	1	ea		3682Nm <sup>3</sup> /h	Air Blower	225.0	225	
200	PROC	M	240-MFAB-004		SIR Filter Blower	1	PKG			Air Blower	55.0	55	
200	PROC	M	240-MCNJ-001		JIB Crane	1	ea						
200	PROC	M	240-MPPM-001		Area Sump Pump - Secondary Iron Removal Area 1	1	ea	100 x 75 mm	68 m <sup>3</sup> /h	Vertical Cantilevered Sump	7.5	7.5	
200	PROC				<b>MIXED HYDROXIDE PRECIPITATION</b>								
200	PROC	M	250-MTNK-001		MHP TNK #1	1	ea	9.9 m D x 11.4 m H	0.75 hr, 760 m <sup>3</sup>	Closed Tank			
200	PROC	M	250-MTNK-002		MHP TNK #2	1	ea	9.9 m D x 11.4 m H	0.75 hr, 760 m <sup>3</sup>	Closed Tank			
200	PROC	M	250-MTNK-003		MHP TNK #3	1	ea	9.9 m D x 11.4 m H	0.75 hr, 760 m <sup>3</sup>	Closed Tank			
200	PROC	M	250-MTNK-004		MHP TNK #4	1	ea	9.9 m D x 11.4 m H	0.75 hr, 760 m <sup>3</sup>	Closed Tank			
200	PROC	M	250-MTNK-005		MHP Feed Pot	1	ea	2.2 m D x 2.5 m H	0.008 hr, 8.5 m <sup>3</sup>	Closed Tank			
200	PROC	M	250-MTNK-006		MHP Thickener O/F TNK	1	ea	2.2 m D x 2.5 m H	0.008 hr, 8.2 m <sup>3</sup>	Closed Tank			
200	PROC	M	250-MTNK-007		MHP Filter Press Feed TNK	1	ea	5.7 m D x 6.6 m H	6 hr, 121.1 m <sup>3</sup>	Closed Tank			
200	PROC	M	250-MTNK-008		Filter Filtrate Tank	1	ea	2.7 m D x 3.1 m H	0.5 hr, 13.2 m <sup>3</sup>	Closed Tank			
200	PROC	M	250-MAGP-001		MHP TNK #1 AGT	1	ea	4 m D x 11.4 m L	Uniform Distribution	310 - Solid Suspension	45.0	45.00	y
200	PROC	M	250-MAGP-002		MHP TNK #2 AGT	1	ea	4 m D x 11.4 m L	Uniform Distribution	310 - Solid Suspension	45.0	45.00	y
200	PROC	M	250-MAGP-003		MHP TNK #3 AGT	1	ea	4 m D x 11.4 m L	Uniform Distribution	310 - Solid Suspension	45.0	45.00	y
200	PROC	M	250-MAGP-004		MHP TNK #4 AGT	1	ea	4 m D x 11.4 m L	Uniform Distribution	310 - Solid Suspension	45.0	45.00	y
200	PROC	M	250-MAGP-006		MHP Filter Feed TNK AGT	1	ea	2.3 m D x 6.6 m L	Uniform Distribution	320 - High Viscosity	11.0	11.00	y
200	PROC	M	250-MAGP-007		Filter Filtrate TNK AGT	1	ea	1.1 m D x 3.1 m L	Uniform Distribution	310 - Solid Suspension	3.7	3.70	y
200	PROC	M	250-MTHK-001		MHP Thickener	1	ea	20.7 m D	0.7 m <sup>2</sup> /pd, 20 t/h	Thickener			
200	PROC	M	250-MTHM-001		MHP Thickener: Mechanism, supports, etc.	1	ea	20.7 m D	0.7 m <sup>2</sup> /pd, 20 t/h	Thickener	5.5	5.5	
200	PROC	M	250-MSAQ-001		MHP Sampler	1	ea						
200	PROC	M	250-MFLC-001		MHP Filter Press 1	1	ea	1.5 x 1.5m x 43 plates / 10min cycle time	5/h solids	Diaphragm Filter Press	11	11	
200	PROC	M	250-MHOP-001		MHP Hopper 1	1	ea	3.4 m D x 2.2 m H	0/h solids	Hopper			
200	PROC	M	250-MCVS-001		MHP Screw Conveyor 1	1	ea	225mm D x 20m L	0/h solids	Screw Conveyor	3.7	3.7	
200	PROC	M	250-MCVB-001		MHP Transfer Conveyor	1	ea	457 mm x 10 m L	0/h solids	Screw Conveyor	2.2	2.2	
200	PROC	M	250-MBGH-001		MHP Filter Press Dust Collector	1	ea			Bag House and Fan	7.5	7.5	
200	PROC	M	250-MFLC-002		MHP Filter Press 2	1	ea	1.5 x 1.5m x 43 plates / 10min cycle time	5/h solids	Diaphragm Filter Press	11	11	
200	PROC	M	250-MHOP-002		MHP Hopper 2	1	ea	3.4 m D x 2.2 m H	0/h solids	Hopper			
200	PROC	M	250-MCVS-002		MHP Screw Conveyor 2	1	ea	225mm D x 20m L	0/h solids	Screw Conveyor	3.7	3.7	
200	PROC	M	250-MCVB-002		MHP Retracting Conveyor	1	ea	457 mm x 10 m L	0/h solids	Screw Conveyor	2.2	2.2	
200	PROC	M	250-MBGH-002		MHP Load-Out Dust Collector	1	ea			Bag House and Fan	7.5	7.5	
200	PROC	M	250-MHST-001		Load-Out Hoist	1	ea			Hoist	3.7	3.7	
200	PROC	M	250-MSLW-001		Truck Weigh Scale (existing)	1	ea	3m x 11m	40mt capacity	Weigh Scale			
200	PROC	M	250-MCNJ-001		Bulk Bag Handling Jib	1	ea						
200	PROC	M	250-MBIN-001		Magnesia Day Silo 1	1	ea	1.3 m D x 2.7 m H	4 hr, 2.9 m <sup>3</sup>	Silo			
200	PROC	M	250-MBIN-002		Magnesia Day Silo 2	1	ea	1.3 m D x 2.7 m H	4 hr, 2.9 m <sup>3</sup>	Silo			
200	PROC	M	250-MCVS-004		Magnesia Feeder 1	1	ea	150mm x 1 m	2.99t/h solids	Screw Conveyor	0.37	0.37	

WBS	CLASS	MATRIX	EQUIP No.	PFD No.	DESCRIPTION	QTY	UNIT	DESIGN DATA			MOTOR		
								SIZE (primary dimensions)	DESIGN BASIS (Capacity)	EQUIP TYPE	SIZE (kW)	TOTAL MOTOR (kW)	VSD
200	PROC	M	250-MCVS-005		Magnesia Feeder 2	1	ea	150mm x 1 m	2.99t/h solids	Screw Conveyor	0.37	0.37	
200	PROC	M	250-MDCO-001		Magnesia Day Silo Dust Collector 1	1	ea				7.5	7.5	
200	PROC	M	250-MDCO-002		Magnesia Day Silo Dust Collector 2	1	ea				7.5	7.5	
200	PROC	M	250-MWCN-001		Wetting Cone 1	1	ea			Mix Pot			
200	PROC	M	250-MWCN-002		Wetting Cone 2	1	ea			Mix Pot			
200	PROC	M	250-MPPS-001		MHP Slurry Transfer Pump	1	ea	350x300-725mm	1107 m3/h @ 20 m H	SLURRY	150.0	150.0	y
200	PROC	M	250-MPPS-002		MHP Slurry Transfer Pump Stand-by	1	ea	350x300-725mm	1107 m3/h @ 20 m H	SLURRY	150.0	150.0	y
200	PROC	M	250-MPPS-003		MHP Thickener U/F Pump	1	ea	75x75-250mm	52 m3/h @ 20 m H	SLURRY	11.0	11.0	y
200	PROC	M	250-MPPS-004		MHP Thickener U/F Pump Stand-by	1	ea	75x75-250mm	52 m3/h @ 20 m H	SLURRY	11.0	11.0	y
200	PROC	M	250-MPPS-005		MHP Filter Press Feed Pump	1	ea	75x50-375mm	37 m3/h @ 40 m H	SLURRY	15.0	15.0	y
200	PROC	M	250-MPPS-006		MHP Filter Press Feed Pump Stand-by	1	ea	75x50-375mm	37 m3/h @ 40 m H	SLURRY	15.0	15.0	y
200	PROC	M	250-MPPS-007		Recirculation Pump	1	ea	75x50-375mm	48 m3/h @ 20 m H	SLURRY	7.5	7.5	y
200	PROC	M	250-MPPS-008		Recirculation Pump (Standby)	1	ea	75x50-375mm	48 m3/h @ 20 m H	SLURRY	7.5	7.5	y
200	PROC	M	250-MPPP-001		MHP Thickener O/F Pump	1	ea	250x200-375mm	1095 m3/h @ 20 m H	Centrifugal	110.0	110.0	y
200	PROC	M	250-MPPP-002		MHP Thickener O/F Pump Stand-by	1	ea	250x200-375mm	1095 m3/h @ 20 m H	Centrifugal	110.0	110.0	y
200	PROC	M	250-MPPM-001		Area Sump Pump - MHP Area 1	1	ea	100 x 75 mm	68 m3/h	Vertical Cantilevered Sump	7.5	7.5	
200	PROC				<b>SCAVENGER PRECIPITATION</b>								
200	PROC	M	260-MTNK-001		SP TNK #1	1	ea	10.9 m D x 12 m H	1 hr, 1020 m3	Closed Tank			
200	PROC	M	260-MTNK-002		SP TNK #2	1	ea	10.9 m D x 12 m H	1 hr, 1020 m3	Closed Tank			
200	PROC	M	260-MTNK-003		SP TNK #3	1	ea	10.9 m D x 12 m H	1 hr, 1020 m3	Closed Tank			
200	PROC	M	260-MTNK-004		SP Feed Pot	1	ea	2.2 m D x 2.5 m H	0.008 hr, 8.5 m3	Closed Tank			
200	PROC	M	260-MTNK-005		SP Thickener O/F TNK	1	ea	4.7 m D x 5.4 m H	0.083 hr, 83.6 m3	Closed Tank			
200	PROC	M	260-MTNK-008		Filter Feed Storage TNK	1	ea	13.9 m D x 15.2 m H	2 hr, 1741.616 m3	Closed Tank			
200	PROC	M	260-MTNK-009		SP Backwash TNK	1	ea	6.3 m D x 7.3 m H	165.5 m3	Closed Tank			
200	PROC	M	260-MTNK-010		SP Dirty Backwash TNK	1	ea	6.3 m D x 7.3 m H	165.5 m3	Closed Tank			
200	PROC	M	260-MTNK-011		SP Surge TNK	1	ea	13.9 m D x 15.2 m H	2 hr, 1741.616 m3	Closed Tank			
200	PROC	M	260-MAGP-001		SP TNK #1 AGT	1	ea	4.4 m D x 12 m L	Uniform Distribution	310 - Solid Suspension	55.0	55.00	y
200	PROC	M	260-MAGP-002		SP TNK #2 AGT	1	ea	4.4 m D x 12 m L	Uniform Distribution	310 - Solid Suspension	55.0	55.00	y
200	PROC	M	260-MAGP-003		SP TNK #3 AGT	1	ea	4.4 m D x 12 m L	Uniform Distribution	310 - Solid Suspension	55.0	55.00	y
200	PROC	M	260-MAGP-004		SP Dirty Backwash TNK AGT	1	ea	2.5 m D x 7.3 m L	Uniform Distribution	310 - Solid Suspension	15.0	15.00	y
200	PROC	M	260-MTHK-001		SP Thickener	1	ea	26.6 m D	2 m3/m2/h, 890.6 m3/h	Clarifier			
200	PROC	M	260-MTHM-001		SP Thickener: Mechanism, supports, etc.	1	ea	26.6 m D	2 m3/m2/h, 890.6 m3/h	Clarifier	5.5	5.5	
200	PROC	M	260-MPPS-001		SP Slurry Transfer Pump	1	ea	350x300-725mm	1109 m3/h @ 20 m H	SLURRY	150.0	150.0	y
200	PROC	M	260-MPPS-002		SP Slurry Transfer Pump Stand-by	1	ea	350x300-725mm	1109 m3/h @ 20 m H	SLURRY	150.0	150.0	y
200	PROC	M	260-MPPS-003		SP Thickener U/F Pump	1	ea	50x50-250mm	26 m3/h @ 20 m H	SLURRY	5.5	5.5	y
200	PROC	M	260-MPPS-004		SP Thickener U/F Pump Stand-by	1	ea	50x50-250mm	26 m3/h @ 20 m H	SLURRY	5.5	5.5	y
200	PROC	M	260-MPPS-005		SP Backwash Slurry Transfer Pump	1	ea	350x300-725mm	827 m3/h @ 20 m H	SLURRY	110	110	--
200	PROC	M	260-MPPS-006		SP Backwash Slurry Transfer Pump Stand-by	1	ea	350x300-725mm	827 m3/h @ 20 m H	SLURRY	110	110	--
200	PROC	M	260-MPPP-001		SP Thickener O/F Pump	1	ea	250x200-375mm	1090 m3/h @ 20 m H	Centrifugal	110.0	110.0	y
200	PROC	M	260-MPPP-002		SP Thickener O/F Pump Stand-by	1	ea	250x200-375mm	1090 m3/h @ 20 m H	Centrifugal	110.0	110.0	y

WBS	CLASS	MATRIX	EQUIP No.	PFD No.	DESCRIPTION	QTY	UNIT	DESIGN DATA			MOTOR		
								SIZE (primary dimensions)	DESIGN BASIS (Capacity)	EQUIP TYPE	SIZE (kW)	TOTAL MOTOR (kW)	VSD
200	PROC	M	260-MPPP-003		SP Filter Feed Pump	1	ea	250x200-375mm	1219 m3/h @ 40 m H	Centrifugal	225.0	225.0	y
200	PROC	M	260-MPPP-004		SP Filter Feed Pump Stand-by	1	ea	250x200-375mm	1219 m3/h @ 40 m H	Centrifugal	225.0	225.0	y
200	PROC	M	260-MPPP-005		SP Backwash Pump	1	ea	250x200-375mm	827 m3/h @ 40 m H	Centrifugal	150	150	y
200	PROC	M	260-MPPP-006		SP Backwash Pump Stand-by	1	ea	250x200-375mm	827 m3/h @ 40 m H	Centrifugal	150	150	y
200	PROC	M	260-MPPP-007		SP Surge Pump	1	ea	250x200-375mm	1089 m3/h @ 20 m H	Centrifugal	110.0	110.0	y
200	PROC	M	260-MPPP-008		SP Surge Pump Stand-by	1	ea	250x200-375mm	1089 m3/h @ 20 m H	Centrifugal	110.0	110.0	y
200	PROC	M	260-MFLS-001		SP Sand Filter #1	1	ea	3 m D x 1.5 m H	84m3/h	Sand Filter			
200	PROC	M	260-MFLS-002		SP Sand Filter #2	1	ea	3 m D x 1.5 m H	84m3/h	Sand Filter			
200	PROC	M	260-MFLS-003		SP Sand Filter #3	1	ea	3 m D x 1.5 m H	84m3/h	Sand Filter			
200	PROC	M	260-MFLS-004		SP Sand Filter #4	1	ea	3 m D x 1.5 m H	84m3/h	Sand Filter			
200	PROC	M	260-MFLS-005		SP Sand Filter #5	1	ea	3 m D x 1.5 m H	84m3/h	Sand Filter			
200	PROC	M	260-MFLS-006		SP Sand Filter #6	1	ea	3 m D x 1.5 m H	84m3/h	Sand Filter			
200	PROC	M	260-MFLS-007		SP Sand Filter #7	1	ea	3 m D x 1.5 m H	84m3/h	Sand Filter			
200	PROC	M	260-MFLS-008		SP Sand Filter #8	1	ea	3 m D x 1.5 m H	84m3/h	Sand Filter			
200	PROC	M	260-MFLS-009		SP Sand Filter #9	1	ea	3 m D x 1.5 m H	84m3/h	Sand Filter			
200	PROC	M	260-MFLS-010		SP Sand Filter #10	1	ea	3 m D x 1.5 m H	84m3/h	Sand Filter			
200	PROC	M	260-MFLS-011		SP Sand Filter #11	1	ea	3 m D x 1.5 m H	84m3/h	Sand Filter			
200	PROC	M	260-MFLS-012		SP Sand Filter #12	1	ea	3 m D x 1.5 m H	84m3/h	Sand Filter			
200	PROC	M	260-MFLS-013		SP Sand Filter #13	1	ea	3 m D x 1.5 m H	84m3/h	Sand Filter			
200	PROC	M	260-MFAB-001		SP Filter Blower	1	PKG			Air Blower	55.0	55	
200	PROC	M	260-MSBR-001		Tank Ventilation Scrubber Package (c/w packed bed column, pumps, exhaust fans, stack)	1	pkg	2.4 m D x 6.0 m H	22820 Nm3/h	Wet Scrubber	150.0	150.0	
200	PROC	M	260-MPPM-001		Area Sump Pump - Scavenger Precipitation Area 1	1	ea	100 x 75 mm	68 m3/h	Vertical Cantilevered Sump	7.5	7.5	
<b>200</b>	<b>PROC</b>				<b>RESIDUE NEUTRALIZATION AND PASTE REDUCTION</b>								
200	PROC	M	290-MTNK-001		RN TNK #1	1	ea	6.9 m D x 7.9 m H	0.5 hr, 250 m3	Closed Tank			
200	PROC	M	290-MTNK-002		RN TNK #2	1	ea	6.9 m D x 7.9 m H	0.5 hr, 254.2 m3	Closed Tank			
200	PROC	M	290-MTNK-003		RN TNK #3	1	ea	6.9 m D x 7.9 m H	0.5 hr, 254.2 m3	Closed Tank			
200	PROC	M	290-MTNK-004		RN TNK #4	1	ea	6.9 m D x 7.9 m H	0.5 hr, 254.2 m3	Closed Tank			
200	PROC	M	290-MTNK-005		RN Feed Pot 1	1	ea	1.3 m D x 1.5 m H	0.008 hr, 1.8 m3	Open Tank			
200	PROC	M	290-MTNK-006		RN Thickener O/F TNK 1	1	ea	2 m D x 2.3 m H	0.083 hr, 6 m3	Open Tank			
200	PROC	M	290-MTNK-007		RN Feed Pot 2	1	ea	1.3 m D x 1.5 m H	0.008 hr, 1.8 m3	Open Tank			
200	PROC	M	290-MTNK-008		RN Thickener O/F TNK 2	1	ea	2 m D x 2.3 m H	0.083 hr, 6 m3	Open Tank			
200	PROC	M	290-MTNK-009		RN Feed Pot 3	1	ea	1.3 m D x 1.5 m H	0.008 hr, 1.8 m3	Open Tank			
200	PROC	M	290-MTNK-010		RN Thickener O/F TNK 3	1	ea	2 m D x 2.3 m H	0.083 hr, 6 m3	Open Tank			
200	PROC	M	290-MAGP-001		RN TNK #1 AGT	1	ea	2.7 m D x 7.9 m L	Uniform Distribution	310 - Solid Suspension	18.5	18.50	y
200	PROC	M	290-MAGP-002		RN TNK #2 AGT	1	ea	2.7 m D x 7.9 m L	Uniform Distribution	310 - Solid Suspension	18.5	18.50	y
200	PROC	M	290-MAGP-003		RN TNK #3 AGT	1	ea	2.7 m D x 7.9 m L	Uniform Distribution	310 - Solid Suspension	18.5	18.50	y
200	PROC	M	290-MAGP-004		RN TNK #4 AGT	1	ea	2.7 m D x 7.9 m L	Uniform Distribution	310 - Solid Suspension	18.5	18.50	y
200	PROC	M	290-MAGP-005		RN Feed Pot #1 AGT	1	ea	0.5 m D x 1.5 m L	Uniform Distribution	310 - Solid Suspension	0.8	0.75	y
200	PROC	M	290-MAGP-006		RN Feed Pot #2 AGT	1	ea	0.5 m D x 1.5 m L	Uniform Distribution	310 - Solid Suspension	0.8	0.75	y
200	PROC	M	290-MAGP-007		RN Feed Pot #3 AGT	1	ea	0.5 m D x 1.5 m L	Uniform Distribution	310 - Solid Suspension	0.8	0.75	y

WBS	CLASS	MATRIX	EQUIP No.	PFD No.	DESCRIPTION	QTY	UNIT	DESIGN DATA			MOTOR		
								SIZE (primary dimensions)	DESIGN BASIS (Capacity)	EQUIP TYPE	SIZE (kW)	TOTAL MOTOR (kW)	VSD
200	PROC	M	290-MTHK-001		Paste Thickener 1	1	ea	20 m d, 16 m h	290 t/h	Thickener			
200	PROC	M	290-MTHM-001		Paste Thickener 1: Mechanism, supports, etc.	1	ea	20 m d, 16 m h	290 t/h	Thickener	18.5	18.5	
200	PROC	M	290-MTHK-002		Paste Thickener 2	1	ea	20 m d, 16 m h	290 t/h	Thickener			
200	PROC	M	290-MTHM-002		Paste Thickener 2: Mechanism, supports, etc.	1	ea	20 m d, 16 m h	290 t/h	Thickener	18.5	18.5	
200	PROC	M	290-MTHK-003		Paste Thickener 3	1	ea	20 m d, 16 m h	290 t/h	Thickener			
200	PROC	M	290-MTHM-003		Paste Thickener 3: Mechanism, supports, etc.	1	ea	20 m d, 16 m h	290 t/h	Thickener	18.5	18.5	
200	PROC	M	290-MPPS-001		RN Slurry Transfer Pump	1	ea	250x200-525mm	539 m3/h @ 95 m H	SLURRY	500.0	500.0	y
200	PROC	M	290-MPPS-006		RN Slurry Transfer Pump	1	ea	250x200-525mm	539 m3/h @ 95 m H	SLURRY	500.0	500.0	y
200	PROC	M	290-MPPS-002		RN Slurry Transfer Pump Stand-by	1	ea	250x200-525mm	539 m3/h @ 95 m H	SLURRY	500.0	500.0	y
200	PROC	M	290-MPPS-007		RN Slurry Transfer Pump Stand-by	1	ea	250x200-525mm	539 m3/h @ 95 m H	SLURRY	500.0	500.0	y
200	PROC	M	290-MSAO-001		RN Sampler	1	ea						
200	PROC	M	290-MPPS-003		RN THK 1 U/F Recirc Pump	1	ea	150x100-300mm	172 m3/h @ 20 m H	SLURRY	37.0	37.0	y
200	PROC	M	290-MPPS-004		RN THK 2 U/F Recirc Pump	1	ea	150x100-300mm	172 m3/h @ 20 m H	SLURRY	37.0	37.0	y
200	PROC	M	290-MPPS-005		RN THK 3 U/F Recirc Pump	1	ea	150x100-300mm	172 m3/h @ 20 m H	SLURRY	37.0	37.0	y
200	PROC	M	290-MPPA-001		RN Deep Bed Thickener Paste Pump (Operating)	0	ea		459 m3/h @ 725 m H	High Pressure Piston Diaphragm Pump	1500.0	1500.0	y
200	PROC	M	290-MPPA-002		RN Deep Bed Thickener Paste Pump (Standby)	0	ea		459 m3/h @ 725 m H	High Pressure Piston Diaphragm Pump	1500.0	1500.0	y
200	PROC	M	290-MPPP-001		RN Thickener O/F Pump 1	1	ea	100x75-200mm	79 m3/h @ 20 m H	Centrifugal	7.5	7.5	y
200	PROC	M	290-MPPP-002		RN Thickener O/F Pump Stand-by 1	1	ea	100x75-200mm	79 m3/h @ 20 m H	Centrifugal	7.5	7.5	y
200	PROC	M	290-MPPP-003		RN Thickener O/F Pump 2	1	ea	100x75-200mm	79 m3/h @ 20 m H	Centrifugal	7.5	7.5	y
200	PROC	M	290-MPPP-004		RN Thickener O/F Pump Stand-by 2	1	ea	100x75-200mm	79 m3/h @ 20 m H	Centrifugal	7.5	7.5	y
200	PROC	M	290-MPPP-005		RN Thickener O/F Pump 3	1	ea	100x75-200mm	79 m3/h @ 20 m H	Centrifugal	7.5	7.5	y
200	PROC	M	290-MPPP-006		RN Thickener O/F Pump Stand-by 3	1	ea	100x75-200mm	79 m3/h @ 20 m H	Centrifugal	7.5	7.5	y
200	PROC	M	290-MPPM-001		Area Sump Pump - Residue and Effluent Neutralization Area 1	1	ea	100 x 75 mm	68 m3/h	Vertical Cantilevered Sump	7.5	7.5	
200	PROC	M	290-MPPM-002		Area Sump Pump - Residue and Effluent Neutralization Area 2	1	ea	100 x 75 mm	68 m3/h	Vertical Cantilevered Sump	7.5	7.5	
200	PROC				<b>MANGANESE REMOVAL</b>								
200	PROC	M	270-MTNK-002		Mn Rem. TNK #1	1	ea	10 m D x 11.4 m H	0.75 hr, 775.2 m3	Closed Tank			
200	PROC	M	270-MTNK-003		Mn Rem. TNK #2	1	ea	10 m D x 11.4 m H	0.75 hr, 775.2 m3	Closed Tank			
200	PROC	M	270-MTNK-004		Mn Rem. TNK #3	1	ea	10 m D x 11.4 m H	0.75 hr, 775.2 m3	Closed Tank			
200	PROC	M	270-MTNK-005		Mn Rem. TNK #4	1	ea	10 m D x 11.4 m H	0.75 hr, 775.2 m3	Closed Tank			
200	PROC	M	270-MTNK-006		Mn Rem. Feed Pot	1	ea	2.2 m D x 2.6 m H	0.008 hr, 8.6 m3	Open Tank			
200	PROC	M	270-MTNK-007		Mn Rem. Thickener O/F TNK	1	ea	4.7 m D x 5.4 m H	0.083 hr, 82.7 m3	Open Tank			
200	PROC	M	270-MTHK-001		Mn Rem. Thickener	1	ea	26.2 m D	2 m3/m2/h, 863.3 m3/h	Clarifier			
200	PROC	M	270-MTHM-001		Mn Rem. Thickener: Mechanism, supports, etc.	1	ea	26.2 m D	2 m3/m2/h, 863.3 m3/h	Clarifier	5.5	5.5	
200	PROC	M	270-MAGP-001		Mn Rem. TNK #1 AGT	1	ea	4 m D x 11.4 m L	Mass Transfer/ Gas sparging	315-Gas Sparging	350.0	350.00	y
200	PROC	M	270-MAGP-002		Mn Rem. TNK #2 AGT	1	ea	4 m D x 11.4 m L	Mass Transfer/ Gas sparging	315-Gas Sparging	350.0	350.00	y
200	PROC	M	270-MAGP-003		Mn Rem. TNK #3 AGT	1	ea	4 m D x 11.4 m L	Mass Transfer/ Gas sparging	315-Gas Sparging	350.0	350.00	y
200	PROC	M	270-MAGP-004		Mn Rem. TNK #4 AGT	1	ea	4 m D x 11.4 m L	Mass Transfer/ Gas sparging	315-Gas Sparging	350.0	350.00	y
200	PROC	M	270-MSPG-001		Mn Rem. TNK #1 Sparger	1	ea						
200	PROC	M	270-MSPG-002		Mn Rem. TNK #2 Sparger	1	ea						
200	PROC	M	270-MSPG-003		Mn Rem. TNK #3 Sparger	1	ea						

WBS	CLASS	MATRIX	EQUIP No.	PFD No.	DESCRIPTION	QTY	UNIT	DESIGN DATA			MOTOR		
								SIZE (primary dimensions)	DESIGN BASIS (Capacity)	EQUIP TYPE	SIZE (kW)	TOTAL MOTOR (kW)	VSD
200	PROC	M	270-MSPG-004		Mn Rem. TNK #4 Sparger	1	ea						
200	PROC	M	270-MPPS-001		Mn Rem. Slurry Transfer Pump	1	ea	350x300-725mm	1123 m3/h @ 20 m H	SLURRY	150.0	150.0	y
200	PROC	M	270-MPPS-002		Mn Rem. Slurry Transfer Pump Stand-by	1	ea	350x300-725mm	1123 m3/h @ 20 m H	SLURRY	150.0	150.0	y
200	PROC	M	270-MPPS-003		Mn. Rem Thickener U/F Pump	1	ea	75x75-250mm	55 m3/h @ 20 m H	SLURRY	11.0	11.0	y
200	PROC	M	270-MPPS-004		Mn. Rem Thickener U/F Pump Stand-by	1	ea	75x75-250mm	55 m3/h @ 20 m H	SLURRY	11.0	11.0	y
200	PROC	M	270-MPPP-003		Mn Rem. Thickener O/F Pump	1	ea	250x200-375mm	1079 m3/h @ 20 m H	Centrifugal	110.0	110.0	y
200	PROC	M	270-MPPP-004		Mn Rem. Thickener O/F Pump Stand-by	1	ea	250x200-375mm	1079 m3/h @ 20 m H	Centrifugal	110.0	110.0	y
200	PROC	M	270-MFAB-001		MR Tank Blower 1	1	ea		2435Nm3/h	Air Blower	150.0	150.0	
200	PROC	M	270-MFAB-002		MR Tank Blower 2	1	ea		2435Nm3/h	Air Blower	150.0	150.0	
200	PROC	M	270-MFAB-003		MR Tank Blower, Standby	1	ea		2435Nm3/h	Air Blower	150.0	150.0	
200	PROC	M	270-MPPM-001		Area Sump Pump - Mn Removal Area 1	1	ea	100 x 75 mm	68 m3/h	Vertical Cantilevered Sump	7.5	7.5	
200	PROC				<b>BARREN SOLUTION SETTLING POND</b>								
200	PROC	M	275-MTNK-001		Ocean outfall Pump Tank	1	ea	5.8 m D x 6.6 m H	0.1 hr, 150.7 m3	Open Tank			
200	PROC	E	275-MZOO-001		Clarification and Surge Pond	1	ea	272m X 136m X 3m (Including crest)		Pond			
200	PROC	M	275-MPPP-001		Pond Reclaim Pump	1	ea	250x200-600 mm	1794 m3/h @ 20 m H	Centrifugal	185.0	185.0	y
200	PROC	M	275-MPPP-002		Pond Reclaim Pump Stand-by	1	ea	250x200-600 mm	1794 m3/h @ 20 m H	Centrifugal	185.0	185.0	y
200	PROC	M	275-MPPP-003		Mn Free Solution Recycle Pump (Standby)	1	ea	250x200-375mm	1079 m3/h @ 20 m H	Centrifugal	110.0	110.0	y
300	PROC				<b>ANCILLARY FACILITIES</b>								
300	PROC	M	305-MHOP-001		Limestone Reclaim Hopper	1	ea	3 m D x 1 m H	56t/h solids	Hopper			
300	PROC	M	305-MFEA-001		Limestone Apron Feeder	1	ea	762 mm x 2 m	56t/h solids	Apron Feeder	0.15	0.15	
300	PROC	M	305-MCVB-001		Limestone Belt Conveyor	1	ea	762 mm x 24 m (6 m lift)	56t/h solids	Conveyor	3.7	3.7	
300	PROC	M	305-MCHU-001		Limestone Screen Feed Chute	1	ea		56t/h solids	Chute			
300	PROC	M	305-MSCR-001		Limestone Vibrating Screen	1	ea	1.8 m x 4 m	56t/h solids	Grizzly	11	11	
300	PROC	M	305-MCHU-002		Limestone Screen OS Chute	1	ea		56t/h solids	Chute			
300	PROC	M	305-MCVB-002		Lime Limestone Belt Conveyor	1	ea	225 mm x 50 m (5 m lift)	8t/h solids	Conveyor	3.7	3.7	
300	PROC	M	305-MCHU-003		Limestone Screen US Chute	1	ea		56t/h solids	Chute			
300	PROC	M	305-MMAG-001		Limestone Tramp Iron Magnet	1	ea						
300	PROC	M	305-MMDT-001		Limestone Metal Detector	1	ea						
300	PROC	M	305-MCRR-001		Limestone Crusher	1	ea	0.6 m IW x 2 mH	47t/h solids	Quadroll Crusher	90	90	
300	PROC	M	305-MCHU-004		Limestone Screen US Chute	1	ea		47t/h solids	Chute			
300	PROC	M	305-MCHU-005		Limestone Crusher Chute	1	ea		47t/h solids	Chute			
300	PROC	M	305-MCHU-006		Limestone Lime Stockpile Chute	1	ea		47t/h solids	Chute			
300	PROC	M	305-MBIN-001		Limestone Bin	1	ea	3.8 m x 3.8 m x 5.4 m H		Silo			
300	PROC	M	305-MCVB-003		Limestone Ball Mill Feed Conveyor	1	ea	762 mm x 200 m	45t/h solids	Conveyor	3.7	3.7	
300	PROC	M	305-MSLO-001		Limestone Weigh Scale	1	ea	762 mm belt width	45t/h solids	Scale			
300	PROC	M	305-MMCB-001		Limestone Ball Mill	1	ea	3.7 m ID x 6.1 m L	45t/h solids	Ball Mill	1200.0	1200.0	
300	PROC	M	305-MHST-001		Ball Mill Charge Hoist	1	ea				0.37	0.37	
300	PROC	M	305-MPBX-001		Ball Mill Pump Box	1	ea	1.3 m D x 1.5 m H	0.033 hr, 0 m3	Pump Box			
300	PROC	M	305-MCYC-001		Ball Mill Cyclone	1	ea		130t/h solids	Eight-Cyclone Cyclo-Pac			
300	PROC	M	305-MPPS-003		Ball Mill Pump	1	ea	125x125-350mm	146 m3/h @ 20 m H	SLURRY	45	45	y

WBS	CLASS	MATRIX	EQUIP No.	PFD No.	DESCRIPTION	QTY	UNIT	DESIGN DATA			MOTOR		
								SIZE (primary dimensions)	DESIGN BASIS (Capacity)	EQUIP TYPE	SIZE (kW)	TOTAL MOTOR (kW)	VSD
300	PROC	M	305-MPPS-004		Ball Mill Pump Stand-by	1	ea	125x125-350mm	146 m3/h @ 20 m H	SLURRY	45	45	y
300	PROC	M	305-MBGH-001		Limestone Baghouse Dust Collector	1	ea		30 000 Am3/h, 7 Transfer Points	Baghouse			
300	PROC	M	305-MFAN-001		Limestone Baghouse Dust Collector Exhaust Fan	1	ea		30 000 Am3/h	Centrifugal Fan	45.0	45	
300	PROC	M	305-MSTK-001		Limestone Baghouse Dust Collector Exhaust Stack	1	ea	0.5 m D x 30 m H		Baghouse			
300	PROC	M	305-MTNK-001		Storage Tank #1 - Limestone Slurry	1	ea	9.4 m D x 10.8 m H	12 hr, 521.5 m3	Closed Tank			
300	PROC	M	305-MAGP-001		Agitator - Limestone Slurry Storage Tank #1	1	ea	3.8 m D x 10.8 m L	Uniform Distribution	310 - Solid Suspension	22.0	22.00	y
300	PROC	M	305-MTNK-002		Storage Tank #2 - Limestone Slurry	1	ea	9.4 m D x 10.8 m H	12 hr, 521.5 m3	Closed Tank			
300	PROC	M	305-MAGP-002		Agitator - Limestone Slurry Storage Tank #2	1	ea	3.8 m D x 10.8 m L	Uniform Distribution	310 - Solid Suspension	22.0	22.00	y
300	PROC	M	305-MPPS-001		Pump - Limestone Slurry Ring Main (operating)	1	ea	150x150-375mm	261 m3/h @ 20 m H	SLURRY	45.0	45.0	y
300	PROC	M	305-MPPS-002		Pump - Limestone Slurry Ring Main (standby)	1	ea	150x150-375mm	261 m3/h @ 20 m H	SLURRY	45.0	45.0	y
300	PROC	M	305-MCHA-001		Chute Allowance	1	ea						
300	PROC	M	305-MPPM-001		Area Sump Pump - Limestone Prep Area	1	ea	100 x 75 mm	68 m3/h	Vertical Cantilevered Sump	7.5	7.5	
<b>300</b>	<b>PROC</b>				<b>LIME CALCINATION, PREPARATION AND DISTRIBUTION</b>								
300	PROC	M	310-MBIN-003		Limestone Feed Bin	1	ea	3 m D x 4 m H	4 hr, 30 m3	Silo	7.5	7.5	
300	PROC	M	310-MFEV-001		Bin Discharge Vibrating Feeder	1	ea		4.7/h solids	Vibrating Feeder	5.5	5.5	
300	PROC	M	310-MCHU-002		Skip Hoist Feed Chute	1	ea		4.7/h solids	Chute			
300	PROC	M	310-MHOW-001		Skip Hoist Weigh Hopper	1	ea		4.7/h solids	Hopper			
300	PROC	M	310-MHST-001		Skip Hoist	1	PKG	50m H	8.4/h solids	Skip Hoist	3.7	3.7	
300	PROC	M	310-MKNR-001		Vertical Shaft Lime Kiln	1	PKG	45 m H x 5 m D	125tpd	Vertical Shaft Lime Kiln	120.0	120	
300	PROC	M	310-MBGH-001		Kiln Baghouse Dust Collector	1	PKG		15 000 Am3/h, 6 Transfer Points	Baghouse			
300	PROC	M	310-MFAN-001		Kiln Baghouse Dust Collector Exhaust Fan	1	PKG		15 000 Am3/h	Centrifugal Fan	7.5	7.5	
300	PROC	M	310-MSTK-001		Kiln Exhaust Stack	1	PKG	0.7 m D x 50 m H		Baghouse			
300	PROC	M	310-MFAB-001		Combustion Air Blower & Filter	1	PKG		45 000 Am3/h	Cooler	225.0	225	
300	PROC	M	310-MFAB-002		Exhaust Blower	1	PKG		45 000 Am3/h	Cooler	75.0	75	
300	PROC	M	310-MFAB-003		Cooler Blower & Filter	1	PKG		45 000 Am3/h	Cooler	90.0	90	
300	PROC	M	310-MFEV-002		Lime Product Vibrating Feeder	1	PKG		4.7/h solids	Vibrating Feeder	1.5	1.5	
300	PROC	M	310-MBGH-002		Mill Baghouse Dust Collector	1	ea		15 000 Am3/h, 4 Transfer Points	Baghouse			
300	PROC	M	310-MFAN-002		Mill Baghouse Dust Collector Exhaust Fan	1	ea		30 000 Am3/h	Centrifugal Fan	7.5	7.5	
300	PROC	M	310-MSTK-002		Mill Baghouse Dust Collector Exhaust Stack	1	ea	0.7 m D x 10 m H		Baghouse			
300	PROC	M	310-MFEB-001		Lime Product Conveyor	1	ea	225 mm belt width	4.7/h solids	Belt Feeder	2.2	2.2	
300	PROC	M	310-MSLO-002		Lime Weigh Scale	1	ea	225 mm belt width	4.7/h solids	Scale			
300	PROC	M	310-MMLH-001		Lime Hammer Mill	1	ea	1.5m L x 1.3m W x 1m H	4.7/h solids	Hammer Mill	22	22	
300	PROC	M	310-MCHU-002		Bucket Elevator Feed Chute	1	ea		4.7/h solids	Chute			
300	PROC	M	310-MCVE-001		Bucket Elevator	1	ea	15m H	9.4/h solids	Bucket Elevator	1	1	
300	PROC	M	310-MCHU-003		Bucket Elevator Discharge Chute #1	1	ea		4.7/h solids	Chute			
300	PROC	M	310-MCHU-004		Bucket Elevator Discharge Chute #2	1	ea		4.7/h solids	Chute			
300	PROC	M	310-MBIN-001		Lime Storage Silo #1	1	ea	3.8 m D x 12.2 m H	24 hr each	Silo	7.5	7.5	
300	PROC	M	310-MBIN-002		Lime Storage Silo #2	1	ea	3.8 m D x 12.2 m H	24 hr each	Silo	7.5	7.5	
300	PROC	M	310-MCVB-001		Lime Belt Conveyor	1	ea	225 mm belt width	4.7/h solids	Belt Feeder	2.2	2.2	
300	PROC	M	310-MSLO-001		Lime Weigh Scale	1	ea	225 mm belt width	4.7/h solids	Scale			
300	PROC	M	310-MVTM-001		Lime Slaker	1	ea	7.5 m H x 1.6 m D	4.7/h solids	Tower Mill	37.5	37.5	

WBS	CLASS	MATRIX	EQUIP No.	PFD No.	DESCRIPTION	QTY	UNIT	SIZE (primary dimensions)	DESIGN DATA			MOTOR		
									DESIGN BASIS (Capacity)	EQUIP TYPE	SIZE (kW)	TOTAL MOTOR (kW)	VSD	
300	PROC	M	310-MPBX-001		Slaker Pump Box	1	ea	0.4 m D x 0.5 m H	0.033 hr, 0 m3	Pump Box				
300	PROC	M	310-MPPS-001		Slaker Pump	1	ea	50x40-300mm	20 m3/h @ 20 m H	SLURRY	3.7	3.7	y	
300	PROC	M	310-MPPS-002		Slaker Pump Stand-by	1	ea	50x40-300mm	20 m3/h @ 20 m H	SLURRY	3.7	3.7	y	
300	PROC	M	310-MTNK-001		Storage Tank #1 - Lime Slurry	1	ea	6.1 m D x 7.1 m H	12 hr, 145.5 m3	Closed Tank				
300	PROC	M	310-MAGP-001		Agitator - Lime Slurry Storage Tank #1	1	ea	2.5 m D x 7.1 m L	Uniform Distribution	310 - Solid Suspension	11.0	11.00	y	
300	PROC	M	310-MTNK-002		Storage Tank #2 - Lime Slurry	1	ea	6.1 m D x 7.1 m H	12 hr, 145.5 m3	Closed Tank				
300	PROC	M	310-MAGP-002		Agitator - Lime Slurry Storage Tank #2	1	ea	2.5 m D x 7.1 m L	Uniform Distribution	310 - Solid Suspension	11.0	11.00	y	
300	PROC	M	310-MPPS-003		Pump - Lime Slurry Ring Main (operating)	1	ea	100x75-300mm	73 m3/h @ 20 m H	SLURRY	11.0	11.0	y	
300	PROC	M	310-MPPS-004		Pump - Lime Slurry Ring Main (standby)	1	ea	100x75-300mm	73 m3/h @ 20 m H	SLURRY	11.0	11.0	y	
300	PROC	M	310-MCHA-001		Chute Allowance	1	ea							
300	PROC	M	310-MPPM-001		Area Sump Pump - Lime Prep Area	1	ea	100 x 75 mm	68 m3/h	Vertical Cantilevered Sump	7.5	7.5		
<b>300</b>	<b>PROC</b>	<b>M</b>			<b>FLOCCULANT PREPARATION AND DISTRIBUTION</b>									
300	PROC	M	320-MFPP-001		Flocculant Pkg #1 - CCD c/w Dry Flocc Hopper, Feed Screw, Air Blower, Venturi and Wetting Head, Makeup Tank/AGT., transfer pump	1	pkg							
300	PROC	M	320-MTNK-001		Tank - Flocculant #1 Storage	1	ea	8.4 m D x 9.6 m H	12 hr, 369 m3	Closed Tank				
300	PROC	M	320-MPPD-001		Flocculant #1 Distribution pump 1	1	ea		12.8 m3/h @ 23 m H	Metering	1.5	1.5	y	
300	PROC	M	320-MPPD-002		Flocculant #1 Distribution pump 2	1	ea		8.5 m3/h @ 23 m H	Metering	1.0	1.0	y	
300	PROC	M	320-MPPD-003		Flocculant #1 Distribution pump 3	1	ea		4.3 m3/h @ 23 m H	Metering	0.4	0.4	y	
300	PROC	M	320-MPPD-004		Flocculant #1 Distribution pump 4	1	ea		4.3 m3/h @ 23 m H	Metering	0.4	0.4	y	
300	PROC	M	320-MPPD-005		Flocculant #1 Distribution pump 5	1	ea		4.3 m3/h @ 23 m H	Metering	0.4	0.4	y	
300	PROC	M	320-MPPD-006		Flocculant #1 Distribution pump 6	1	ea		4.3 m3/h @ 23 m H	Metering	0.4	0.4	y	
300	PROC	M	320-MPPD-007		Flocculant #1 Distribution pump (Standby)	1	ea		12.8 m3/h @ 23 m H	Metering	1.5	1.5	y	
300	PROC	M	320-MFPP-002		Flocculant Pkg #2 - Non-CCD c/w Dry Flocc Hopper, Feed Screw, Air Blower, Venturi and Wetting Head, Makeup Tank/AGT., transfer pump	1	pkg							
300	PROC	M	320-MTNK-002		Tank - Flocculant #2 Storage	1	ea	4.1 m D x 4.7 m H	12 hr, 43.7 m3	Closed Tank				
300	PROC	M	320-MPPD-008		Flocculant #2 Distribution pump 1	1	ea		0.1 m3/h @ 23 m H	Metering	0.4	0.4	y	
300	PROC	M	320-MPPD-009		Flocculant #2 Distribution pump 2	1	ea		0.2 m3/h @ 23 m H	Metering	0.4	0.4	y	
300	PROC	M	320-MPPD-010		Flocculant #2 Distribution pump 3	1	ea		0.2 m3/h @ 23 m H	Metering	0.4	0.4	y	
300	PROC	M	320-MPPD-011		Flocculant #2 Distribution pump 4	1	ea		0.2 m3/h @ 23 m H	Metering	0.4	0.4	y	
300	PROC	M	320-MPPD-012		Flocculant #2 Distribution pump 5	1	ea		3.9 m3/h @ 23 m H	Metering	0.4	0.4	y	
300	PROC	M	320-MPPD-013		Flocculant #2 Distribution pump (Standby)	1	ea		3.9 m3/h @ 23 m H	Metering	0.4	0.4	y	
300	PROC	M	320-MFPP-003		Flocculant Pkg #3 - RN c/w Dry Flocc Hopper, Feed Screw, Air Blower, Venturi and Wetting Head, Makeup Tank/AGT., transfer pump	1	pkg							
300	PROC	M	320-MTNK-003		Tank - Flocculant #3 Storage	1	ea	6 m D x 6.9 m H	12 hr, 136.9 m3	Closed Tank				
300	PROC	M	320-MPPD-014		Flocculant #3 Distribution pump 1	1	ea		4.8 m3/h @ 23 m H	Metering	0.4	0.4	y	
300	PROC	M	320-MPPD-015		Flocculant #3 Distribution pump 2	1	ea		4.8 m3/h @ 23 m H	Metering	0.4	0.4	y	
300	PROC	M	320-MPPD-016		Flocculant #3 Distribution pump 3	1	ea		4.8 m3/h @ 23 m H	Metering	0.4	0.4	y	
300	PROC	M	320-MPPD-017		Flocculant #3 Distribution pump 4	1	ea		4.8 m3/h @ 23 m H	Metering	0.4	0.4	y	
300	PROC	M	320-MPPM-001		Area Sump Pump - Flocculant Prep Area	1	ea	100 x 75 mm	68 m3/h	Vertical Cantilevered Sump	7.5	7.5		
300	PROC	M	320-MPPM-002		Area Sump Pump - Flocculant Prep Area 2	1	ea	100 x 75 mm	68 m3/h	Vertical Cantilevered Sump	7.5	7.5		
300	PROC	M	320-MPPM-003		Area Sump Pump - Flocculant Prep Area 3	1	ea	100 x 75 mm	68 m3/h	Vertical Cantilevered Sump	7.5	7.5		
300	PROC	M	320-MCNJ-001		Bulk Bag Handling Jib 1	1	ea							

WBS	CLASS	MATRIX	EQUIP No.	PFD No.	DESCRIPTION	QTY	UNIT	DESIGN DATA			MOTOR		
								SIZE (primary dimensions)	DESIGN BASIS (Capacity)	EQUIP TYPE	SIZE (kW)	TOTAL MOTOR (kW)	VSD
300	PROC	M	320-MCNJ-002		Bulk Bag Handling Jib 2	1	ea						
300	PROC	M	320-MCNJ-003		Bulk Bag Handling Jib 3	1	ea						
<b>300</b>	<b>PROC</b>				<b>SULPHURIC ACID PLANT</b>								
300	PROC	AP	330-MZOO-001		Sulphuric Acid Plant (Turnkey)	1	pkg		1593 t/d H2SO4 + 25 t/d Liquid SO2				
300	PROC	M	330-MTNK-001		Acid Plant Transfer Tank	1	ea	3 m D x 3.2 m H	0.333 hr, 13 m3	Closed Tank			
300	PROC	M	330-MPPP-001		Pump - Conc. H2SO4 Distribution (operating)	1	ea	75x50-325mm	51 m3/h @ 20 m H	Centrifugal	11.0	11.0	y
300	PROC	M	330-MPPP-002		Pump - Conc. H2SO4 Distribution (standby)	1	ea	75x50-325mm	51 m3/h @ 20 m H	Centrifugal	11.0	11.0	y
<b>300</b>	<b>PROC</b>				<b>SULPHURIC ACID STORAGE AND DISTRIBUTION</b>								
300	PROC	M	332-MTNK-001		Conc. H2SO4 Storage Tank #1	1	ea	29 m D x 11 m H	168 hr, 6801 m3	Closed Tank			
300	PROC	M	332-MTNK-002		Conc. H2SO4 Storage Tank #2	1	ea	29 m D x 11 m H	168 hr, 6801 m3	Closed Tank			
300	PROC	M	332-MPPP-001		Pump - Conc. H2SO4 Distribution (operating)	1	ea	75x50-325mm	51 m3/h @ 20 m H	Centrifugal	11.0	11.0	y
300	PROC	M	332-MPPP-002		Pump - Conc. H2SO4 Distribution (standby)	1	ea	75x50-325mm	51 m3/h @ 20 m H	Centrifugal	11.0	11.0	y
300	PROC	M	332-MPPM-001		Area Sump Pump - H2SO4 Storage Area	1	ea	100 x 75 mm	68 m3/h	Vertical Cantilevered Sump	7.5	7.5	
<b>300</b>	<b>PROC</b>	<b>M</b>			<b>MISCELLANEOUS REAGENTS</b>								
300	PROC				<b>Sodium Hydroxide (50 wt.%)</b>								
300	PROC	M	360-MTNK-001		Sodium Hydroxide Dilution/Storage Tank	1	ea	3 m D x 3.9 m H	25 m3	Closed Tank			
300	PROC	M	360-MPPP-001		Sodium Hydroxide Transfer Pump	1	ea	75x40-150mm	13 m3/h @ 20 m H	Centrifugal	2.2	2.2	y
300	PROC	M	360-MPPP-002		Sodium Hydroxide Distribution Pump (Operating)	1	ea	40x25-150mm		Centrifugal	0.37	0.37	y
300	PROC	M	360-MPPP-003		Sodium Hydroxide Distribution Pump (Stand-by)	1	ea	40x25-150mm		Centrifugal	0.37	0.37	y
300	PROC				<b>Hydrogen Peroxide (50 wt.%)</b>								
300	PROC	M	360-MPPP-004		Hydrogen Peroxide Dosing Pump (Operating)	1	ea	40x25-150mm	0 m3/h @ 20 m H	Centrifugal	0.37	0.37	y
300	PROC	M	360-MPPP-005		Hydrogen Peroxide Dosing Pump (Stand-by)	1	ea	40x25-150mm	0 m3/h @ 20 m H	Centrifugal	0.37	0.37	y
300	PROC				<b>PROCESS WATER SUPPLY AND DISTRIBUTION</b>								
300	PROC	M	370-MPPP-001		Fresh Water Distribution Pump	1	ea	250x200-375mm	525 m3/h @ 40 m H	Centrifugal	75.0	75.0	y
300	PROC	M	370-MPPP-002		Fresh Water Distribution Pump, Standby	1	ea	250x200-375mm	525 m3/h @ 40 m H	Centrifugal	75.0	75.0	y
300	PROC	M	370-MTNK-001		Process Water Storage Tank	1	ea	9.6 m D x 11 m H	0.5 hr, 691.2 m3	Closed Tank			
300	PROC	M	370-MPPP-003		Process Water Distribution Pump	1	ea	250x200-375mm	1728 m3/h @ 40 m H	Centrifugal	350	350	y
300	PROC	M	370-MPPP-004		Process Water Distribution Pump Stand-by	1	ea	250x200-375mm	1728 m3/h @ 40 m H	Centrifugal	350	350	y
<b>300</b>	<b>PROC</b>				<b>COOLING WATER SUPPLY AND DISTRIBUTION</b>								
300	PROC	M	375-MCZO-001		Cooling Tower	1	ea		4000 m3/h, 35-25°C	1-cell crossflow wood cooling tower (16.5m x 16.5m x 12m H)	225.0	225.0	y
300	PROC	M	375-MPPP-001		Cooling Water Pump	1	ea		2500 m3/h @ 20 m H	Centrifugal	500.0	500.0	y
300	PROC	M	375-MPPP-002		Cooling Water Pump	1	ea		2500 m3/h @ 20 m H	Centrifugal	500.0	500.0	y
300	PROC	M	375-MPPP-003		Cooling Water Pump (Standby)	1	ea		2500 m3/h @ 20 m H	Centrifugal	500.0	500.0	y
<b>300</b>	<b>PROC</b>				<b>GLAND WATER SUPPLY AND DISTRIBUTION</b>								
300	PROC	M	376-MTNK-001		Gland Water Storage Tank	1	ea	4 m D x 4.6 m H	0.5 hr, 50 m3	Closed Tank			
300	PROC	M	376-MPPP-002		Gland Water Distribution Pump	1	ea	100x75-175mm	60 m3/h @ 20 m H	Centrifugal	5.5	5.5	y
300	PROC	M	376-MPPP-003		Gland Water Distribution Pump Stand-by	1	ea	100x75-175mm	60 m3/h @ 20 m H	Centrifugal	5.5	5.5	y

WBS	CLASS	MATRIX	EQUIP No.	PFD No.	DESCRIPTION	QTY	UNIT	DESIGN DATA			MOTOR		
								SIZE (primary dimensions)	DESIGN BASIS (Capacity)	EQUIP TYPE	SIZE (kW)	TOTAL MOTOR (kW)	VSD
<b>300 PROC PLANT DCS</b>													
300	PROC	J			PLANT DCS	1	PKG						
300	PROC	J			Misc Furniture Control Room	1	PKG						
300	PROC	J			PCS Programming	1	PKG						
300	PROC	J			MES and COMMUNICATIONS	1	PKG						
<b>500 INFR RESIDUE IMPOUNDMENT</b>													
500	INFR	E			Residue Disposal Area Preparation/Dam Construction (0 to year 3) Source: Golder	1	LOT				Residue Dam		
500	INFR	E			Setal West Emergency Discharge	1	LOT				Residue Dam		
500	INFR	E			Setal East Emergency Discharge	1	LOT				Residue Dam		
500	INFR	X			Paste Distribution System	1	LOT				Residue Dam		
500	INFR	E	580-MZOO-003		Surge Pond	1	LOT				Residue Dam Water Reclaim Pond		
500	PROC	M	580-MPPA-001		RN Deep Bed Thickener Paste Pump (Operating)	1	ea		459 m3/h @ 775 m H		High Pressure Piston Diaphragm Pump		
500	PROC	M	580-MPPA-002		RN Deep Bed Thickener Paste Pump (Standby)	1	ea		459 m3/h @ 775 m H		High Pressure Piston Diaphragm Pump		
500	PROC	M	580-MTNK-001		Pond Water Tank	1	ea	6.6 m D x 7.6 m H	0.167 hr, 230.4 m3		Open Tank		
500	INFR	M	580-MPPP-001		Pond Water Return Pump	1	ea	250x200-375mm	1659 m3/h @ 126.5 m H		Centrifugal	750	750 y
500	INFR	M	580-MPPP-002		Pond Water Return Pump Standby	1	ea	250x200-375mm	1659 m3/h @ 126.5 m H		Centrifugal	750	750 y
500	INFR	M	580-MPPP-003		Pond Water Reclaim Pump	1	ea	250x200-375mm	1569 m3/h @ 15 m H		Centrifugal	110	110 y
500	INFR	M	580-MPPP-004		Pond Water Reclaim Pump Stand-by	1	ea	250x200-375mm	1569 m3/h @ 15 m H		Centrifugal	110	110 y
<b>500 INFR OCEAN OUTFALL PIPELINE AND DISTRIBUTION</b>													
500	INFR	M	581-MPPP-001		Ocean Outfall Pump #1 (Operating)	1	ea	350x200-600mm	1723 m3/h @ 116.6 m H		Centrifugal	1100	1100 y
500	INFR	M	581-MPPP-002		Ocean Outfall Pump #1 (Operating)	1	ea	350x200-600mm	1723 m3/h @ 116.6 m H		Centrifugal	1100	1100 y
500	INFR	M	581-MPPP-003		Ocean Outfall Pump #2 (Standby)	1	ea	350x200-600mm	1723 m3/h @ 116.6 m H		Centrifugal	1100	1100 y
500	INFR	M	581-MPPP-004		Ocean Outfall Pump #2 (Standby)	1	ea	350x200-600mm	1723 m3/h @ 116.6 m H		Centrifugal	1100	1100 y
500	INFR	P	581-MZOO-001		Pipeline to Ocean (24' CS)	72.0	km	24					
500	INFR	P	581-MZOO-002		Pipeline to Ocean (20' CS)	20.0	km	20					
500	INFR	P	581-MZOO-002		Undersea Outfall Line (24" DR17 HDPE)	8.0	km	24					
500	INFR	X	581-MZOO-003		Interstage Pump Fencing	1	ea						
500	PROC	M	581-MTNK-001		Deisel Storage Tank	1	ea	4.9 m D x 5.6 m H	168 hr, 92.4 m3		Closed Tank		
500	INFR	M	581-MZOO-004		Diesel Pump Drive	2	ea						
500	INFR	M	581-MPPP-005		Interstage Pumphouse Pumps + manifolds (Operating)	1	ea	350x200-560mm	1787 m3/h @ 160 m H		Diesel Driven Centrifugal Pump		
500	INFR	M	581-MPPP-006		Interstage Pumphouse Pumps + manifolds (Standby)	1	ea	350x200-560mm	1787 m3/h @ 160 m H		Diesel Driven Centrifugal Pump		
500	INFR	P	581-MZOO-005		Ocean Outfall Diffuser	1	LS						
<b>500 INFR EMERGENCY POND</b>													
500	INFR	E			Emergency Pond	1	LS				Pond		
500	PROC	M	582-MPPP-001		Pond Reclaim Pump	1	ea	250x200-280mm	500 m3/h @ 20 m H		Vertical Pump	45.0	45.0 y
500	PROC	M	582-MPPP-002		Pond Reclaim Pump Stand-by	1	ea	250x200-280mm	500 m3/h @ 20 m H		Vertical Pump	45.0	45.0 y

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<b>MECHANICAL EQUIPMENT LIST - Steam Plant: 1 x 32 MW (gross) STG</b>									
WBS #	Description	Description of sub-components	No off	Duty %	Type	MCR Conditions			
						Pressure, Bar	Temp. deg.C	TDH kPa	Unit Flow, tonne/h
21	<b>Stack</b>								
31	<b>Boiler &amp; Auxiliaries</b>	Steam generator	1		Package boiler	68.6	503		88.5
		Ignition Oil Firing Systems	Lot		Diesel Oil				
		Heavy Fuel Oil Firing System	Lot		Heavy Oil - Low Sulphur				
		Sootblowing system	Lot						
		Attemperation	Lot						
32	<b>Air &amp; Gas Systems</b>	Air heater	1	100	Tubular				
		Forced Draft fan	1	100	Radial				
		Ducting to Stack breach	Lot						
34	<b>Steam Systems</b>	Main Steam System from boiler	Lot		Single Pipe	68.6	503		88.5
		Steam from Sulphuric Acid Plant	Lot		Single Pipe	66	500		35.0
		Steam to sulphuric Acid Plant	Lot		Single Pipe	50	274		61.3
		Steam to Steam Turbine	Lot		Single Pipe	66	500		123.5
		Auxiliary Steam System	Lot		Piping & Valves only				
		-Pegging steam (to Deaerator)	Lot		Piping & Valves only				
		-Atomizing Steam (to Burners)	Lot		Piping & Valves only				
		-Aux Steam from 150 MW plant	Lot						
		Temporary Steam Blow Piping	Lot		Piping & Valves only				
		-Silencer (specific for steam blow)	1						
39	<b>Boiler Vents, Drains &amp; Blowdown System</b>	Vents to atmosphere and drains to BDT	Lot		Atmosph. Blowdown only				
39	<b>Boiler Chemical Feed Systems</b>								
	<i>Ammonia Injection Skid:</i>	Ammonia Drum/Pump	1	100					
		Ammonia Storage Tank, c/w Agitator	1						
		Ammonia Feed Pumps	2	100					
		Metering Cylinder	1						
	<i>Hydrazine Injection Skid:</i>	Hydrazine Drum/Pump	1						
		Hydrazine Storage Tank, c/w Agitator	1						
		Hydrazine Feed Pumps	2	100					
		Metering Cylinder	1						
	<i>Phosphate Injection Skid:</i>	Phosphate Storage Tank, c/w Agitator	1						

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						Pressure, Bar	Temp. deg.C	TDH kPa	Unit Flow, tonne/h
		Phosphate Feed Pumps	2	100					
41	<b>Steam Turbine Generator</b>	Steam Turbine with 3 extraction points	1	100		66	500		123.5
		Steam Turbine Sub-systems	Lot						
		Generator - 32.0 MW, 13.8 kV, 60 Hz	1	100	Air Cooled				
		Generator Excitation System	1	100	Brushless				
		Lube Oil System	1	100					
		Hydraulic Oil System	1	100					
		Turbo Supervisory System	Lot						
		Gland Steam Condenser	1	100					
43	<b>Boiler Feed Water system</b>	Suction Strainers	2	50					
		Boiler Feed pumps	2	50	Hor., ring section, or horizontally split casing				92.9
		HP heater	1	100	Shell & Tube				86.7
		Feedwater Piping, Valves & Strainers	Lot						
		Heater Vents & Drains	Lot						
		Spraywater to boiler SH	Lot						
		Spraywater to process steam	Lot						
44	<b>Condensate System</b>	Condensate Extraction Pumps	2	50	Vertical ring sectional casing with barrel can				82.3
		LP heater	1	100	Shell & Tube				164.5
		Deaerator and Storage Tank	1	100	Direct contact				
		Condensate Piping & Valves	Lot						
		Heater Vents & Drains	Lot						
44	<b>Condensate Make-up System</b>	Condensate make-up Pumps	2	100	Centrifugal				
		Condensate Surge Tank	1	100				50 m3	
		Boiler Fill Pump	1	100					
		Piping & Valves	Lot						

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WBS #	Description	Description of sub-components	No off	Duty %	Type	MCR Conditions			
						Pressure, Bar	Temp. deg.C	TDH kPa	Unit Flow, tonne/h
45	<b>Condenser &amp; Auxiliaries</b>	Condenser c/w Hotwell	1	100	Water Cooled				89.3
		Barometric Condenser	1	100					
		Air Removal System:							
		-Hogging Ejector	1	100	Steam Jet or Vac. Pumps				
		-Air Ejectors	2	100	Steam Jet or not applic.				
		-Air Ejector Condenser	1	100	Shell & Tube				
		Expansion Tank	1						
46	<b>Turbine Steam System:</b>								
	<b>Attemperation System</b>	Attemperation Valve	1	100					
		Piping	Lot						
46	<b>Extraction Steam System</b>	For HP Feedwater Heater	Lot		Piping & Valves				
		For LP Feedwater Heater	Lot		Piping & Valves				
		For Dearator	Lot		Piping & Valves				
46	<b>Turbine and Piping Drains</b>	From turbine drains to condenser	Lot						
47	<b>Condenser Cooling Water System</b>	Cooling Tower	1	100	Approx. 4 cells, counter flow				4484.0
		Gate	1	100					
		Screen	1	100	Double				
		Circulating water pumps	2	50					2242.0
		Condenser Ball Cleaning System	2	50					
71	<b>Plant Water Systems</b>	Raw Water Supply	Lot		Water supply from Lake Izabel to WTP				
		Potable Water Supply System	Lot		Bottled Water only				
		Auxiliary Cooling Water System:							
		-Pumps	2	100					
		-Head tank	1						
		-Closed cooling water heat exchangers	2	100					
		-Piping	lot						

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WBS #	Description	Description of sub-components	No off	Duty %	Type	MCR Conditions			
						Pressure, Bar	Temp. deg.C	TDH kPa	Unit Flow, tonne/h
72	<b>Condenser Cooling Water Treatment System</b>	Hypo Chloride Feed System	Lot						
72	<b>Waste Water System</b>	Waste water Collection Sump	1						
		Waste water Collection Sump Pump	1	100					
		Boiler Sump	1						
		Boiler Sump Pump	1	100					
72	<b>Water treatment system</b>	Supply demin. Water to power plant	1		2 x 100% trains				
73	<b>Plant Air &amp; Instrument Air System</b>	One new compressor plant sized for needs of plant, with back-up airsupply from Pyromet plant							
		Air Compressor	1	100					
		Air Dryer	1	100					
		Service Air Receiver	1	100					
		Instrument Air Receiver	1	100					
		Piping & Valves	Lot						
73	<b>Lubricating Oil Storage/treatment</b>	No new scope; share with Pyromet system							
77	<b>Fire Protection Systems</b>	Fire Detection system	Lot						
		Fire Protection:	Lot						
		-Water Ring Main System	NA						
		-Dry Deluge Spray System	Lot						
		-Valved Fire Water Connections	Lot						
		-Yard Hydrant & Hose Station	Lot						
		-Wet System Sprinklers	Lot						
		-Portable Dry Chemical Extinguishers	Lot						
		-CO <sub>2</sub> systams	Lot						
78	<b>Ventilation and Air Conditioning</b>	Ventilation Equipment	Lot						

Date:	22/08/2006								
JOB TITLE:	FENIX Hydrometallurgical Expansion								
Rev. H									
JOB NUMBER:	321898								
<b>MECHANICAL EQUIPMENT LIST - Steam Plant: 1 x 32 MW (gross) STG</b>									
						<b>MCR Conditions</b>			
WBS #	Description	Description of sub-components	No off	Duty %	Type	Pressure, Bar	Temp. deg.C	TDH kPa	Unit Flow, tonne/h
79	<b>Cranes and Hoists</b>	Turbine Crane	1					15 tonne, Max. weight	
		Misc. hoists and cranes	Lot						
79	<b>Workshop Equipment and Tools</b>								
	<b>Laboratory and Test Equipment</b>	No new workshop, use 150 MW workshop							
	<b>Fuel Oil Systems</b>	Oil supply from existing Pyromet daytanks							
	<i>Heavy Oil Fuel</i>	Forwarding pumps	2	100	Pos. Displacement Pumps				
		P/H set (2 x100% pumps and heaters)	1		Steam heated				6.5
		Supply System to Burners	Lot						
		Recirculation System	Lot						
	<i>Light Oil Fuel</i>	Pumping set (2 x 100% pumps)	1						0.6
		Supply System to Ignitors	Lot						