Undertaking 80

Page 129, line 15 to Page 133, line 15

Re: Criticality assessment done on all the complete plant (Holyrood) and all the systems in the plant (including motors in relation to the AC and DC pumps for the lube oil)

Undertake to either identify where it is on the record, if it is on the record, or produce it and file it as part of the record.

Please see Undertaking 80 Attachment 1, which is the complete Asset Criticality Assessment for the Holyrood Thermal Generating Plant as well as the equipment factor definitions. The DC lube oil system placed 58th from a Holyrood system analysis perspective based on the criteria used in this assessment. This ranking placed this system in the top 5% of the plant's most critical assets.

Undertaking 80, Attachment 1 Page 1 of 12

				Pag	-						
					Health & Safety		Quality				Equipment Score
Station Board SB34 (ST34)					6			5 1			9600
	Station Aux Transformer (SAT34)				10	4	-	5 1		_	16000
	Station Aux Transformer (SAT34)	Station Aux Board (SAB34)			4	4	8	5 1			6400
	Station Aux Transformer (SAT34)	Station Aux Board (SAB34)	Make Up Air MCC (WAM34)		4	1	1	5 2			80
	Station Aux Transformer (SAT34)	Station Aux Board (SAB34)	General Purpose MCC (GPB34)		4	1	1	5 6			600
	Station Aux Transformer (SAT34)	Station Aux Board (SAB34)	Turbine and Boiler Standby MCC SDB34 (SDB3)		4	3	1	5 3			900
	Station Aux Transformer (SAT34)	Station Aux Board (SAB34)	Diesel Bus DB34 (Alternate Feeds Diesel Generator D2, Diesel Bus Tie		4	4	8	5 1			6400
	Station Aux Transformer (SAT34)	Station Aux Board (SAB34)	Diesel Bus DB34	Essential Services MCC ESB34	4	4	8	5 6	2	. 5	38400
	Station Aux Transformer (SAT34)	Station Aux Board (SAB34)	CW Pump House MCC (CWP34)		4	_1	_1_	5 6	1 1	5	600
	Station Aux Transformer (SAT34)	Station Aux Board (SAB34)	Lighting Distribution Panel (LDP34)		4	1	1	5 6			600
	Station Aux Transformer (SAT34)	Station Aux Board (SAB34)	Water Treatment Plant (WTP34)		4	4	1	5 1		-	400
	Station Aux Transformer (SAT34)	Station Aux Board (SAB34)	ATB12 (Transfer Bus)		4	1	1	5 1	_		100
	TB12 (Tie Breaker to Station Board SB12)				- 6	1		5 1		-	150
Unit Board UB3 (UT3)					6	8		5 6			115200
	Unit Aux Transformer (UAT3)	A . D			10	4	8	5 1			16000
	Unit Aux Transformer (UAT3)	Aux Board UAB3 (UAB3)			4	4		5 1			6400
	Unit Aux Transformer (UAT3)	Aux Board UAB3 (UAB3)	Turbine Area MCC TAB34 (SDB3) (Alternate Feed TAB3)		4	3	_	5 3			900
	Unit Aux Transformer (UAT3)	Aux Board UAB3 (UAB3)	Lighting Distribution Transformer (LDP3)		6	1		5 6			1800
	Unit Aux Transformer (UAT3)	Aux Board UAB3 (UAB3)	Boiler Area MCC (BAB3)		4	4	-	5 3			19200
	Unit Aux Transformer (UAT3)	Aux Board UAB3 (UAB3)	Boiler Area MCC (BAB3)	Boiler Room Ventilation MCC BRV 3	4	2	1	5 3			960
	Unit Aux Transformer (UAT3)	Aux Board UAB3 (UAB3)	Boiler Area MCC (BAB3)	HP Heater MCC HPH3	4	1	1	5 4			1600
	Unit Aux Transformer (UAT3)	Aux Board UAB3 (UAB3)	Boiler Area MCC (BAB3)	Soot Blower MCC SB3	4	1	1	5 4			640
	Unit Aux Transformer (UAT3)	Aux Board UAB3 (UAB3)	Boiler Area MCC (BAB3)	Condensate Polisher BAB33	4	1	1	5 6		_	240
	Unit Aux Transformer (UAT3)	ATB3 (Tie Breaker Between Unit Aux Board	UAB3 and Station Aux Board SAB34)		4	1	1	5 1		-	100
	TB3 (Tie Breaker Between Station Board S	B34 & Unit Board UB3)			6	3	1	5 6			2700
Unit Board UB2 (UB21)					6	8	8	5 6			115200
Unit Board UB2 (UB21)	Aux Transformer ATB (UB22)				10	4	8	5 1	1 2	. 5	16000
	Aux Transformer ATB (UB22)	Power Center B UAB2 (B1)			4	4	8	5 3			19200
	Aux Transformer ATB (UB22)	Power Center B UAB2 (B1)	Turbine & Boiler Area MCC B1 (B5)		4	4	8	5 3			19200
	Aux Transformer ATB (UB22)	Power Center B UAB2 (B1)	Turbine & Boiler Area MCC B1 (B5)	Unit 2 Condensate Polishers MCC B13	4	1	1	5 6		. 2	240
Unit Board UB2 (UB21)	Aux Transformer ATB (UB22)	Power Center B UAB2 (B1)	Turbine & Boiler Area MCC B1 (B5)	HP Heater MCC B11	4	1	1	5 4		, 5	1600
Unit Board UB2 (UB21)	Aux Transformer ATB (UB22)	Power Center B UAB2 (B1)	Turbine & Boiler Area MCC B1 (B5)	Soot Blower MCC B12	4	1	1	5 6	i 1	. 2	240
Unit Board UB2 (UB21)	Aux Transformer ATB (UB22)	Power Center B UAB2 (B1)	B2 (To Transfer Bus)		4	1	1	5 1			100
Unit Board UB2 (UB21)	Aux Transformer ATB (UB22)	Power Center B UAB2 (B1)	LT Transformer LT8 (B4)		6	1	1	5 6	5 2	. 5	1800
UB212 (Tie Breaker Between Unit Board UB2	2 & Station Board SB12)				6	3	1	5 6	1	. 5	2700
Station Board SB12 (SSB1) (Alternate Feeds 0	Gas Turbine Transformer T9, Tie Breaker t	o Station Board SB34, Tie Breaker to Unit Bo	ard UB2, Tie Breaker to Unit Board UB1)		4	4	8	5 1	1 2	: 5	6400
Station Board SB12 (SSB1)	SSB3 (Aux Transformer ATC)				10	4	8	5 1	1 2	: 5	16000
Station Board SB12 (SSB1)	SSB3 (Aux Transformer ATC)	Power Center C SAB12 (C1) (Alternate Feed	Tie Breaker to Transfer Bus C15)		4	4	8	5 1	1 2	5	6400
Station Board SB12 (SSB1)	SSB3 (Aux Transformer ATC)	Power Center C SAB12 (C1)	C15 (To Transfer Bus)		4	1	1	5 1	1	. 5	100
Station Board SB12 (SSB1)	SSB3 (Aux Transformer ATC)	Power Center C SAB12 (C1)	C16 (Tie Breaker		4	1	1	5 1	1	. 5	100
Station Board SB12 (SSB1)	SSB3 (Aux Transformer ATC)	Power Center C SAB12 (C1)	Diesel Bus DB12 (Alternate Feeds Diesel Generator D1, Diesel Bus Tie	, Tie Breaker to Transfer Bus C15)	4	4	8	5 1	1 2	: 5	6400
Station Board SB12 (SSB1)	SSB3 (Aux Transformer ATC)	Power Center C SAB12 (C1)	Diesel Bus DB12	Essential Services MCC E1 (C18)	4	4	8	5 6	5 2	: 5	38400
Station Board SB12 (SSB1)	SSB3 (Aux Transformer ATC)	Power Center C SAB12 (C1)	Turbine & Boiler Area MCC C2 (C3)		4	3	1	5 3	3 1	. 5	900
Station Board SB12 (SSB1)	SSB3 (Aux Transformer ATC)	Power Center C SAB12 (C1)	Water Treatment and Aux Boiler MCC C5 (C4)		4	4	1	5 6	5 1	. 5	2400
	SSB3 (Aux Transformer ATC)	Power Center C SAB12 (C1)	Turbine & Boiler Area MCC C3 (C12)		4	3	1	5 3		. 5	900
	SSB3 (Aux Transformer ATC)	Power Center C SAB12 (C1)	Hi Bay Lighting Distribution LDPC (C11)		4	3	1	5 3	3 1	. 5	900
	SSB3 (Aux Transformer ATC)	Power Center C SAB12 (C1)	Boiler Room Vent MCC C4 (C5)		4	2	1	5 3	3 2	4	960
Station Board SB12 (SSB1)	SSB3 (Aux Transformer ATC)	Power Center C SAB12 (C1)	Common Services MCC C1 (C2)		4	4	3	5 2		. 5	2400
	SSB3 (Aux Transformer ATC)	Power Center C SAB12 (C1)	Common Services MCC C1 (C2)	Fuel Additative Area MCC C8 (C8)	4	1	1	5 2		2	80
	SSB3 (Aux Transformer ATC)	Power Center C SAB12 (C1)	Common Services MCC C1 (C2)	Work Shop Area MCC C9 (C9)	4	1	1	5 6		. 5	600
	SSB3 (Aux Transformer ATC)	Power Center C SAB12 (C1)	Common Services MCC C1 (C2)	Admin Area MCC C7 (C7)	4	1	1	5 6		. 5	600
	SSB3 (Aux Transformer ATC)	Power Center C SAB12 (C1)	Common Services MCC C1 (C2)	CW Pump House MCC C6 (C6)	4	1	1	5 6		. 1	120
	SSB3 (Aux Transformer ATC)	Power Center C SAB12 (C1)	Waste Water Treatment Plant MCC C12 (C7)		4	1	1	5 6		2	1440
UB11 (Tie Breaker Between Station Board	-				6	3	1	5 6			2700
Unit Board UB1 (UB12)					6	8	8	5 6	5 2	5	115200
Hait Beard HD4 (HD42)	UB13 (Aux Transformer ATA)				10	4	8	5 1		: 5	16000
Unit Board UB1 (UB12)	UB13 (Aux Transformer ATA)	Power Center A UAB1 (A1) (Alternate Feed	Transfer Bus A9)		4	4	8	5 3	3 2	2 5	19200
		Power Center A UAB1 (A1)	Lighting Transformer LTA (A3)		6	1	1	5 6			1800
Unit Board UB1 (UB12)	UB13 (Aux Transformer ATA)										
Unit Board UB1 (UB12) Unit Board UB1 (UB12)	UB13 (Aux Transformer ATA) UB13 (Aux Transformer ATA)	Power Center A UAB1 (A1)	Turbine & Boiler Area MCC A1 (A4)		4	4	8	5 3	3 2	5	19200
Unit Board UB1 (UB12) Unit Board UB1 (UB12) Unit Board UB1 (UB12)		Power Center A UAB1 (A1)	Turbine & Boiler Area MCC A1 (A4) Turbine & Boiler Area MCC A1 (A4)	Condensate Polisher MCC A13 (A13)	4	4		5 3 5 6			19200 240
Unit Board UB1 (UB12) Unit Board UB1 (UB12)	UB13 (Aux Transformer ATA)		Turbine & Boiler Area MCC A1 (A4)	Condensate Polisher MCC A13 (A13) HP Heater MCC A11 (A11)	4 4		1		1	1 2	

Undertaking 80, Attachment 1 Page 2 of 12

									16	
			et.						t	core
			Health & Safety			8	ives	Environment	Effect	Equipment Score
			It 8	Output	Quality	Utilization	Alternatives	iron	Time to	ë.
					Ö	5				
Raw and Makeup Water System Raw and Makeup Water System	Quarry Brook Dam Fish Ladder at Quarry Brook		1		1	5	- 4	_	3	43200 1440
Raw and Makeup Water System	Raw Water Line from Dam to Plant		2		1	5			3	1920
Raw and Makeup Water System	Raw Water Piping		1		1	5	4	-	3	240
Raw and Makeup Water System	Manual Isolating Valves Control Valves		2	1	1	5	-	2 1	1	20 360
Raw and Makeup Water System Raw and Makeup Water System	Raw Water Pumps		1	8	1	5		1 1	3	120
Raw and Makeup Water System	Portable Diesel Pump		2			5	-		4	3840
Raw and Makeup Water System	Portable Diesel Pump Piping		2		1	5		-	4	320
Raw and Makeup Water System Raw and Makeup Water System	Raw Water Sump Polymer Tank System	Injection Pumps	2	-	1	5	3	-	2	60 360
Raw and Makeup Water System	Polymer Tank System	Valves	2	1	1	5	-		3	240
Raw and Makeup Water System	Polymer Tank System	Piping	2	1	1	5	4	1 2	3	240
Raw and Makeup Water System	Polymer Tank System	Polymer Tanks 6401 Distribution Tank (WTP)	2		1	5	3		3	540
Raw and Makeup Water System Raw and Makeup Water System	6400 and 6401 System 6400 and 6401 System	6401 Tote Tank	2		1	5	-		3	2160 360
Raw and Makeup Water System	6400 and 6401 System	6401 Piping	2	3	1	5	(5 4	3	2160
Raw and Makeup Water System	6400 and 6401 System	6401 Metering Pumps	2		1	5		4	3	360
Raw and Makeup Water System Raw and Makeup Water System	6400 and 6401 System 6400 and 6401 System	6400 Mix Tank (WTP) 6400 Tote Tank	2						3	2160 360
Raw and Makeup Water System	6400 and 6401 System	6400 Piping	2			_			3	2160
Raw and Makeup Water System	6400 and 6401 System	6400 Mix Tank	2						3	2160
Raw and Makeup Water System	6400 and 6401 System	6400 Metering Pumps	2	_	1	5	-	_	3	360
Raw and Makeup Water System	6400 and 6401 System	6400 Mixer	2		1	5	3	_	3	1080 720
Raw and Makeup Water System Raw and Makeup Water System & Water Treatment Plant	6400 and 6401 System Clarifier	Demin. Water Dilution Pump Clarifier Tank	4	_	1	5			3	1920
Raw and Makeup Water System & Water Treatment Plant	Clarifier	Mixer	2	-		5	_	-	3	960
Raw and Makeup Water System & Water Treatment Plant	Clarifier	Rake	2	8		5	- 2	2 2	3	960
Raw and Makeup Water System & Water Treatment Plant	Clarifier	Rake VSD	4		1	5	- 2	-	3	1920
Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant	Clarifier Clarifier	Distribution Tank Instrumentation/Controls	2	_	1	5		-	3	2880 960
Raw and Makeup Water System & Water Treatment Plant	Clarifier	Badger Meter	2	_	1	5		_	3	960
Raw and Makeup Water System & Water Treatment Plant	Clarifier	Piping	2	1	1	5	3	3 2	3	180
Raw and Makeup Water System & Water Treatment Plant	Clarifier	Bypass	1	-	1	5	(3	720
Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant	Clarifier Clarifier	Sampling Lines Mix Tank	1	-	1	5	3	-	5 3	75 1080
Raw and Makeup Water System & Water Treatment Plant	Clarifier	Suction Tote Tank	4	1	1	5	3	8 6	3	1080
Raw and Makeup Water System & Water Treatment Plant	Sand Filters		4	8		5	3	3 1	3	1440
Raw and Makeup Water System & Water Treatment Plant	Sand Filters	Backwash Controls	2			5			2	60
Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant	Clearwell Clearwell	Clearwell Instrumentation	2		1	5			3	2880 240
Raw and Makeup Water System & Water Treatment Plant	Clearwell	Clearwell Pumps	1	_	1	5		_	4	160
Raw and Makeup Water System & Water Treatment Plant	Clearwell	Clearwell Piping	1	4	1	5	(4	480
Raw and Makeup Water System & Water Treatment Plant	Feed Water Analytical System	Sample Lines/Filters	4			_			5	600
Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant	Feed Water Analytical System Feed Water Analytical System	Sample Coolers Valves	4		1	_			5	600
Raw and Makeup Water System & Water Treatment Plant	Feed Water Analytical System	Instrumentation	2		1				1	20
Raw and Makeup Water System & Water Treatment Plant	Feed Water Analytical System	Cooling Water Piping	2		1			1	5	300
Raw and Makeup Water System & Water Treatment Plant	Feed Water Analytical System	Cooling Pumps	2		1	5	Ŀ	-	5	50
Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant	Caustic Dosing System Caustic Dosing System	Metering Pumps Mixing Tank	4	1	1	5		1 2	2	32 80
Raw and Makeup Water System & Water Treatment Plant	Caustic Dosing System	Phosphate/Caustic Piping	4	_	1	5	_	-	2	480
Raw and Makeup Water System & Water Treatment Plant	Caustic Dosing System	Water Piping	1	_	1	5	- 2	_	2	20
Raw and Makeup Water System & Water Treatment Plant	Caustic Dosing System	Manual Valves	4		1	5	3	3 2 L 4	2	240
Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant	Demineralization System Demineralization System	Trains Mix Beds	4	4	1	5		_	3	1920 960
Raw and Makeup Water System & Water Treatment Plant	Demineralization System	Resin	4	8	1	5	_	_	3	1920
Raw and Makeup Water System & Water Treatment Plant	Demineralization System	Cation Resin	4			5	:	_	3	1920
Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant	Demineralization System Demineralization System	Anion Resin Acid Regen Storage Tanks	10			5		1 10	4	1920 16000
Raw and Makeup Water System & Water Treatment Plant	Demineralization System Demineralization System	Acid Regen Injection Pumps	2		1	-	_		4	32
Raw and Makeup Water System & Water Treatment Plant	Demineralization System	Acid Regen Transfer Pumps	2		1	1	:	4	4	32
Raw and Makeup Water System & Water Treatment Plant	Demineralization System	Acid Regen Piping	6			5	(4	5760
Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant	Demineralization System Demineralization System	Caustic Regen Storage Tanks	10						4	16000 32
Raw and Makeup Water System & Water Treatment Plant	Demineralization System Demineralization System	Caustic Regen Injection Pumps Caustic Regen Transfer Pumps	2				-	-	4	32
Raw and Makeup Water System & Water Treatment Plant	Demineralization System	Caustic Regen Piping	6	2	1	5	(4	4	5760
Raw and Makeup Water System & Water Treatment Plant	Demineralization System	Instrumentation/Controls	2						4	7680
Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant	Demineralization System Demineralization System	Demin Water Piping Demin Water Booster Pumps	1						2	180 60
	Demineralization System	Demin Water Booster Pump Plastic Header	1			5	-		2	90
Raw and Makeup Water System & Water Treatment Plant			2	1	1	1	- 2	2 2	1	8
Raw and Makeup Water System & Water Treatment Plant	Demineralization System	Brine Mixing Tanks		1	1	1	1	2 2	1	8
Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant	Demineralization System Demineralization System	Brine Injection Pumps	2	-	_	-			1	80
Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant	Demineralization System Demineralization System Demineralization System		4	. 2	_	5	- 2	-	3	
Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant	Demineralization System Demineralization System	Brine Injection Pumps	4	2	_	-	(1	3	360 1440
Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant Waste Water Treatment Plant Waste Water Treatment Plant	Demineralization System Demineralization System Demineralization System Makeup Water Common Header (Demin.) Periodic Basin Continious Basin	Brine Injection Pumps	4 1 4	4 1	1 1 1	5	4	5 1 1 6	3	360 1440 640
Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant Waste Water Treatment Plant Waste Water Treatment Plant Waste Water Treatment Plant	Demineralization System Demineralization System Demineralization System Makeup Water Common Header (Demin.) Periodic Basin Continious Basin Batch Reactor	Brine Injection Pumps	4 1 4 4	2 4 1 1	1 1 1	5 5 5 5	4	5 1 1 6 1 4 5 6	3 2 3	360 1440 640 1296
Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant Waste Water Treatment Plant	Demineralization System Demineralization System Demineralization System Makeup Water Common Header (Demin.) Periodic Basiin Continious Basiin Gontinious Basiin Filter Press	Brine Injection Pumps	4 1 4	2 4 1 1 1	1 1 1	5	4	5 1 4 6 4 4 5 6 8 2	3 2 3	360 1440 640 1296 72
Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant Waste Water Treatment Plant Waste Water Treatment Plant Waste Water Treatment Plant	Demineralization System Demineralization System Demineralization System Makeup Water Common Header (Demin.) Periodic Basin Continious Basin Batch Reactor	Brine Injection Pumps	4 1 4 4 4	2 4 1 1 1 1	1 1 1 1 1	5 5 5 5 3	4	5 1 1 6 1 4 5 6 8 2	3 2 3	360 1440
Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant Waste Water Treatment Plant	Demineralization System Demineralization System Demineralization System Makeup Water Common Header (Demin.) Periodic Bassin Continious Basin Batch Reactor Filter Press Dumpsters Instrumentation Sludge Pumps	Brine Injection Pumps	4 1 4 4 4 6 2 1	2 4 1 1 1 1 1 1	1 1 1 1 1 1 1 1	5 5 5 5 3 1 2 5	6 4 6 3 3 4	5 1 6 4 4 5 6 6 8 2 1 2 1 1 1 2	3 2 3 2 1 1 3	360 1440 640 1296 72 8 20
Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant Waste Water Treatment Plant	Demineralization System Demineralization System Demineralization System Makeup Water Common Header (Demin.) Periodic Basin Continious Basin Batch Reactor Filter Press Dumpsters Instrumentation Sludge Pumps Caustic injection Pumps	Brine Injection Pumps	4 1 4 4 6 2 1 1 4	2 4 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1	5 5 5 5 3 1 2 5 3	4 4 6 3 3 4 4	5 1 6 1 4 6 6 6 6 6 8 2 1 2 1 1 1 1 2 1 2 1	3 2 3 2 1 1 3 3	360 1440 640 1296 72 8 20 72
Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant Waste Water Treatment Plant	Demineralization System Demineralization System Demineralization System Makeup Water Common Header (Demin.) Periodic Basin Continious Basin Batch Reactor Filter Press Dumpsters Instrumentation Sludge Pumps Caustic Injection Pumps Caustic Transfer Pumps	Brine Injection Pumps	4 1 4 4 4 6 2 1	2 4 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1	5 5 5 5 3 1 2 5 3	6 4 6 3 3 4	5 1 1 6 1 4 5 6 8 2 1 2 1 1 1 2 1 2	3 2 3 2 1 1 3	360 1440 640 1296 72 8 20 72 72 48
Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant Waste Water Treatment Plant	Demineralization System Demineralization System Demineralization System Makeup Water Common Header (Demin.) Periodic Basin Continious Basin Satch Reactor Filter Press Dumpsters Unstrumentation Sludge Pumps Caustic Injection Pumps Caustic Transfer Pumps Polymer Pumps Caustic Transfer Caustic Canacia Caustic Canacia Caustic Canacia Caustic Canacia Caustic Ca	Brine Injection Pumps	4 4 4 4 6 2 1 4 4	2 4 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	5 5 5 5 3 1 2 5 3 3 3 3	4 4 3 3 4 3	5 1 1 6 1 4 5 6 8 2 1 2 1 1 1 2 1 2 1 2	3 2 3 2 1 1 3 3	360 1440 640 1296 72 8 20 72 72 48
Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant Waste Water Treatment Plant	Demineralization System Demineralization System Demineralization System Makeup Water Common Header (Demin.) Periodic Basain Continious Basin Batch Reactor Filter Press Dumpsters Instrumentation Sludge Pumps Caustic Injection Pumps Caustic Transfer Pumps Polymer Pumps Caustic Tansfer Pumps Caustic Tank Clarifier Overflow Discharge Pumps	Brine Injection Pumps	4 4 4 4 6 2 2 1 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	2 4 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	5 5 5 5 3 1 2 5 3 3 3 2 2		5 1 4 6 5 6 8 2 1 2 1 1 1 2 1 2 1 2 1 2 1 2	3 2 3 2 1 1 3 3 3	360 1440 640 1296 72 8 20 72 72 72 48 72 6000
Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant Waste Water Treatment Plant	Demineralization System Demineralization System Demineralization System Makeup Water Common Header (Demin.) Periodic Basin Continious Basin Batch Reactor Filter Press Dumpsters Instrumentation Sludge Pumps Caustic Injection Pumps Caustic Transfer Pumps Polymer Pumps Caustic Trank Clarifier Overflow Discharge Pumps Piping	Brine Injection Pumps	4 4 4 4 6 2 1 1 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	2 4 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	5 5 5 5 5 5 5 5 5 5 3 3 2 2 2 3 3 3 3 3		5 1 1 6 1 4 5 6 8 2 1 2 1 1 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1	3 2 3 2 1 1 3 3 3 3 4 3	360 1440 640 1296 72 8 20 72 72 48 72 6000
Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant Waste Water Treatment Plant	Demineralization System Demineralization System Demineralization System Makeup Water Common Header (Demin.) Periodic Basain Continious Basin Batch Reactor Filter Press Dumpsters Instrumentation Sludge Pumps Caustic Injection Pumps Caustic Transfer Pumps Polymer Pumps Caustic Tansfer Pumps Caustic Tank Clarifier Overflow Discharge Pumps	Brine Injection Pumps	4 4 4 4 6 2 2 1 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	2 4 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	5 5 5 5 5 5 5 5 5 5 3 3 2 2 2 3 3 3 3 3		5 1 1 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	3 2 3 2 1 1 3 3 3	360 1440 640 1296 72 8 20 72 72 48 48 6000 72
Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant Waste Water Treatment Plant	Demineralization System Demineralization System Demineralization System Makeup Water Common Header (Demin.) Periodic Basin Continious Basin Satch Reactor Filter Press Dumpsters Unstrumentation Sludge Pumps Caustic Injection Pumps Caustic Injection Pumps Caustic Transfer Pumps Polymer Pumps Caustic Transfer Pumps Caustic Transfer Pumps Polymer Pumps Caustic Transfer Pumps Caustic Transfer Pumps Polymer Pumps Caustic Transfer Pumps Laufill Pumps Laustic Transfer Pumps Piping Car Wash/Service Water Pumps Waste Landfill Landfill Holding Pond	Brine Injection Pumps Demin. Water Storage Tank	44 44 44 44 44 44 44 42 22 22 22	2 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	55 55 55 55 55 55 33 33 22 23 33 55 55 55 55 55 55 55 55 55 55 55 55		b 1 1 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	3 2 3 2 1 1 3 3 3 3 4 4 3 3 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	360 1440 640 1296 8 200 72 72 48 72 6000 72 720 4
Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant Waste Water Treatment Plant	Demineralization System Demineralization System Demineralization System Makeup Water Common Header (Demin.) Periodic Basin Continious Basin Batch Reactor Filter Press Dumpsters Unstrumentation Sludge Pumps Caustic Injection Pumps Caustic Inrafer Pumps Polymer Pumps Caustic Tansfer Pumps Caustic Tansfer Pumps Polymer Pumps Caustic Tank Clarifier Overflow Discharge Pumps Piping Car Wash/Service Water Pumps Waste Landfill Landfill Holding Pond Landfill Holding Pond	Brine Injection Pumps	44 44 44 44 44 44 44 44 42 22 22 44	2 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	11 11 11 11 11 11 11 11 11 11	55 55 55 55 33 11 22 23 33 55 55 55 55 55 55 55 55 55 55 55 55		b 1 1 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	3 2 3 2 1 1 3 3 3 3 4 4 3 3 2 1	360 1440 640 1296 20 72 72 72 6000 72 720 4 4 180
Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant Waste Water Treatment Plant	Demineralization System Demineralization System Demineralization System Demineralization System Makeup Water Common Header (Demin.) Periodic Bassin Continious Basin Batch Reactor Filter Press Dumpsters Instrumentation Sludge Pumps Caustic Injection Pumps Caustic Injection Pumps Caustic Transfer Pumps Polymer Pumps Caustic Transfer Pumps Polymer Pumps Caustic Trank Clarifier Overflow Discharge Pumps Piping Car Wash/Service Water Pumps Waste Landfill Landfill Holding Pond Landfill Holding Pond Ferrous Sulphate Dosing System	Brine Injection Pumps Demin. Water Storage Tank	44 44 44 44 44 44 44 44 42 22 22 44 44	2 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	11 11 11 11 11 11 11 11 11 11 11 11	55 55 55 55 33 33 22 25 55 55 55 55 55 55 55 55 55 55 55	6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	b 1 4 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	3 2 3 2 1 1 3 3 3 3 4 4 3 3 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	360 1440 640 1296 8 8 20 72 72 6000 72 720 4 240 180 32
Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant Waste Water Treatment Plant	Demineralization System Demineralization System Demineralization System Makeup Water Common Header (Demin.) Periodic Basin Continious Basin Batch Reactor Filter Press Dumpsters Unstrumentation Sludge Pumps Caustic Injection Pumps Caustic Inrafer Pumps Polymer Pumps Caustic Tansfer Pumps Caustic Tansfer Pumps Polymer Pumps Caustic Tank Clarifier Overflow Discharge Pumps Piping Car Wash/Service Water Pumps Waste Landfill Landfill Holding Pond Landfill Holding Pond	Brine Injection Pumps Demin. Water Storage Tank	44 44 44 44 44 44 44 44 42 22 22 44	2 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	11 11 11 11 11 11 11 11 11 11 11 11 11	55 55 55 55 33 33 33 22 55 55 55 55 55 55 55 55 55 55 55 55	6 4 4 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	b 1 4 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	3 2 3 2 1 1 3 3 3 3 4 4 3 3 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	360 1440 640 1296 72 8 8 20 72 48 72 6000 72 240 180 32
Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant Waste Water Treatment Plant	Demineralization System Demineralization System Demineralization System Makeup Water Common Header (Demin.) Periodic Basin Continious Basin Continious Basin Batch Reactor Filter Press Dumpsters Instrumentation Sludge Pumps Caustic Injection Pumps Caustic Injection Pumps Caustic Transfer Pumps Polymer Pumps Landfill Holding Pond Landfill Holding Pond Landfill Holding Pond Ferrous Sulphate Dosing System Oily Water Seperator Grease Traps Piping From Plant to WWTP	Brine Injection Pumps Demin. Water Storage Tank	44 44 44 44 44 44 44 44 44 44 46 66 66	2 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	11 11 11 11 11 11 11 11 11 11 11 11 11	55 55 55 55 55 55 55 55 55 55 55 55 55		b 1 4 6 6 6 6 6 6 6 7 6 7 6 7 6 7 6 7 6 7 6	3 2 3 2 1 1 3 3 3 3 4 4 3 3 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	360 1440 640 1296 8 20 722 722 722 722 720 4 240 180 32 120 180 180 720
Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant Waste Water Treatm	Demineralization System Demineralization System Demineralization System Makeup Water Common Header (Demin.) Periodic Basin Continious Basin Batch Reactor Filter Press Dumpsters Instrumentation Sludge Pumps Caustic Injection Pumps Caustic Insection Pumps Caustic Transfer Pumps Polymer Pumps Caustic Tank Clarifier Overflow Discharge Pumps Piping Car Wash/Service Water Pumps Waste Landfill Landfill Holding Pond Landfill Holding Pond Landfill Holding Pond Ferrous Sulphate Dosing System Oily Water Seperator Grease Traps Piping from Plant to WWTP Biogreen System	Brine Injection Pumps Demin. Water Storage Tank	44 44 44 44 44 44 44 44 44 46 66 66 66	2 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	11 11 11 11 11 11 11 11 11 11 11 11 11	55 55 55 55 55 33 32 22 55 55 55 55 55 55 55 55 55 55 55 55	6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	5 11 6 1 6 1 6 1 6 1 6 1 6 1 6 1 6 1 6 1	3 2 1 1 3 3 3 3 4 3 3 2 1 1 1 1 2 1 1 1 1 1 1 1 1 1 1 1 1	360 1440 640 1296 72 8 8 200 72 72 6000 72 240 180 180 180 180 180 240 240
Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant Waste Water Treatment Plant	Demineralization System Demineralization System Demineralization System Makeup Water Common Header (Demin.) Periodic Basin Continious Basin Batch Reactor Filter Press Dumpsters Instrumentation Sludge Pumps Caustic Injection Pumps Caustic Inrasfer Pumps Polymer Pumps Caustic Transfer Pumps Polymer Pumps Caustic Transfer Pumps Polymer Pumps Caustic Tansfer Pumps Piping Car Wash/Service Water Pumps Waste Landfill Holding Pond Landfill Holding Pond Ferrous Sulphate Dosing System Oily Water Seperator Grease Traps Piping from Plant to WWTP Biogreen System SA & SB Pumps	Brine Injection Pumps Demin. Water Storage Tank	44 44 44 44 44 44 44 44 44 44 44 44 44	2 4 4 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	55 55 55 55 55 55 55 55 55 55 55 55 55	6 4 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	5 1 1 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	3 2 3 2 1 1 3 3 3 4 4 3 2 1 1 1 2 1 1 1 2 1 1 1 1 1 1 1 1 1 1	360 1440 6400 1296 8 200 72 72 6000 4 240 240 120 120 120 120 720 600 60
Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant Waste Water Treatm	Demineralization System Demineralization System Demineralization System Makeup Water Common Header (Demin.) Periodic Basin Continious Basin Batch Reactor Filter Press Dumpsters Instrumentation Sludge Pumps Caustic Injection Pumps Caustic Insection Pumps Caustic Transfer Pumps Polymer Pumps Caustic Tank Clarifier Overflow Discharge Pumps Piping Car Wash/Service Water Pumps Waste Landfill Landfill Holding Pond Landfill Holding Pond Landfill Holding Pond Ferrous Sulphate Dosing System Oily Water Seperator Grease Traps Piping from Plant to WWTP Biogreen System	Brine Injection Pumps Demin. Water Storage Tank	44 44 44 44 44 44 44 44 44 46 66 66 66	2 4 4 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	55 55 55 55 55 55 55 55 55 55 55 55 55	6 4 4 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	5 1 1 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	3 2 1 1 3 3 3 3 4 3 3 2 1 1 1 1 2 1 1 1 1 1 1 1 1 1 1 1 1	360 1440 1296 72 8 8 72 72 72 6000 72 720 4 240 140 32 120 180 180 720 240 140 240 240 240 240 240 240 240 240 240 2
Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant Raw and Makeup Water System & Water Treatment Plant Waste Water Treatm	Demineralization System Demineralization System Demineralization System Makeup Water Common Header (Demin.) Periodic Basin Continious Basin Batch Reactor Filter Press Dumpsters Instrumentation Sludge Pumps Caustic Injection Pumps Caustic Injection Pumps Caustic Transfer Pumps Polymer Pumps Caustic Transfer Pumps Polymer Pumps Caustic Transfer Pumps Piping Car Wash/Service Water Pumps Waste Landfill Landfill Holding Pond Landfill Holding Pond Landfill Holding Pond Ferrous Sulphate Dosing System Oily Water Seperator Grease Traps Piping from Plant to WWTP Biogreen System SA & SB Pumps Leachate Forwarding Pumps	Brine Injection Pumps Demin. Water Storage Tank	44 44 44 44 44 44 44 44 46 66 66 66	22 44 11 11 11 11 11 11 11 11 11 11 11 11	11 11 11 11 11 11 11 11 11 11 11 11 11	55 55 55 55 55 55 55 55 55 55 55 55 55		5 1 1 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	3 2 3 2 1 1 3 3 3 3 3 4 4 3 1 1 1 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1	360 1440 6400 1296 72 8 200 72 72 6000 4 240 180 32 120 180 180 720 240 600

Undertaking 80, Attachment 1 Page 3 of 12

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			Safety			1 _	es	t H	Effect	Equipment Score
			8	+	^	tion	ativ	E	9 E	mer
			Health &	Output	Quality	Utilization	Alternatives	Environment	Time to	혍
Fire Cil Delivery Contact Ave. Steem 8 Fire Cil Bining	Oil Francisco Ininto Maio Frank Crank to Di		ž 2		ō 1				j <u>=</u> 3	8640
Fuel Oil Delivery System Aux. Steam & Fuel Oil Piping Fuel Oil Delivery System Aux. Steam & Fuel Oil Piping	Oil Expansion Joints Main Fuel Supply to Pl Oil Expansion Joint for Off-Loading		2	1	1		6		5	600
Fuel Oil Delivery System Aux. Steam & Fuel Oil Piping	Electrical Heat Tracing (Jetty to Tank Farm)		2	1	1	1	6		2	24
Fuel Oil Delivery System Aux. Steam & Fuel Oil Piping	Fuel Oil Tanks		4	8	1	5	1	6	3	2880
Fuel Oil Delivery System Aux. Steam & Fuel Oil Piping	Suction Heaters		6	3	1	5	1		3	1620
Fuel Oil Delivery System Aux. Steam & Fuel Oil Piping	Flatform Heaters		1 4	1	1	5	4	-	3	540
Fuel Oil Delivery System Aux. Steam & Fuel Oil Piping Fuel Oil Delivery System Aux. Steam & Fuel Oil Piping	Steam Tracing Aux Steam Expansion Joint		4	3	1	5	4	_	3	720 720
Fuel Oil Delivery System Aux. Steam & Fuel Oil Piping	Light Oil Delivery Pump		2	1	1	1	3		5	180
Fuel Oil Delivery System Aux. Steam & Fuel Oil Piping	Light Oil Strainer		2	1	1	1	4	6	3	144
Fuel Oil Delivery System Aux. Steam & Fuel Oil Piping	Light Oil Tank Truck Unloading Connection		1	1	1	1	4	4	3	48
Fuel Oil Delivery System Aux. Steam & Fuel Oil Piping	Piping Tank Farm to Plant		2	8	1	5	6	6	3	8640
Fuel Oil Delivery System Aux. Steam & Fuel Oil Piping	Valves	Tankan Cananatian Flaus Marken	2	8	1	5	3		3	4320
Common Fuel Oil System Common Fuel Oil System		Tanker Connection Flow Meter Unit Day Tank	6	8	1	1	6		3	12960
Common Fuel Oil System		Steam Coil	4	1	1	5	1	4	3	240
Fire Protection System	Diesel Driven Pump		10	8	1	5	4		5	8000
Fire Protection System	Diesel Driven Pump	Main Control Panel	10	8	1	5	2	1	5	4000
Fire Protection System	Diesel Driven Pump	Unit Control Panel/Charger	10	8	1	5	4		5	8000
Fire Protection System	Diesel Driven Pump	Battery Bank	10	8	1	5	1		5	2000
Fire Protection System	Electrical Driven Pump	Control Bonel	10 10	4	1	5	4		5	4000
Fire Protection System Fire Protection System	Electrical Driven Pump Jockey Pump	Control Panel	10	1	1	5	2		5	4000 50
Fire Protection System	Fire Water Distribution System	Hydrants	10	8	1	5	2		5	4000
Fire Protection System	Fire Water Distribution System	Isolation Valves	10	4	1		2		5	2000
Fire Protection System	Fire Water Distribution System	Pipes	10	8	1	5	4	1	5	8000
Fire Protection System	Fire Suppression Systems (Pre-Action Valve	es)	10	8	1	5	6		5	12000
Fire Protection System	Fire Suppression Systems (Deluge)	1	10	8	1	5	6		5	12000
Fire Protection System	Fire Suppression Systems (Wet-Pipe System		10	8	1	5	6		5	12000
Fire Protection System Fire Protection System	Fire Suppression Systems (Dry-Pipe System Fire Suppression Systems (Dry-Pipe System		6	1	1	5	4		5	600
Fire Protection System	Fire Suppression Systems (Dry-Pipe System		6	1	1	5	4		5	600
Fire Protection System	Fire Suppression Systems (Dry-Pipe System		6	1	1	5	4	_	5	600
Fire Protection System	Fire Suppression Systems (Clean Agent Sys		10	2	1	5	6		5	3000
Fire Protection System	Fire Suppression Systems (Clean Agent Sys		2	8	_1	5	6		5	4800
Fire Protection System	Fire Suppression Systems (Clean Agent Sys		2	8	1	5	6	2	5	4800
Fire Protection System	Fire Alarm System		10	8	1	5	6	1	5	12000
Fire Protection System	Fire Alarm System	Battery BackUp	10	1	1	5	6		5	1500
Fire Protection System	Public Address System		10	8	1	5	6		5	12000
Fire Protection System	Public Address System	Horns Handsot/Docksot	10 10	8	1	5	1	1	5	2000
Fire Protection System Fire Protection System	Public Address System Public Address System	Handset/Deskset Electrical Components (cables/wiring)	10	8	1	5	1	-	5	2000
Fire Protection System	Public Address System	Lights/beacons	10	8	1	5	1	1	5	2000
Powerhouse and Switchyard Single Line	400 kW Diesel Generators	Eights/ Dedection	6	1	1	5	1	2	5	300
Powerhouse and Switchyard Single Line	400 kW Diesel Generators	Governor System	4	1	1	5	6	1	5	600
Powerhouse and Switchyard Single Line	400 kW Diesel Generators	Battery & Charger	2	1	1	5	4		5	200
Powerhouse and Switchyard Single Line	400 kW Diesel Generators	Fuel Delivery System	2	1	1	5	6		5	1200
Powerhouse and Switchyard Single Line	400 kW Diesel Generators	Generator	2	1	1	5	6		5	300
Powerhouse and Switchyard Single Line	400 kW Diesel Generators	Engine	2			5	6		5	300 600
Bowerhouse and Switchward Single Line	400 kW Diocal Congretors		- 4	1	1			1		
Powerhouse and Switchyard Single Line Powerhouse and Switchyard Single Line	400 kW Diesel Generators	E-Stop	4	1	1	5	6		5	
Powerhouse and Switchyard Single Line	400 kW Diesel Generators	E-Stop Controls (Sync)	1	1	1	5 5	6	1	5	150
		E-Stop				5	6	1	-	
Powerhouse and Switchyard Single Line Powerhouse and Switchyard Single Line	400 kW Diesel Generators UPS #4 UPS #4 UPS #4	E-Stop Controls (Sync) Charger/Controls	1 4	1	1	5 5 5	6	1 1 2	5	150 1200
Powerhouse and Switchyard Single Line	400 kW Diesel Generators UPS #4 UPS #4 UPS #4 129V DC System	E-Stop Controls (Sync) Charger/Controls 480V Battery Banks Cooling Fans Panel	1 4 6 1 6	1 3 3 3	1 1	5 5 5 5	6 4 6 1	1 1 2 2 2	5 5 5 5	150 1200 5400 150 115200
Powerhouse and Switchyard Single Line	400 kW Diesel Generators UPS #4 UPS #4 UPS #4 129V DC System 129V DC System	E-Stop Controls (Sync) Charger/Controls 480V Battery Banks Cooling Fans Panel Battery	1 4 6 1 6	1 3 3 8 8	1 1 1	5 5 5 5 5 5	6 4 6 1 6	1 1 2 2 2 2	5 5 5 5 5	150 1200 5400 150 115200 230400
Powerhouse and Switchyard Single Line	400 kW Diesel Generators UPS #4 UPS #4 UPS #4 129V DC System 129V DC System 129V DC System	E-Stop Controls (Sync) Charger/Controls 480V Battery Banks Cooling Fans Panel Battery Charger	1 4 6 1 6 6	1 3 3 8 8 8	1 1 1 8 8	5 5 5 5 5 5 5	6 4 6 1 6 6	1 1 2 2 2 2 4 4	5 5 5 5 5 5 5	150 1200 5400 150 115200 230400 1600
Powerhouse and Switchyard Single Line	400 kW Diesel Generators UPS #4 UPS #4 129V DC System 129V DC System 129V DC System 129V DC System 129V DC System	E-Stop Controls (Sync) Charger/Controls 480V Battery Banks Cooling Fans Panel Battery	1 4 6 1 6	1 3 3 8 8 8	1 1 1	5 5 5 5 5 5	6 4 6 1 6	1 1 2 2 2 2 4 4 4	5 5 5 5 5	150 1200 5400 150 115200 230400 1600 480
Powerhouse and Switchyard Single Line Service Air and Instrument Air Supply	400 kW Diesel Generators UPS #4 UPS #4 UPS #4 129V DC System 129V DC System 129V DC System 129V DC System COMPressors	E-Stop Controls (Sync) Charger/Controls 480V Battery Banks Cooling Fans Panel Battery Charger	1 4 6 1 6 6 2 6	1 3 3 8 8 8	1 1 1 8 8	5 5 5 5 5 5 5	6 4 6 1 6 6 1 4	1 1 2 2 2 2 4 4 1	5 5 5 5 5 5 5	150 1200 5400 150 115200 230400 1600 480 120
Powerhouse and Switchyard Single Line	400 kW Diesel Generators UPS #4 UPS #4 129V DC System 129V DC System 129V DC System 129V DC System 129V DC System	E-Stop Controls (Sync) Charger/Controls 480V Battery Banks Cooling Fans Panel Battery Charger	1 4 6 1 6 6 2 6	1 3 3 8 8 8 8	1 1 1 8 8	5 5 5 5 5 5 5	6 4 6 1 6 6 1 4	1 1 2 2 2 4 4 4 1 1	5 5 5 5 5 5 5	150 1200 5400 150 115200 230400 1600 480
Powerhouse and Switchyard Single Line Service Air and Instrument Air Supply Service Air and Instrument Air Supply	400 kW Diesel Generators UPS #4 UPS #4 UPS #4 129V DC System 50mpressors Service Air Receivers	E-Stop Controls (Sync) Charger/Controls 480V Battery Banks Cooling Fans Panel Battery Charger Exhaust Fan	1 4 6 1 6 6 2 6 1 4 1	1 3 3 8 8 8 8	1 1 1 8 8	5 5 5 5 5 5 5 5 5 5 5 5	66 64 66 66 11 11 11 12	1 1 2 2 2 4 4 1 1 1 1	5 5 5 5 5 5 5 4 3 4 2	150 1200 5400 150 115200 230400 1600 480 120 1920 40
Powerhouse and Switchyard Single Line Service Air and Instrument Air Supply	400 kW Diesel Generators UPS #4 UPS #4 129V DC System 529V DC Syst	E-Stop Controls (Sync) Charger/Controls 480V Battery Banks Cooling Fans Panel Battery Charger Exhaust Fan Automatic Condensate Drain Valves Safety Valve	1 4 6 6 6 2 6 1 4 1 4 2	1 3 3 8 8 8 8 1 8 8 2 1	1 1 1 8 8 1 1 1 3 1 1	5 5 5 5 5 5 5 5 5 5 5 5 5	66 66 44 66 66 11 11 12 66 11	1 1 2 2 2 4 4 1 1 1 1 1	5 5 5 5 5 5 5 4 3 4 2 1	150 1200 5400 150 115200 230400 1600 480 120 1920 40 120
Powerhouse and Switchyard Single Line Service Air and Instrument Air Supply	400 kW Diesel Generators UPS #4 UPS #4 129V DC System 529V DC System 529V DC System 529V DC System 640V DC Syst	E-Stop Controls (Sync) Charger/Controls 480V Battery Banks Cooling Fans Panel Battery Charger Exhaust Fan Automatic Condensate Drain Valves Safety Valve Filter	1 4 6 6 6 6 2 6 1 1 4 4 2 2	1 3 3 3 8 8 8 8 8 1 8 8 2 1 1	1 1 1 1 8 8 8 1 1 1 1 1 1 1 1 1 1 1 1 1	5 5 5 5 5 5 5 5 5 5 5 5	66 66 11 66 11 11 12 66 11 11	1 2 2 2 2 4 4 1 1 1 1 1	5 5 5 5 5 5 5 4 3 4 2 1 3 2	150 1200 5400 1150 115200 230400 1600 480 120 1920 40 120 30
Powerhouse and Switchyard Single Line Service Air and Instrument Air Supply	400 kW Diesel Generators UPS #4 UPS #4 129V DC System Compressors Service Air Receivers Service Air Receivers Service Air Receivers Air Dryer Air Dryer Air Dryer	E-Stop Controls (Sync) Charger/Controls 480V Battery Banks Cooling Fans Panel Battery Charger Exhaust Fan Automatic Condensate Drain Valves Safety Valve Filter Prefilter	1 4 6 6 6 2 6 1 4 1 4 2	1 3 3 8 8 8 8 1 8 8 2 1	1 1 1 8 8 1 1 1 3 1 1	5 5 5 5 5 5 5 5 5 5 5 5 5	66 66 44 66 66 11 11 12 66 11	1 2 2 2 2 4 4 1 1 1 1 1	5 5 5 5 5 5 5 4 3 4 2 1	150 1200 5400 150 115200 230400 480 120 1920 40 120 30 10
Powerhouse and Switchyard Single Line Service Air and Instrument Air Supply	400 kW Diesel Generators UPS #4 UPS #4 129V DC System 129V DC Syst	E-Stop Controls (Sync) Charger/Controls 480V Battery Banks Cooling Fans Panel Battery Charger Exhaust Fan Automatic Condensate Drain Valves Safety Valve Filter Prefilter Afterfilter	1 4 6 6 6 2 6 1 1 4 4 2 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 3 3 8 8 8 8 8 8 1 1 1 1 1	1 1 1 1 8 8 8 1 1 1 1 1 1 1 1 1 1 1 1 1	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	66 66 11 44 11 12 66 11 11 11	1 1 2 2 2 2 4 4 1 1 1 1 1 1 1	5 5 5 5 5 5 5 5 4 3 4 2 1 1 3 2 2	150 1200 5400 1150 115200 230400 1600 480 120 1920 40 120 30 10
Powerhouse and Switchyard Single Line Service Air and Instrument Air Supply	400 kW Diesel Generators UPS #4 UPS #4 129V DC System Compressors Service Air Receivers Service Air Receivers Service Air Receivers Air Dryer Air Dryer Air Dryer	E-Stop Controls (Sync) Charger/Controls 480V Battery Banks Cooling Fans Panel Battery Charger Exhaust Fan Automatic Condensate Drain Valves Safety Valve Filter Prefilter	1 4 6 6 6 6 2 6 1 1 4 4 2 2	1 3 3 3 8 8 8 8 8 1 8 8 2 1 1	1 1 1 1 8 8 8 1 1 1 1 1 1 1 1 1 1 1 1 1	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	66 66 11 66 11 11 12 66 11 11	1 1 2 2 2 2 4 4 4 1 1 1 1 1 1 1 1	5 5 5 5 5 5 5 4 3 4 2 1 3 2	150 1200 5400 150 115200 230400 480 120 1920 40 120 30 10
Powerhouse and Switchyard Single Line Service Air and Instrument Air Supply	400 kW Diesel Generators UPS #4 UPS #4 129V DC System 529V DC System 529V DC System 529V DC System 529V DC System 647 Receivers 647 Exercivers 647 Exercivers 647 Exercivers 647 Exercivers 648 Exercivers 649 Air Dryer	E-Stop Controls (Sync) Charger/Controls 480V Battery Banks Cooling Fans Panel Battery Charger Exhaust Fan Automatic Condensate Drain Valves Safety Valve Filter Prefilter Afterfilter Controller (Electronics and Valves)	1 4 6 6 6 2 6 1 1 4 4 2 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 3 3 8 8 8 8 8 1 1 1 1 1 1	1 1 1 1 8 8 8 1 1 1 1 1 1 1 1 1 1 1 1 1	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	66 66 11 66 61 11 11 11 11 16	1 1 2 2 2 2 4 4 4 1 1 1 1 1 1 1 1 1	5 5 5 5 5 5 5 5 4 3 4 2 1 1 3 2 2	150 1200 5400 150 115200 230400 480 120 1920 40 120 30 10 10
Powerhouse and Switchyard Single Line Service Air and Instrument Air Supply	400 kW Diesel Generators UPS #4 UPS #4 129V DC System 500 Ferror Service Air Receivers Service Air Receivers Service Air Receivers Air Dryer Air Bryer	E-Stop Controls (Sync) Charger/Controls 480V Battery Banks Cooling Fans Panel Battery Charger Exhaust Fan Automatic Condensate Drain Valves Safety Valve Filter Prefilter Arterfilter Controller (Electronics and Valves) Desiccant Chambers Automatic Condensate Drain Valves	11 44 66 11 66 66 11 44 11 11 11 12 44 11	1 3 3 3 8 8 8 8 8 1 1 1 1 1 1 1 1 1 2	1 1 1 1 8 8 8 1 1 1 1 1 1 1 1 1 1 1 1 1	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	66 66 66 11 11 12 22 66 11 11 11 11 66 62 22	1 1 2 2 2 2 4 4 4 1 1 1 1 1 1 1 1 1 1 1	5 5 5 5 5 5 5 5 5 6 4 6 7 1 1 3 1 2 2 2 2 5 5 2 4 1 1 1	150 1200 5400 1150 115200 230400 480 120 1920 30 10 10 10 150 150 120 20 20
Powerhouse and Switchyard Single Line Service Air and Instrument Air Supply	400 kW Diesel Generators UPS #4 UPS #4 129V DC System 129V DC Syst	E-Stop Controls (Sync) Charger/Controls 480V Battery Banks Cooling Fans Panel Battery Charger Exhaust Fan Automatic Condensate Drain Valves Safety Valve Filter Prefilter Afterfilter Controller (Electronics and Valves) Desiccant Chambers	1 4 6 6 1 6 6 6 1 1 4 4 4 2 2 1 1 1 1 1 1 1 2 1 4 1 1 1 1	1 3 3 3 8 8 8 8 8 1 1 1 1 1 1 1 4 2	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	66 66 66 66 11 11 12 66 66 66 11 11 11 11 11 11 11 11 11 11	1 1 2 2 2 2 4 4 1 1 1 1 1 1 1 1 1 1 1 1	5 5 5 5 5 5 5 5 5 5 6 4 4 6 2 1 1 3 2 2 2 2 5 5 2 4 1 1 1 1	150 1200 5400 115200 230400 480 120 1920 40 120 10 10 10 11 10 120 120 20 20 20 20 21 20 21 21 21 21 21 21 21 21 21 21 21 21 21
Powerhouse and Switchyard Single Line Service Air and Instrument Air Supply	400 kW Diesel Generators UPS #4 UPS #4 129V DC System 129V DC Syst	E-Stop Controls (Sync) Charger/Controls 480V Battery Banks Cooling Fans Panel Battery Charger Exhaust Fan Automatic Condensate Drain Valves Safety Valve Filter Prefilter Afterfilter Controller (Electronics and Valves) Desiccant Chambers Automatic Condensate Drain Valves Safety Valve Safety Valve Automatic Condensate Drain Valves Safety Valve	1 4 6 6 6 2 6 1 1 4 4 2 1 1 1 1 1 2 4 4 1 1 1 1 1 1 1	1 3 3 8 8 8 8 8 1 1 1 1 1 1 1 2 2 1 3	1 1 1 1 8 8 8 1 1 1 1 1 1 1 1 1 1 1 1 1	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	66 66 66 66 11 11 12 66 66 66 11 11 11 11 11 11 11 11 11 11	1 1 2 2 2 2 4 4 1 1 1 1 1 1 1 1 1 1 1 1	5 5 5 5 5 5 5 5 4 4 2 1 3 2 2 2 2 2 4 4 1 1 1 1 1 1 1 1 1 1 1 1 1	150 1200 5400 1150 115200 230400 480 120 1920 30 10 10 10 150 150 120 20 20
Powerhouse and Switchyard Single Line Service Air and Instrument Air Supply	400 kW Diesel Generators UPS #4 UPS #4 129V DC System 129V DC Syst	E-Stop Controls (Sync) Charger/Controls 480V Battery Banks Cooling Fans Panel Battery Charger Exhaust Fan Automatic Condensate Drain Valves Safety Valve Filter Prefilter Arterfilter Controller (Electronics and Valves) Desiccant Chambers Automatic Condensate Drain Valves	1 4 6 6 2 6 1 1 4 4 2 2 1 1 1 1 2 4 4 1 1 1 1 1 1 1	1 3 3 8 8 8 8 8 1 1 1 1 1 1 1 1 2 2 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	66 66 66 66 11 11 12 66 66 66 11 11 11 11 11 11 11 11 11 11	1 1 2 2 2 2 4 4 1 1 1 1 1 1 1 1 1 1 1 1	5 5 5 5 5 5 5 4 4 2 1 3 2 2 2 2 2 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1	150 1200 5400 115200 230400 480 120 40 120 30 10 10 1150 120 120 20 20 2700 4
Powerhouse and Switchyard Single Line Service Air and Instrument Air Supply	400 kW Diesel Generators UPS #4 UPS #4 129V DC System 129V DC Syst	E-Stop Controls (Sync) Charger/Controls 480V Battery Banks Cooling Fans Panel Battery Charger Exhaust Fan Automatic Condensate Drain Valves Safety Valve Filter Prefilter Afterfilter Controller (Electronics and Valves) Desiccant Chambers Automatic Condensate Drain Valves Safety Valve Safety Valve Automatic Condensate Drain Valves Safety Valve	1 4 6 6 6 2 6 6 1 1 4 4 2 2 1 1 1 1 1 2 2 4 4 4 4 4 4 4	1 3 3 3 8 8 8 8 1 1 8 8 1 1 1 1 1 1 1 1 1	1 1 1 1 8 8 8 1 1 1 1 1 1 1 1 1 1 1 1 1	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	66 66 11 11 11 11 11 11 11 11 11 11 11 1	1 1 2 2 2 4 4 1 1 1 1 1 1 1 1 1 1 1 1 1	5 5 5 5 5 5 5 5 5 5 6 4 6 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	150 1200 5400 115200 230400 1600 480 120 1920 40 110 110 110 120 120 120 20 20 2700 4
Powerhouse and Switchyard Single Line Service Air and Instrument Air Supply	400 kW Diesel Generators UPS #4 UPS #4 129V DC System 129V DC Syst	E-Stop Controls (Sync) Charger/Controls 480V Battery Banks Cooling Fans Panel Battery Charger Exhaust Fan Automatic Condensate Drain Valves Safety Valve Filter Prefilter Afterfilter Controller (Electronics and Valves) Desiccant Chambers Automatic Condensate Drain Valves Safety Valve Safety Valve Automatic Condensate Drain Valves Safety Valve	1 4 6 6 2 6 1 1 4 4 2 2 1 1 1 1 2 4 4 1 1 1 1 1 1 1	1 33 33 88 88 1 1 1 1 1 1 1 1 2 1 1 3 3 3 8 8 8 8 8 1 1 1 1 1 1 1 1 1 1	1 1 1 1 8 8 8 1 1 1 1 1 1 1 1 1 1 1 1 1	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	66 66 66 66 11 11 12 66 66 66 11 11 11 11 11 11 11 11 11 11	1 1 2 2 2 2 4 4 1 1 1 1 1 1 1 1 1 1 1 1	5 5 5 5 5 5 5 4 4 2 1 3 2 2 2 2 2 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1	150 1200 5400 115200 230400 480 120 40 120 30 10 10 1150 120 120 20 20 2700 4
Powerhouse and Switchyard Single Line Service Air and Instrument Air Supply	400 kW Diesel Generators UPS #4 UPS #4 1UPS #4 129V DC System 14 Dryer 14ir Dryer 15ir Dryer 16ir Dryer 16	E-Stop Controls (Sync) Charger/Controls 480V Battery Banks Cooling Fans Panel Battery Charger Exhaust Fan Automatic Condensate Drain Valves Safety Valve Filter Prefilter Afterfilter Controller (Electronics and Valves) Desiccant Chambers Automatic Condensate Drain Valves Safety Valve	1 4 6 6 6 2 6 6 1 1 4 4 2 2 1 1 1 1 1 2 2 4 4 4 1 1 1 1	1 3 3 8 8 8 8 1 1 1 1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	66 66 66 11 44 11 11 11 11 66 66 66 66 66 66 66 66 66	1 1 2 2 2 4 4 1 1 1 1 1 1 1 1 1 1 1 1 1	5 5 5 5 5 5 5 5 5 5 6 4 6 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	150 1200 5400 115200 230400 1600 480 120 1920 40 110 110 110 120 120 20 120 20 40 120 40 120 40 120 40 120 40 40 120 40 40 40 40 40 40 40 40 40 40 40 40 40
Powerhouse and Switchyard Single Line Service Air and Instrument Air Supply	400 kW Diesel Generators UPS #4 UPS #4 129V DC System 129V DC Syst	E-Stop Controls (Sync) Charger/Controls 480V Battery Banks Cooling Fans Panel Battery Charger Exhaust Fan Automatic Condensate Drain Valves Safety Valve Filter Prefilter Afterfilter Controller (Electronics and Valves) Desiccant Chambers Automatic Condensate Drain Valves Safety Valve	1 4 6 6 6 2 6 1 1 4 4 2 1 1 1 1 1 2 4 4 2 2 4 4 1 1 1 1	1 3 3 3 8 8 8 8 8 1 1 1 1 1 1 1 1 1 2 2 1 1 1 8 8 8 8	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	66 66 66 66 66 11 11 11 11 11 11 66 66 6	1 1 2 2 2 4 4 1 1 1 1 1 1 1 1 1 1 1 1 1	5 5 5 5 5 5 5 5 5 4 4 2 1 3 2 2 2 2 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	150 1200 5400 1590 115200 230400 1600 480 120 120 30 10 10 10 120 20 20 20 2700 4 4 4 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9
Powerhouse and Switchyard Single Line Service Air and Instrument Air Supply Service Air Air Air Air Air Air	400 kW Diesel Generators UPS #4 UPS #4 129V DC System 129V DC Syst	E-Stop Controls (Sync) Charger/Controls 480V Battery Banks Cooling Fans Panel Battery Charger Exhaust Fan Automatic Condensate Drain Valves Safety Valve Filter Prefilter Afterfilter Controller (Electronics and Valves) Desiccant Chambers Automatic Condensate Drain Valves Safety Valve Manual Valves	1 4 6 6 6 1 1 4 4 2 2 1 1 1 1 1 2 2 4 4 2 2 4 4 2 2 4 4 2 2 4 4 4 4	1 3 3 3 8 8 8 8 8 1 1 1 1 1 1 1 1 2 2 1 1 1 8 8 8 8	1 1 1 1 1 1 3 3 1 1 1 1 1 1 1 1 1 1 1 1	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	66 66 66 11 11 11 11 11 11 66 66 66 66 22 22 22 22 22 22 22	1 1 2 2 2 2 4 4 4 1 1 1 1 1 1 1 1 1 1 1	5 5 5 5 5 5 5 5 5 4 4 2 2 1 3 2 2 2 2 4 1 1 5 5 5 5 5 7 5 7 7 7 7 7 7 7 7 7 7 7	150 1200 5400 11520 115200 230400 120 120 120 120 10 10 10 10 150 120 20 20 20 27 20 27 20 48 48 40 49 40 40 40 40 40 40 40 40 40 40 40 40 40
Powerhouse and Switchyard Single Line Service Air and Instrument Air Supply Service Air Air Supply	400 kW Diesel Generators UPS #4 UPS #4 1299 De System 1299 De Syst	E-Stop Controls (Sync) Charger/Controls 480V Battery Banks Cooling Fans Panel Battery Charger Exhaust Fan Automatic Condensate Drain Valves Safety Valve Filter Prefilter Afterfilter Controller (Electronics and Valves) Desiccant Chambers Automatic Condensate Drain Valves Safety Valve	1 4 6 6 6 1 1 4 4 2 2 1 1 1 1 2 2 4 4 4 2 2 4 4 4 4	1 3 3 3 8 8 8 8 1 1 1 1 1 1 1 1 1 2 1 1 3 3 3 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	66 66 66 11 11 11 11 11 11 66 66 66 22 22 22 22 22 22 21	1 1 2 2 2 4 4 1 1 1 1 1 1 1 1 1 1 1 1 1	5 5 5 5 5 5 5 4 4 2 2 2 2 2 2 4 1 1 5 5 5 5 5 5 7 7 7 8 7 8 7 8 7 8 7 8 7 8	150 1200 1400 159 115200 230400 480 120 40 120 10 10 10 10 110 120 120 120 20 120 20 2700 480 480 480 480 480 480 480
Powerhouse and Switchyard Single Line Service Air and Instrument Air Supply	400 kW Diesel Generators UPS #4 UPS #4 129V DC System 129V DC Syst	E-Stop Controls (Sync) Charger/Controls 480V Battery Banks Cooling Fans Panel Battery Charger Exhaust Fan Automatic Condensate Drain Valves Safety Valve Filter Prefilter Afterfilter Controller (Electronics and Valves) Desiccant Chambers Automatic Condensate Drain Valves Safety Valve Manual Valves	1 4 6 6 6 6 1 1 4 4 1 1 1 1 1 1 2 2 4 4 4 2 2 4 4 4 4	1 3 3 3 8 8 8 8 1 1 1 1 1 1 1 1 1 2 2 1 1 1 1 1	1 1 1 1 1 1 3 3 1 1 1 1 1 1 1 1 1 1 1 1	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	66 66 66 11 11 11 11 11 66 66 22 22 11 66 66 22 22 22 22 22 21 11	1 1 2 2 2 4 4 4 1 1 1 1 1 1 1 1 1 1 1 1	5 5 5 5 5 5 5 5 5 5 4 4 2 2 2 2 2 2 2 4 1 1 1 5 5 5 5 5 5 5 7 7 8 7 8 7 8 7 8 7 8 7 8	150 1200 5400 1550 115200 230400 1600 480 1220 400 100 100 100 100 100 120 200 200 200 480 200 480 480 480 480 480 480 480 480 480 4
Powerhouse and Switchyard Single Line Service Air and Instrument Air Supply Service Air Air Supply	400 kW Diesel Generators UPS #4 UPS #4 129V DC System 129V DC Syst	E-Stop Controls (Sync) Charger/Controls 480V Battery Banks Cooling Fans Panel Battery Charger Exhaust Fan Automatic Condensate Drain Valves Safety Valve Filter Prefilter Afterfilter Controller (Electronics and Valves) Desiccant Chambers Automatic Condensate Drain Valves Safety Valve Manual Valves Safety Valve	1 4 6 6 6 6 1 1 1 1 1 1 1 1 2 2 4 4 1 1 2 2 4 4 2 2 4 4 1 1 1 1	1 3 3 3 8 8 8 8 1 1 1 1 1 1 1 1 1 2 2 1 1 1 1 8 8 8 8	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	66 66 66 11 11 11 11 11 11 66 66 22 22 11 66 22 22 11 66 66 66 66 66 22 22 22 22 22 22 22 22	1 1 2 2 2 4 4 4 1 1 1 1 1 1 1 1 1 1 1 1	5 5 5 5 5 5 5 5 4 4 2 2 2 2 2 2 2 4 1 1 1 5 1 5 1 5 1 5 1 5 1 1 1 1 1 1 1	150 1200 5400 150 115200 230400 1600 480 120 1920 40 100 100 150 120 200 2700 4 600 720 1600 480 480 640 320 480
Powerhouse and Switchyard Single Line Service Air and Instrument Air Supply Service Air	400 kW Diesel Generators UPS #4 UPS #4 129V DC System 129V DC Syst	E-Stop Controls (Sync) Charger/Controls 480V Battery Banks Cooling Fans Panel Battery Charger Exhaust Fan Automatic Condensate Drain Valves Safety Valve Filter Prefilter Arterfilter Controller (Electronics and Valves) Desiccant Chambers Automatic Condensate Drain Valves Safety Valve Safety Valve Manual Valves Safety Valves	1 4 6 6 6 6 1 1 4 4 1 1 1 1 1 1 2 2 4 4 4 2 2 4 4 4 4	1 3 3 3 8 8 8 8 1 1 1 1 1 1 1 1 1 2 2 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	66 66 66 11 11 11 11 11 66 66 22 22 11 66 66 22 22 22 22 22 21 11	1 1 1 2 2 2 2 2 4 4 4 1 1 1 1 1 1 1 1 1	5 5 5 5 5 5 5 5 5 5 4 4 2 2 2 2 2 2 2 4 1 1 1 5 5 5 5 5 5 5 7 7 7 8 7 8 7 8 7 8 7 8 7	150 1200 1500 1500 11520 115200 480 120 40 120 30 10 10 110 120 120 20 20 20 20 44 960 720 480 480 480 480 480 480 480 480 480
Powerhouse and Switchyard Single Line Service Air and Instrument Air Supply Service Air Air Supply	400 kW Diesel Generators UPS #4 UPS #4 129V DC System 129V DC Syst	E-Stop Controls (Sync) Charger/Controls 480V Battery Banks Cooling Fans Panel Battery Charger Exhaust Fan Automatic Condensate Drain Valves Safety Valve Filter Prefilter Afterfilter Controller (Electronics and Valves) Desiccant Chambers Automatic Condensate Drain Valves Safety Valve Manual Valves Safety Valve	1 44 66 66 66 11 44 22 11 11 11 22 44 44 22 44 44 46	1 3 3 3 8 8 8 8 1 1 1 1 1 1 1 1 1 1 1 8 8 8 8	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	66 66 66 66 11 11 11 11 11 66 66 66 66 6	1 1 1 2 2 2 2 2 4 4 4 1 1 1 1 1 1 1 1 1	5 5 5 5 5 5 5 5 5 5 5 7 4 4 2 2 2 2 2 2 2 4 1 1 3 3 3 5 5 5 5 5 5 5 7 1 1 1 1 1 1 1 1 1 1 1 1	150 1200 5400 150 115200 230400 1600 480 120 1920 40 100 100 150 120 200 2700 4 600 720 1600 480 480 640 320 480
Powerhouse and Switchyard Single Line Service Air and Instrument Air Supply Service Air	400 kW Diesel Generators UPS #4 UPS #4 129V DC System 129V DC Syst	E-Stop Controls (Sync) Charger/Controls 480V Battery Banks Cooling Fans Panel Battery Charger Exhaust Fan Automatic Condensate Drain Valves Safety Valve Filter Prefilter Afterfilter Controller (Electronics and Valves) Desiccant Chambers Automatic Condensate Drain Valves Safety Valve Manual Valves Safety Valve Manual Valves Safety Valves Motorized Valves Hand Valves Sozoo Nox	1 4 6 6 6 6 6 1 1 1 1 1 1 1 1 1 2 2 4 4 1 1 1 1 1 1 2 4 4 1 1 1 1	1 3 3 3 8 8 8 8 1 1 1 1 1 1 1 1 1 1 1 8 8 8 8	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	66 66 66 66 11 11 11 11 11 66 66 66 66 6	1 1 1 2 2 2 2 4 4 4 1 1 1 1 1 1 1 1 1 1	5 5 5 5 5 5 5 5 5 5 4 4 2 2 1 3 2 2 2 2 4 1 1 3 3 3 3 3 3 3 5 5 5 5 5 5 5 5 5 5 5	150 1200 1500 1500 1500 1500 115200 230400 1600 480 1200 1920 100 100 100 100 120 120 200 120 2700 48 960 720 4800 4800 4800 4800 2880 4320 3660 180
Powerhouse and Switchyard Single Line Service Air and Instrument Air Supply Service Air A	400 kW Diesel Generators UPS #4 UPS #4 129V DC System 129V DC Syst	E-Stop Controls (Sync) Charger/Controls 480V Battery Banks Cooling Fans Panel Battery Charger Exhaust Fan Automatic Condensate Drain Valves Safety Valve Filter Prefilter Controller (Electronics and Valves) Desiccant Chambers Automatic Condensate Drain Valves Safety Valve Filter Safety Valve Filter Automatic Condensate Drain Valves Desiccant Chambers Automatic Condensate Drain Valves Safety Valve Manual Valves Manual Valves Manual Valves Motorized Valves Hand Valves So2 Nox Particulaties PM 2.5	1 4466666666666666666666666666666666666	1 3 3 3 8 8 8 8 1 1 1 1 1 1 1 1 1 1 1 8 8 8 8	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	66 66 66 66 11 11 11 11 11 66 66 66 66 6	1 1 1 2 2 2 2 4 4 4 1 1 1 1 1 1 1 1 1 1	5 5 5 5 5 5 5 5 5 4 4 2 2 2 2 2 2 2 4 1 1 1 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	150 1200 1500 1500 1500 1500 115200 230400 1600 480 120 1920 100 100 100 150 120 200 2700 480 480 4800 4800 4800 2880 4320 360 180 180
Powerhouse and Switchyard Single Line Service Air and Instrument Air Supply Service Air	400 kW Diesel Generators UPS #4 UPS #4 129V DC System 140V DC System 141 Dryer 142 Dryer 143 Dryer 144 Dryer 145 Dryer 145 Dryer 146 Dryer 147 Dryer 148 Dryer 149 Dryer 14	E-Stop Controls (Sync) Charger/Controls 480V Battery Banks Cooling Fans Panel Battery Charger Exhaust Fan Automatic Condensate Drain Valves Safety Valve Filter Prefilter Arterfilter Controller (Electronics and Valves) Desiccant Chambers Automatic Condensate Drain Valves Safety Valve Manual Valves Manual Valves Safety Valve Manual Valves Motorized Valves Hand Valves So2 Nox Particulaties PM 2.5 Particulaties PM 2.5 Particulaties PM 2.5 Particulaties High Volume Monitoring	1 44 6 6 6 2 2 1 1 1 1 1 1 1 1 2 2 4 4 4 4 4 2 2 4 4 4 4	1 3 3 3 8 8 8 8 1 1 1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	66 66 66 66 66 66 66 66 66 66 66 66 66	1 1 1 2 2 2 2 4 4 4 1 1 1 1 1 1 1 1 1 1	5 5 5 5 5 5 5 5 5 4 4 2 2 2 2 2 4 1 1 3 3 3 5 5 5 5 5 5 5 5 5 5 7 5 7 7 7 7 7	150 1200 1500 1500 1500 1500 1500 115200 230400 400 120 1920 40 110 100 150 120 120 120 120 120 120 120 120 120 12
Powerhouse and Switchyard Single Line Service Air and Instrument Air Supply Service Air	400 kW Diesel Generators UPS #4 UPS #4 129V DC System 129V DC Syst	E-Stop Controls (Sync) Charger/Controls 480V Battery Banks Cooling Fans Panel Battery Charger Exhaust Fan Automatic Condensate Drain Valves Safety Valve Filter Prefilter Atterfilter Controller (Electronics and Valves) Desiccant Chambers Automatic Condensate Drain Valves Safety Valve Safety Valve Manual Valves Manual Valves Safety Valve Manual Valves Safety Valve Manual Valves Safety Valve Manual Valves Safety Valve Automatic Condensate Drain Valves Safety Valve Manual Valves Manual Valves Safety Valves Particulaties PM 2.5	1 44 6 6 6 2 2 1 1 1 1 1 1 2 2 4 4 4 2 2 2 4 4 4 4	1 3 3 3 8 8 8 8 1 1 1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	66 66 66 66 11 11 11 11 11 66 66 66 66 6	1 1 1 2 2 2 4 4 1 1 1 1 1 1 1 1 1 1 1 1	5 5 5 5 5 5 5 5 5 5 5 4 4 2 2 2 2 2 2 2	150 1200 1500 1500 1500 1500 115200 230400 1600 480 120 1920 10 10 10 10 10 120 120 2700 48 960 720 120 4800 4800 4800 4800 4800 2880 4320 4800 180 180
Powerhouse and Switchyard Single Line Service Air and Instrument Air Supply Service Air Air Supply Service A	400 kW Diesel Generators UPS #4 UPS #4 129V DC System 129V DC Syst	E-Stop Controls (Sync) Charger/Controls 480V Battery Banks Cooling Fans Panel Battery Charger Exhaust Fan Automatic Condensate Drain Valves Safety Valve Filter Prefilter Afterfilter Controller (Electronics and Valves) Desiccant Chambers Automatic Condensate Drain Valves Safety Valve Walves Manual Valves Safety Valve Motorized Valves Motorized Valves Mary Particulaties PM 2.5 Particulaties PM 2.5 Particulaties High Volume Monitoring Data Logger Air Conditioning	1 44 6 6 6 6 1 1 1 1 1 1 1 1 1 2 2 4 4 2 2 2 4 4 4 2 2 2 4 4 4 4	1 33 3 8 8 8 8 8 8 1 1 1 1 1 1 1 2 2 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	66 66 66 66 66 66 66 66 66 66 66 66 66	1 1 1 2 2 2 2 4 4 4 1 1 1 1 1 1 1 1 1 1	5 5 5 5 5 5 5 5 5 4 4 2 2 2 2 2 2 4 1 1 5 5 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	150 1200 1400 150 115200 230400 1400 120 120 120 120 120 120 120 120 120 1
Powerhouse and Switchyard Single Line Service Air and Instrument Air Supply Service Air Air Supply Service Air Air Supply Service Air Air Supply S	400 kW Diesel Generators UPS #4 UPS #4 129V DC System 129V DC Syst	E-Stop Controls (Sync) Charger/Controls 480V Battery Banks Cooling Fans Panel Battery Charger Exhaust Fan Automatic Condensate Drain Valves Safety Valve Filter Prefilter Arterfilter Controller (Electronics and Valves) Desiccant Chambers Automatic Condensate Drain Valves Safety Valve Manual Valves Manual Valves Manual Valves Motorized Valves Hand Valves Motorized Valves Hand Valves So2 Nox Particulaties PM 2.5	11 44 66 66 66 11 14 44 11 11 12 22 24 44 44 44 44 44 44 44 44 44 44 44	1 33 3 8 8 8 8 8 1 1 1 1 1 1 1 2 2 1 1 3 3 3 1 8 8 8 8 8 8 8 8 8 8 8 8 8 8	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	66 66 66 66 66 61 11 11 11 11 12 22 22 22 22 22 22 22 22	1 1 1 2 2 2 4 4 1 1 1 1 1 1 1 1 1 1 1 1	5 5 5 5 5 5 5 5 4 4 2 2 2 2 2 2 2 3 3 3 3 3 3 3 3 3 3 3	150 1200 1500 1500 1500 1500 115200 230400 1600 480 1200 1920 100 100 100 100 120 120 120 200 120 200 120 200 480 640 320 480 480 640 320 360 180 180 180 180
Powerhouse and Switchyard Single Line Service Air and Instrument Air Supply Service Air and Instrument Air S	400 kW Diesel Generators UPS #4 UPS #4 129V DC System 129V DC Syst	E-Stop Controls (Sync) Charger/Controls 480V Battery Banks Cooling Fans Panel Battery Charger Exhaust Fan Automatic Condensate Drain Valves Safety Valve Filter Prefilter Atterfilter Controller (Electronics and Valves) Desiccant Chambers Manual Valves Manual Valves Safety Valve Manual Valves Manual Valves Manual Valves Manual Valves Manual Valves Particulaties High Volume Monitoring Data Logger Air Conditioning SO2 Nox Nox Particulaties High Volume Monitoring Data Logger Air Conditioning SO2 Nox Nox Pata Safety Valve ANOX	1 44 6 6 6 6 1 1 1 1 1 1 1 1 1 2 2 4 4 2 2 2 4 4 4 2 2 2 4 4 4 4	1 33 3 8 8 8 8 8 8 1 1 1 1 1 1 1 2 2 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	66 66 66 66 66 66 66 66 66 66 66 66 66	1 1 1 2 2 2 2 4 4 4 1 1 1 1 1 1 1 1 1 1	5 5 5 5 5 5 5 5 5 4 4 2 2 2 2 2 2 4 1 1 5 5 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	150 1200 1400 150 115200 230400 1400 120 120 120 120 120 120 120 120 120 1
Powerhouse and Switchyard Single Line Service Air and Instrument Air Supply Service Air Air Supply Service Air Air Supply Service Air Air Supply S	400 kW Diesel Generators UPS #4 UPS #4 129V DC System 129V DC Syst	E-Stop Controls (Sync) Charger/Controls 480V Battery Banks Cooling Fans Panel Battery Charger Exhaust Fan Automatic Condensate Drain Valves Safety Valve Filter Prefilter Afterfilter Controller (Electronics and Valves) Desiccant Chambers Automatic Condensate Drain Valves Safety Valve Filter Prefilter Afterfilter Atterfilter Atterfilter Safety Valve Manual Valves	1 44 6 6 6 6 6 1 1 1 4 4 2 2 2 2 4 4 4 4 2 2 2 2 2 2 2	1 33 3 8 8 8 8 8 1 1 1 1 1 1 1 2 2 1 1 3 3 3 1 8 8 8 8 8 8 8 8 8 8 8 8 8 8	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	66 66 66 66 66 61 11 11 11 11 12 22 22 22 22 22 22 22 22	1 1 1 2 2 2 4 4 4 1 1 1 1 1 1 1 1 1 1 1	5 5 5 5 5 5 5 5 4 4 2 2 2 2 2 2 2 3 3 3 3 3 3 3 3 3 3 3	150 1200 1500 1500 1500 1500 115200 230400 1600 480 120 1920 100 100 110 150 120 200 2700 240 480 480 480 480 480 480 2880 480 2880 180 180 180 180 90
Powerhouse and Switchyard Single Line Service Air and Instrument Air Supply Service Air	400 kW Diesel Generators UPS #4 UPS #4 129V DC System 129V DC Syst	E-Stop Controls (Sync) Charger/Controls 480V Battery Banks Cooling Fans Panel Battery Charger Exhaust Fan Automatic Condensate Drain Valves Safety Valve Filter Prefilter Afterfilter Controller (Electronics and Valves) Desiccant Chambers Automatic Condensate Drain Valves Safety Valve Wannual Valves Manual Valves Safety Valve Manual Valves Safety Valve Marual Valves Manual Valves Particulaties PM 2.5 Particulaties PM 3.5 Particulaties PM 3	11 44 66 66 66 66 11 11 11 11 11 12 22 44 42 22 22 44 44 44 42 22 22 22 22	1 33 3 8 8 8 8 1 1 1 1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	66 66 66 66 66 61 11 11 11 11 12 22 22 22 22 22 22 22 22	1 1 1 2 2 2 4 4 4 1 1 1 1 1 1 1 1 1 1 1	5 5 5 5 5 5 5 5 5 4 4 2 2 2 2 2 2 4 1 1 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	150 1200 1500 1500 1500 1500 1500 1500 1
Powerhouse and Switchyard Single Line Service Air and Instrument Air Supply Service Air Air Air Supply Service Air Air Air Supply Service Air Air	400 kW Diesel Generators UPS #4 UPS #4 129V DC System 129V DC Syst	E-Stop Controls (Sync) Charger/Controls 480V Battery Banks Cooling Fans Panel Battery Charger Exhaust Fan Automatic Condensate Drain Valves Safety Valve Filter Filter Prefilter Afterfilter Controller (Electronics and Valves) Desiccant Chambers Automatic Condensate Drain Valves Safety Valve Manual Valves Manual Valves Motorized Valves Hand Valves Filter Particulaties High Volume Monitoring Data Logger Air Conditioning SO2 NOX CO CO2 Sample Conditioner	11 44 66 66 11 11 11 12 44 41 11 22 24 44 44 44 44 42 22 22 22 22 22 21 11 11 11 11 11 11 11	1 33 3 8 8 8 8 8 8 1 1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	S S S S S S S S S S S S S S S S S S S	66 66 66 66 66 66 66 66 66 66 66 66 66	1 1 1 2 2 2 4 4 4 1 1 1 1 1 1 1 1 1 1 1	5 5 5 5 5 5 5 4 4 2 2 2 2 2 2 4 1 1 1 5 5 5 5 7 7 7 8 7 8 7 8 7 8 7 8 7 8 7 8	150 1200 1500 1500 1500 1500 1500 115200 230400 100 100 100 100 100 100 100 120 120 1
Powerhouse and Switchyard Single Line Service Air and Instrument Air Supply Service Air Air Air Supply Servi	400 kW Diesel Generators UPS #4 UPS #4 129V DC System 129V DC Syst	E-Stop Controls (Sync) Charger/Controls 480V Battery Banks Cooling Fans Panel Battery Charger Exhaust Fan Automatic Condensate Drain Valves Safety Valve Filter Prefilter Atterfilter Controller (Electronics and Valves) Desiccant Chambers Manual Valves Manual Valves Safety Valve Manual Valves Manual Valves Manual Valves Safety Valve Manual Valves Manual Valves Safety Valve Manual Valves Manual Valves Manual Valves Manual Valves Manual Valves Automatic Condensate Drain Valves Safety Valve Manual Valves Manual Valves Manual Valves Automatic Condensate Drain Valves Safety Valves Manual Valves Manual Valves Manual Valves Automatic Condensate Drain Valves Safety Valves Manual Valves Safety Valves Safety Valves Manual Valves Safety Valves	11 44 66 66 61 11 11 11 11 12 22 44 44 42 22 22 22 22 22 22 11 11 11 11 11 11 11	1 3 3 8 8 8 8 8 1 1 1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	66 66 66 66 66 66 66 66 66 66 66 66 66	1 1 2 2 2 4 4 4 1 1 1 1 1 1 1 1 1 1 1 1	5 5 5 5 5 5 5 5 4 4 2 2 2 2 2 2 2 3 3 3 3 3 3 3 3 3 3 3	150 1200 1500 1500 1500 1500 1500 115200 230400 1600 480 1200 1920 100 110 110 150 120 220 2700 480 480 4800 4800 4800 4800 2880 4320 360 180 180 180 180 180 180 90 90 90
Powerhouse and Switchyard Single Line Service Air and Instrument Air Supply Service Air Air Air Supply	400 kW Diesel Generators UPS #4 UPS #4 129V DC System 129V DC Syst	E-Stop Controls (Sync) Charger/Controls 480V Battery Banks Cooling Fans Panel Battery Charger Exhaust Fan Automatic Condensate Drain Valves Safety Valve Filter Prefilter Arterfilter Controller (Electronics and Valves) Desiccant Chambers Automatic Condensate Drain Valves Safety Valve Filter Prefilter Afterfilter Atterfilter Atterfilter Automatic Condensate Drain Valves Safety Valve Manual Valves Manual Valves Manual Valves Particulaties PM 2.5 Particulaties PM	11 44 66 66 66 11 11 11 11 12 2 2 4 4 4 2 2 2 2 2 4 4 4 4	1 33 3 8 8 8 8 8 8 1 1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	S S S S S S S S S S	66 66 66 66 66 66 66 66 66 66 66 66 66	1 1 1 2 2 2 4 4 4 1 1 1 1 1 1 1 1 1 1 1	5 5 5 5 5 5 5 4 4 2 2 2 2 2 4 4 1 1 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	150 1200 1500 1500 1500 1500 1500 1500 1
Powerhouse and Switchyard Single Line Service Air and Instrument Air Supply Service Air Air Air Supply	400 kW Diesel Generators UPS #4 UPS #4 129V DC System 129V DC Syst	E-Stop Controls (Sync) Charger/Controls 480V Battery Banks Cooling Fans Panel Battery Charger Exhaust Fan Automatic Condensate Drain Valves Safety Valve Filter Frefilter Controller (Electronics and Valves) Desiccant Chambers Automatic Condensate Drain Valves Safety Valve Filter Prefilter Afterfilter Controller (Electronics and Valves) Desiccant Chambers Automatic Condensate Drain Valves Safety Valve Manual Valves Manual Valves Safety Valve Manual Valves Safety Valves Motorized Valves Hand Valves So2 Nox Particulaties PM 2.5 Safety Cooling (Society Valves) Nox Coc Coc Sample Conditioner Stack Bundles Chillers Peristalic Pumps	11 44 66 66 66 11 11 11 11 12 22 44 44 44 44 44 46 66 44 41 11 11 11 11 11 11 11 11 11 11 11	1 33 38 88 88 11 11 11 11 11 12 2 13 88 88 88 88 88 88 88 88 88 88 88 88 88	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	S S S S S S S S S S	66666666666666666666666666666666666666	1 1 2 2 2 4 4 4 1 1 1 1 1 1 1 1 1 1 1 1	5 5 5 5 5 5 5 5 5 4 4 2 2 2 2 2 2 2 3 3 3 3 3 3 3 3 3 3 3	150 1200 1500 1500 1500 1500 1500 115200 1200 1
Powerhouse and Switchyard Single Line Service Air and Instrument Air Supply Service Air Air Supply Service	400 kW Diesel Generators UPS #4 UPS #4 1299 DC System 1299 DC Syst	E-Stop Controls (Sync) Charger/Controls 480V Battery Banks Cooling Fans Panel Battery Charger Exhaust Fan Automatic Condensate Drain Valves Safety Valve Filter Prefilter Afterfilter Controller (Electronics and Valves) Desiccant Chambers Automatic Condensate Drain Valves Safety Valve Filter Prefilter Afterfilter Afterfilter Afterfilter Antenatic Condensate Drain Valves Safety Valve Manual Valves Manual Valves Safety Valve Filter Prefilter Afterfilter A	11 44 66 66 61 11 11 11 11 12 22 44 44 44 42 22 22 22 22 11 11 11 11 11 11 11 11 11	1 3 3 8 8 8 8 8 1 1 1 1 1 1 1 1 2 2 1 1 1 1 1		5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	66666666666666666666666666666666666666	1 1 2 2 2 4 4 4 1 1 1 1 1 1 1 1 1 1 1 1	5 5 5 5 5 5 5 5 5 5 7 4 4 2 2 2 2 2 4 4 1 1 5 5 5 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	150 1200 1400 150 115200 230400 1400 120 1400 120 1920 10 10 10 10 10 120 120 120 20 120 2700 480 480 640 320 480 640 320 180 180 180 180 180 180 180 180 180 18
Powerhouse and Switchyard Single Line Service Air and Instrument Air Supply Service Air Air Air Su	400 kW Diesel Generators UPS #4 UPS #4 129V DC System 129V DC Syst	E-Stop Controls (Sync) Charger/Controls 480V Battery Banks Cooling Fans Panel Battery Charger Exhaust Fan Automatic Condensate Drain Valves Safety Valve Filter Filter Prefilter Afterfilter Controller (Electronics and Valves) Desiccant Chambers Automatic Condensate Drain Valves Safety Valve Manual Valves Manual Valves Motorized Valves Hand Valves Safety Valves Motorized Valves Hand Valves So2 Nox Particulaties PM 2.5 Particulaties High Volume Monitoring Data Logger Air Conditioning So2 Nox CO CO CO2 CO2 Sample Conditioner Stack Bundles Chillers Peristalic Pumps Data Logger Peristalic Pumps Data Logger Sample Conditioner Stack Bundles Chillers Peristalic Pumps Data Logger Peristalic Pumps Peristalic Pumps Peristalic Pumps Peristalic Pumps Peristalic Pumps Peristalic Pumps	11 44 66 66 66 61 11 11 11 11 12 24 44 22 22 24 44 44 44 46 66 66 66 66 66 66 66 66 66	1 3 3 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8		S S S S S S S S S S	66666666666666666666666666666666666666	1 1 2 2 4 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1	5 5 5 5 5 5 5 5 5 6 4 4 2 2 2 2 2 2 3 3 3 3 3 3 3 3 3 3 3 3	150 1200 1500 1500 1500 1500 1500 115200 230400 400 120 400 120 100 100 100 100 120 120 200 120 200 120 200 120 12
Powerhouse and Switchyard Single Line Powerhouse and Instrument Air Supply Service Air Air Supply Service	400 kW Diesel Generators UPS #4 UPS #4 1299 DC System 1299 DC Syst	E-Stop Controls (Sync) Charger/Controls 480V Battery Banks Cooling Fans Panel Battery Charger Exhaust Fan Automatic Condensate Drain Valves Safety Valve Filter Filter Prefilter Afterfilter Controller (Electronics and Valves) Desiccant Chambers Automatic Condensate Drain Valves Safety Valve Manual Valves Manual Valves Motorized Valves Hand Valves Safety Valves Motorized Valves Hand Valves So2 Nox Particulaties PM 2.5 Particulaties High Volume Monitoring Data Logger Air Conditioning So2 Nox CO CO CO2 CO2 Sample Conditioner Stack Bundles Chillers Peristalic Pumps Data Logger Peristalic Pumps Data Logger Sample Conditioner Stack Bundles Chillers Peristalic Pumps Data Logger Peristalic Pumps Peristalic Pumps Peristalic Pumps Peristalic Pumps Peristalic Pumps Peristalic Pumps	11 44 66 66 61 11 11 11 11 12 22 44 44 44 42 22 22 22 22 11 11 11 11 11 11 11 11 11	1 3 3 8 8 8 8 8 1 1 1 1 1 1 1 1 2 2 1 1 1 1 1			66666666666666666666666666666666666666	1 1 2 2 2 4 4 4 1 1 1 1 1 1 1 1 1 1 1 1	5 5 5 5 5 5 5 5 5 5 7 4 4 2 2 2 2 2 4 4 1 1 5 5 5 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	150 1200 1400 150 115200 230400 1400 120 1920 40 110 10 10 10 110 120 120 120 20 120 2700 480 480 480 640 320 480 480 180 180 180 180 180 180 180 180 180 1

Undertaking 80, Attachment 1 Page 4 of 12

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			4	2				ves	Ħ	fect	Equipment Score
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			4		3	Quality	Utilization	Alternat	Environment	ime to Effec	ig.
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Environmental Equipment	Continious Opacity Monitoring	Blower System	1	.0	1	1	5	1	6	3	900
Environmental Equipment	Continious Opacity Monitoring	Control Module		1	1	1	5	1	6	3	90
Environmental Equipment	Continious Opacity Monitoring	Stack Winch		.0	1	1	5	1	6	3	900
Environmental Equipment	Plant Air Monitoring	Asbestos Sampler		2	1	1	2	3	2	2	48
Environmental Equipment	Plant Air Monitoring	Air Sampler		1	1	1	- 2	2	6	3	16 180
Environmental Equipment	Meteroligical Monitoring	Ceilometer Rain Gauge		1	1	1	5	2	6	3	180
Environmental Equipment Environmental Equipment	Meteroligical Monitoring Meteroligical Monitoring	Rain Gauge Wind Sensor		1	1	1	5	2	6	3	180
Environmental Equipment	Meteroligical Monitoring	Temperature Sensor		1	1	1	5	2	6	3	180
Environmental Equipment	Meteroligical Monitoring	Humidity Sensor		1	1	1	5	2	6	3	180
Environmental Equipment	Meteroligical Monitoring	Barametric Pressure Sensor		1	1	1	5	2	6	3	180
Environmental Equipment	Meteroligical Monitoring	Solar Radation		1	1	1	5	2	6	3	180
Environmental Equipment	Meteroligical Monitoring	Data Logger		1	1	1	5	2	6	3	180
Environmental Equipment	Meteroligical Monitoring	Tower		6	1	1	5	3	6	3	1620
HRD BUILDINGS & SITE	HRD MARINE TERMINAL STRUCTURE	Shore Line Walkways		4	1	1	1	6	1	1	24
HRD BUILDINGS & SITE	HRD MARINE TERMINAL STRUCTURE	Marine Capstan Lifting Frames		4	1	1	1	3	1	5	60
HRD BUILDINGS & SITE	HRD MARINE TERMINAL STRUCTURE	Capstans			1	1	1	3	1	5	60
HRD BUILDINGS & SITE	HRD MARINE TERMINAL STRUCTURE	CATHODIC PROTECTION FOR THE DOCK		6	1	1	5	6 2	1	2	120
HRD BUILDINGS & SITE HRD BUILDINGS & SITE	HRD MARINE TERMINAL STRUCTURE HRD MARINE TERMINAL STRUCTURE	Dock Fenders		4	1	1	- 1	2	1	3	24 120
HRD BUILDINGS & SITE	HRD MARINE TERMINAL STRUCTURE	Lighting Marine Terminal Structure (Jetty & Shore Arm)		4	1	1	2	6	1	1	48
HRD BUILDINGS & SITE	HRD MARINE TERMINAL STRUCTURE	Marine Terminal Building		_	1	1	2	6	6	3	432
HRD BUILDINGS & SITE	HRD MARINE TERMINAL STRUCTURE	Guard House Marine Terminal			1	1	2	2	1	3	24
HRD MAIN POWERHOUSE	#1 WARM AIR MAKE-UP SYSTEM	Unit 1 North Wall WAM UPPER STEAM COILS		_	1	1	5	2	1	4	160
HRD MAIN POWERHOUSE	#1 WARM AIR MAKE-UP SYSTEM	Unit 1 South Wall WAM STEAM COILS			1	1	5	2	1	4	160
HRD MAIN POWERHOUSE	#2 WARM AIR MAKE-UP SYSTEM	Unit 2 North Wall WAM UPPER STEAM COILS		_	1	1	5	2	1	4	160
HRD MAIN POWERHOUSE	#2 WARM AIR MAKE-UP SYSTEM	Unit 2 South Wall WAM STEAM COILS		4	1	1	5	2	1	4	160
HRD MAIN POWERHOUSE	#3 WARM AIR MAKE-UP SYSTEM	Unit 3 North Wall WAM LOWER STEAM COILS		4	1	1	5	2	1	4	160
HRD MAIN POWERHOUSE	#3 WARM AIR MAKE-UP SYSTEM	Unit 3 South Wall WAM STEAM COILS		4	1	1	5	2	1	4	160
HRD MAIN POWERHOUSE	#3 WARM AIR MAKE-UP SYSTEM	Unit 3 North Wall WAM UPPER STEAM COILS		4	1	1	5	2	1	4	160
HRD MAIN POWERHOUSE	#1 WARM AIR MAKE-UP SYSTEM	Unit 1 South Wall WAM AIR INTAKE LOUVERS		4	1	1	5	2	1	1	40
HRD MAIN POWERHOUSE	#2 WARM AIR MAKE-UP SYSTEM	Unit 2 South Wall WAM AIR INTAKE LOUVERS		4	1	1	5	2	1	1	40
HRD MAIN POWERHOUSE HRD MAIN POWERHOUSE	#3 WARM AIR MAKE-UP SYSTEM	Unit 3 South Wall WAM Louvers	_	2	1	1	5	6	1	1	40
	#3 WARM AIR MAKE-UP SYSTEM	WAM Stationary Louvers		4	1	1	2	6	1	1	60 120
HRD MAIN POWERHOUSE HRD MAIN POWERHOUSE	HRD EXH FAN WEATHERHOODS EXH FANS			4	1	1	5	1	1	1	20
HRD MAIN POWERHOUSE	HRD BUILDING SERVICES ELEVATOR			4	1	1	5	2	1	4	160
HRD MAIN POWERHOUSE	Safety Egress Lighting FOR ROOF ESCAPE L	ADDERS		4	1	1	5	6	1	2	240
HRD MAIN POWERHOUSE	Exterior Emergency Ladders	NO COLO	1	.0	1	1	5	6	1	2	600
HRD MAIN POWERHOUSE	HRD TRAINING CENTRE			1	1	1	1	2	1	2	4
HRD MAIN POWERHOUSE	HRD STAGE 1 PUMPHOUSE			1	1	1	5	6	1	2	60
HRD MAIN POWERHOUSE	HRD STAGE 2 PUMPHOUSE			1	1	1	5	6	1	2	60
HRD MAIN POWERHOUSE	STAGE II PUMPHOUSE MCC ROOM			1	1	1	5	6	1	2	60
HRD MAIN POWERHOUSE	HRD GUARDHOUSE			_	1	1	5	6	1	2	60
HRD MAIN POWERHOUSE	HRD GUARDHOUSE	Propane Generator		2	8	3	5	6	1	5	7200
HRD MAIN POWERHOUSE	HD Security Camera Systems			1	1	1	5	2	1	1	10
HRD MAIN POWERHOUSE	HRD H2 & CO2 STORAGE BUILDING			_	1	1	5	6	1	2	60
HRD MAIN POWERHOUSE	HRD SHAWMONT BUILDING			_	1	1	2	6	1	2	60
HRD MAIN POWERHOUSE HRD MAIN POWERHOUSE	HRD MAIN WAREHOUSE 3M x 30M Outdoor Storage Ramps			_	1	1	5	6	1	2	60 60
HRD MAIN POWERHOUSE	STORAGE RACKS AT HOLYROOD WAREHOU	USE		_	1	1	5	2	1	1	40
HRD MAIN POWERHOUSE	STEEL SHELVING - MAIN WAREHOUSE HOL			4	1	1	5	2	1	1	40
HRD MAIN POWERHOUSE	PIPE STORAGE RACK			4	1	1	5	2	1	1	40
HRD MAIN POWERHOUSE	HRD WWT PLANT BUILDING			1	1	1	5	6	1	2	60
HRD MAIN POWERHOUSE	HRD WWT BASINS BUILDING			1	1	1	5	6	1	2	60
HRD MAIN POWERHOUSE	HRD GAS TURBINE BUILDING			1	1	1	5	6	1	2	60
HRD MAIN POWERHOUSE	HRD WATER TREATMENT BUILDING	Flor Bonel		1	1	1	5	6	1	2	60
HRD MAIN POWERHOUSE	East Elec. Panel Enclosure over Tank Farm			1	1	1	5	6	1	2	60
HRD MAIN POWERHOUSE	West Elec. panel Enclosure over Tank Farn	Overhead Door #1 - MAIN POWERHOUSE - WEST		1	2	1	2	6	1	3	60 96
HRD MAIN POWERHOUSE HRD MAIN POWERHOUSE	OVERHEAD DOORS OVERHEAD DOORS	Overhead Door #1 - MAIN POWERHOUSE - WEST Overhead Door #2 - MAIN POWERHOUSE - NORTH		4	2	1	2	2	1	3	96
HRD MAIN POWERHOUSE	OVERHEAD DOORS	Overhead Door #24 - MAIN POWERHOUSE - NORTH-		4	2	1	2	2	1	3	96
HRD MAIN POWERHOUSE	OVERHEAD DOORS	Overhead Door #3 - MAIN POWERHOUSE - NORTH		4	2	1	2	2	1	3	96
HRD MAIN POWERHOUSE	OVERHEAD DOORS	Overhead Door #4- MAIN POWERHOUSE - NORTH		4	2	1	2	2	1	3	96
HRD MAIN POWERHOUSE	OVERHEAD DOORS	Overhead Door #5- MAIN POWERHOUSE - EAST		4	2	1	2	2	1	3	96
HRD MAIN POWERHOUSE	OVERHEAD DOORS	Overhead Door #6 - MAIN POWERHOUSE - EAST			2	1	2	2	1	3	96
HRD MAIN POWERHOUSE	OVERHEAD DOORS	Overhead Door #7 - MAIN POWERHOUSE - EAST			2	1	2	2	1	3	96
HRD MAIN POWERHOUSE	OVERHEAD DOORS	Overhead Door #8- MAIN POWERHOUSE - SOUTH			2	1	2	2	1	3	96
HRD MAIN POWERHOUSE	OVERHEAD DOORS	Overhead Door #9- MAIN POWERHOUSE - WEST			2	1	2	2	1	3	96
HRD MAIN POWERHOUSE HRD MAIN POWERHOUSE	OVERHEAD DOORS	Overhead Door #10- PUMPHOUSE #1 - WEST			2	1	2	2	1	3	96
HRD MAIN POWERHOUSE HRD MAIN POWERHOUSE	OVERHEAD DOORS OVERHEAD DOORS	Overhead Door #11- PUMPHOUSE #1 - SOUTH Overhead Door #12 - WASTE WATER TREATMENT		4	2	1	2	2	1	2	96 32
HRD MAIN POWERHOUSE	OVERHEAD DOORS OVERHEAD DOORS	Overhead Door #12 - WASTE WATER TREATMENT Overhead Door #13 - PUMPHOUSE #2			2	1	2	2	1	3	96
HRD MAIN POWERHOUSE	OVERHEAD DOORS	Overhead Door #14- CHEMICAL STORAGE BLDG.			1	1	2	2	1	3	48
HRD MAIN POWERHOUSE	OVERHEAD DOORS	Overhead Door #15- CHEMICAL STORAGE BLDG.			1	1	2	2	1	3	48
HRD MAIN POWERHOUSE	OVERHEAD DOORS	Overhead Door #16- PIPE SHOP - NORTH		_	1	1	2	2	1	3	48
HRD MAIN POWERHOUSE	OVERHEAD DOORS	Overhead Door #17- TRAINING CENTER (METER SHOP)		4	1	1	2	2	1	3	48
HRD MAIN POWERHOUSE	OVERHEAD DOORS	Overhead Door #18- WAREHOUSE		4	1	1	2	2	1	3	48
	OVERHEAD DOORS	Overhead Door #19- PIPE SHOP - SOUTH		4	1	1	2	2	1	3	48
HRD MAIN POWERHOUSE		Overhead Door #20 - SHAWMOUNT WAREHOUSE			1	1	2	2	1	3	48
HRD MAIN POWERHOUSE HRD MAIN POWERHOUSE	OVERHEAD DOORS			4	1	1	2			3	48
HRD MAIN POWERHOUSE HRD MAIN POWERHOUSE HRD MAIN POWERHOUSE	OVERHEAD DOORS	Overhead Door #21 - HYDROGEN SHED			. +	-71	-4	2	1		
HRD MAIN POWERHOUSE HRD MAIN POWERHOUSE HRD MAIN POWERHOUSE HRD MAIN POWERHOUSE	OVERHEAD DOORS OVERHEAD DOORS	Overhead Door #22- GAS TURBINE BUILDING		4	1	1	2	2	1	3	48
HRD MAIN POWERHOUSE	OVERHEAD DOORS OVERHEAD DOORS Overhead Door #23 - POWERHOUSE INTER				1	1	2	2		3	48 48
HRD MAIN POWERHOUSE CRANES AND HOISTS	OVERHEAD DOORS OVERHEAD DOORS Overhead Door #23 - POWERHOUSE INTER HRD POWERHOUSE CRANE	Overhead Door #22- GAS TURBINE BUILDING		4	1	1	2 2	2 2 6	1 1 1	3 2	48 48 72
HRD MAIN POWERHOUSE GRANES AND HOISTS CRANES AND HOISTS	OVERHEAD DOORS OVERHEAD DOORS OVERHEAD DOORS OVERHEAD DOOR #23 - POWERHOUSE INTER HRD POWERHOUSE CRANE HRD BOILER ROOM HOISTS	Overhead Door #22- GAS TURBINE BUILDING		4 4 6	1 1 1	1 1 1	2 2 1 1	2 2 6 4	1 1 1	3 3 2 2	48 48 72 48
HRD MAIN POWERHOUSE CRANES AND HOISTS CRANES AND HOISTS CRANES AND HOISTS	OVERHEAD DOORS OVERHEAD DOORS OVERHEAD DOORS OVERHEAD BOOR #23 - POWERHOUSE INTER HRD POWERHOUSE CRANE HRD BOILER ROOM HOISTS HRD PUMPHOUSE CRANE STAGE 1	Overhead Door #22- GAS TURBINE BUILDING		4 4 6 6	1 1 1	1 1 1	1	2 2 6 4 4	1 1 1 1	3 2 2 2	48 48 72 48 48
HRD MAIN POWERHOUSE CRANES AND HOISTS	OVERHEAD DOORS OVERHEAD DOORS OVERHEAD DOORS OVERHEAD DOOR #23 - POWERHOUSE INTER HRD POWERHOUSE CRANE HRD BOILER ROOM HOISTS HRD PUMPHOUSE CRANE STAGE 1 HRD PUMPHOUSE CRANE STAGE 2	Overhead Door #22- GAS TURBINE BUILDING		4 4 6 6 6	1 1 1	1 1 1	-7	2 2 6 4 4	1 1 1	3 3 2 2 2 2 2	48 48 72 48 48
HRD MAIN POWERHOUSE CRANES AND HOISTS CRANES AND HOISTS CRANES AND HOISTS	OVERHEAD DOORS OVERHEAD DOORS OVERHEAD DOORS OVERHEAD BOOR #23 - POWERHOUSE INTER HRD POWERHOUSE CRANE HRD BOILER ROOM HOISTS HRD PUMPHOUSE CRANE STAGE 1	Overhead Door #22- GAS TURBINE BUILDING		4 4 6 6 6 6	1 1 1 1	1 1 1 1	1	2 2 6 4 4	1 1 1 1 1	3 2 2 2	48 48 72 48 48

Undertaking 80, Attachment 1 Page 5 of 12

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			-lealth	Outpu	Quality	Utilization	Altemative	Environme	ime t	Equipr
L.P. Feedwater System L.P. Feedwater System	Surface Condenser Surface Condenser	Hot Well	4	8	8	5	6	2	5	76800 76800
L.P. Feedwater System	Surface Condenser	Hot Well Flash Tank	4	3	1	5	6	1	4	1440
L.P. Feedwater System L.P. Feedwater System	Surface Condenser Surface Condenser	Salt Water Cooling Makeup Water	1	4	1	5	6 6	2	4	76800 960
L.P. Feedwater System L.P. Feedwater System	Condensate Extraction Pumps Condensate Extraction Check Valves		1	8	8	5	3 1	1	5 4	4800 60
L.P. Feedwater System L.P. Feedwater System	Polisher Bypass Valve Gland Seal Condenser		1	4	8	5	2	1	5	1600 40
L.P. Feedwater System	Gland Seal Condenser	Exhausters	1 2	1	1	5	1	1	1	5 100
L.P. Feedwater System L.P. Feedwater System	L.P. Heaters L.P. Heaters	Safety Valves Steam	4	1	1	5	2	1	4	160
L.P. Feedwater System L.P. Feedwater System	L.P. Heaters L.P. Heaters	Safety Valves Water (Relief Valve) NRV Valves	10	2	1	5	2 6	1	5	400 3000
L.P. Feedwater System L.P. Feedwater System	L.P. Heaters L.P. Heaters	Tube Bundles Controls (Level)	2	2	1	5	2	1	2	80 400
L.P. Feedwater System L.P. Feedwater System	L.P. Heaters L.P. Heaters	Manual Isolation Valves Purge Vents	2	1	1	1	2	1	1	4
L.P. Feedwater System	L.P. Heaters	Continuous Vents	2	1	1	5	2	1	2	40
L.P. Feedwater System L.P. Feedwater System	L.P. Heater Controls (Water Induction Protection) L.P. Heater Controls (Water Induction Protection)	Solenoid Valves	2	2	1	5	6 6	1	5	57600 600
L.P. Feedwater System L.P. Feedwater System	L.P. Heater Controls (Water Induction Protection) Cortrol System	Level Probe & Module	4	2	1	5	6	1	5	600 2880
L.P. Feedwater System L.P. Feedwater System	Cortrol System	Pumps Suction Tota Tank	2	2	1	5	1	2	4	160 160
L.P. Feedwater System	Cortrol System Cortrol System	Suction Tote Tank Controls	1	2	1	5	6	1	3	180
L.P. Feedwater System L.P. Feedwater System	Ammonia System Ammonia System	Pumps	2	2	1	5	6 1	2	3	4320 120
L.P. Feedwater System L.P. Feedwater System	Ammonia System Ammonia System	Suction Tote Tank Controls	1	2	1	5	2 6	2	2	160 180
L.P. Feedwater System	Deaerator System		10	3	1	5	6	1	5	4500
L.P. Feedwater System L.P. Feedwater System	Deaerator System Deaerator System	Deaerator Deaerator Storage Tank	6	3	1	5	6	1	3	21600 1620
L.P. Feedwater System L.P. Feedwater System	Deaerator System Deaerator System	NRV Valves (2) Heating Coil	10	1	1	5	6 3	1	5	3000 150
L.P. Feedwater System L.P. Feedwater System	Deaerator System Deaerator System	Pegging Steam Safety Valves	2 6	1	1	5	3	1	5	150 2700
L.P. Feedwater System	Deaerator System	DA Vent	2	1	1	5	3	1	5	150
L.P. Feedwater System L.P. Feedwater System	Deaerator System Cont. Blow Down Flash Tank	Level Control	4	1	8 1	5 2	1	1	5 3	6400 24
L.P. Feedwater System L.P. Feedwater System	Condensate Polishers (Units 1, 2, 3) Condensate Polishers (Units 1, 2)	Polisher Vessels	4	3	1	5 3	1	4	3	720 36
L.P. Feedwater System L.P. Feedwater System	Condensate Polishers (Units 1, 2) Condensate Polishers (Units 1, 2)	Acid Tanks (Plant) Caustic Tanks (Plant)	4	1	1	1	4	4	2	128 128
L.P. Feedwater System	Condensate Polishers (Units 1, 2)	Acid Pumps	4	1	1	1	4	4	2	128
L.P. Feedwater System L.P. Feedwater System	Condensate Polishers (Units 1, 2) Condensate Polishers (Units 1, 2)	Control Valves	2	3	8	5	3	1	5	128 3600
L.P. Feedwater System L.P. Feedwater System	Condensate Polishers (Units 1, 2) Condensate Polishers (Units 1, 2)	Instrumentation and Controls Blower	1 2	2	1	5 1	4	1	3	120 30
L.P. Feedwater System L.P. Feedwater System	Condensate Polishers (Units 1, 2) Condensate Polishers (Units 1, 2)	Circulation Pump	2	1	1	1	3	1	5	30 480
L.P. Feedwater System	Condensate Polishers (Units 1, 2)	Piping (Chemical) Valves	4	1	1	3	6	4	5	1440
L.P. Feedwater System L.P. Feedwater System	Condensate Polishers (Units 1, 2) Piping	Resin (Water)	1	8	1	5	1 6	2	4	5760 1920
L.P. Feedwater System L.P. Feedwater System	Valves Start-up De-Superheater		1	1	1	1	2	1	1	1
Units 1 & 2 H.P. Feedwater System Units 1 & 2 H.P. Feedwater System	Boiler Feed Boiler Feed	Boiler Feed Pumps Boiler Feed Pump (West)	4	8	8	5	4	1	5	25600 7200
Units 1 & 2 H.P. Feedwater System	Boiler Feed	Motorized Discharge Valves	2	3	3	5	4	1	5	1800
Units 1 & 2 H.P. Feedwater System Units 1 & 2 H.P. Feedwater System	Boiler Feed Boiler Feed	Suction Valve Suction Valve Limit Switch	4	4	3	5 5	3 6	1	5	3600 7200
Units 1 & 2 H.P. Feedwater System Units 1 & 2 H.P. Feedwater System	Boiler Feed Boiler Feed	Suction Strainers Suction Line Safety Valve	4	1 2	1	5	6	1	3 5	90 1200
Units 1 & 2 H.P. Feedwater System Units 1 & 2 H.P. Feedwater System	Boiler Feed Boiler Feed	Check Valves Aux Oil Pump	2	2	1	5	1	1	1	20 900
Units 1 & 2 H.P. Feedwater System	Boiler Feed	Vibration Protection - Monitoring	1	1	1	5	3	1	5	75
Units 1 & 2 H.P. Feedwater System Units 1 & 2 H.P. Feedwater System	Boiler Feed Boiler Feed	Gland Seal Feed (from Extraction Pumps) Gland Seal Backup Pump	2	3	1	5	1	1	5	150 150
Units 1 & 2 H.P. Feedwater System Units 1 & 2 H.P. Feedwater System	Boiler Feed Boiler Feed	Gland Seal Controls DA Recirculation Valve	4	3	1	5	2	1	5	300 1200
Units 1 & 2 H.P. Feedwater System Units 1 & 2 H.P. Feedwater System	Boiler Feed Emergency Reheat Attempterator	DA Recirculation Piping	2	2	1	5	4	1	5	400 40
Units 1 & 2 H.P. Feedwater System	Superheater Attempterator Equipment	Control Valves	4	2	1	5	3	1	5	600
Units 1 & 2 H.P. Feedwater System Units 1 & 2 H.P. Feedwater System	Superheater Attempterator Equipment Superheater Attempterator Equipment	Pneumatic Isolating Valves Superheater Attempterators	1	3	3	5	6	6	5	450 8100
Units 1 & 2 H.P. Feedwater System Units 1 & 2 H.P. Feedwater System	Superheater Attempterator Equipment Superheater Attempterator Equipment	Superheater Header Primary Superheater	1	3	3	5	6	6	5	8100 8100
Units 1 & 2 H.P. Feedwater System Units 1 & 2 H.P. Feedwater System	Steam Drum Steam Drum	Level Control Transmitters	10	4	1 8	5	6	1	4	4800 1600
Units 1 & 2 H.P. Feedwater System	Steam Drum	Level Control Transmitters (West)	2	1	1	5	1	1	5	50
Units 1 & 2 H.P. Feedwater System Units 1 & 2 H.P. Feedwater System	Steam Drum Steam Drum	Aquarians [Stg 1 are redundant indication only Aquarian West (Stage 2) [Stg 1 are redundant	4	4	1	5 5	3	1	5	50 1200
Units 1 & 2 H.P. Feedwater System Units 1 & 2 H.P. Feedwater System	Steam Drum Steam Drum	Safety Valves (East & West) Safety Valve (West)	4	3	1	5	1	2	5	600 600
Units 1 & 2 H.P. Feedwater System Units 1 & 2 H.P. Feedwater System	Continuous Blowdown Continuous Blowdown	Tank Level Control	2	1	1	1 5	2	2	3	24 60
Units 1 & 2 H.P. Feedwater System Units 1 & 2 H.P. Feedwater System Units 1 & 2 H.P. Feedwater System	Continuous Blowdown	Piping	2	1	1	5	6	1	3	180
Units 1 & 2 H.P. Feedwater System	Continuous Blowdown Feed Water Flow Controls	Drain Valve	6	3	4	5	4	1	5	7200
Units 1 & 2 H.P. Feedwater System Units 1 & 2 H.P. Feedwater System	Feed Water Flow Controls Feed Water Flow Controls	MOV Isolation Valves Main Feed Water Control Valve	4	2 8	1 8	5 5	2 6	1	5 5	200 38400
Units 1 & 2 H.P. Feedwater System Units 1 & 2 H.P. Feedwater System	Feed Water Flow Controls H.P. Heaters	LL Control Valve	2 6	3	3	5	3	1	5	1350 600
Units 1 & 2 H.P. Feedwater System	H.P. Heaters	Safety Valves Steam	4	1	1	5	4	1	4	320
Units 1 & 2 H.P. Feedwater System Units 1 & 2 H.P. Feedwater System	H.P. Heaters H.P. Heaters	Safety Valves Water NRV Valves	10	2	1	5	6	1	5	320 3000
Units 1 & 2 H.P. Feedwater System Units 1 & 2 H.P. Feedwater System	H.P. Heaters H.P. Heaters	Tube Bundles Controls (Level)	2	1	1	5	2	1	3 5	60 150
Units 1 & 2 H.P. Feedwater System Units 1 & 2 H.P. Feedwater System	H.P. Heaters H.P. Heaters	Motorized Bypass Valves Motorized Isolation Valves	2	3	8	5	3	1	5	3600 50
Units 1 & 2 H.P. Feedwater System	H.P. Heaters	Purge Vents	4	1	1	1	2	1	2	16
Units 1 & 2 H.P. Feedwater System Units 1 & 2 H.P. Feedwater System	H.P. Heaters H.P. Heater Controls (Water Induction Protection)	Continuous Vents	4 6	3	8	5 5	6	1	5	360 21600
Units 1 & 2 H.P. Feedwater System Units 1 & 2 H.P. Feedwater System	H.P. Heater Controls (Water Induction Protection) H.P. Heater Controls (Water Induction Protection)	Solenoid Valves Level Probe & Module	4	1	1	5	6	1	5	600 600
Units 1 & 2 H.P. Feedwater System Units 1 & 2 H.P. Feedwater System	Economizer Economizer	Economizer Inlet Header	4	8	1	5	6	1	5	4800 360
Units 1 & 2 H.P. Feedwater System	Economizer	Economizer Outlet Header	2	2	1	5	6	1	3	360
Units 1 & 2 H.P. Feedwater System Units 1 & 2 H.P. Feedwater System	Economizer Economizer	Economizer Check Valve Economizer Isolation Valve	4	1	1	5 1	6 3	1	3	720 6
Units 1 & 2 H.P. Feedwater System Units 1 & 2 H.P. Feedwater System	Piping Valves		2	2	1	5 1	6 2	1	3	360 4
Units 1 & 2 Reserve Feedwater System Units 1 & 2 Reserve Feedwater System	High Level R.F.W. Tanks High Level R.F.W. Tanks		4	1	1	5	3	1	3	180
Units 1 & 2 Reserve Feedwater System	Common High Level R.F.W. Tank		4	1	1	5	1	1	3	60
Units 1 & 2 Reserve Feedwater System Units 1 & 2 Reserve Feedwater System	Air Extraction Vacuum Pump Seals T.G. Cooling Water H.D. Tanks		2	1	1	5 5	2	1	5 4	75 80
Units 1 & 2 Reserve Feedwater System Units 1 & 2 Reserve Feedwater System	Low Level R.F.W. Tank Unit 1 Low Level R.F.W. Tank Unit 2		4	8	1	5 5	1	1	2	320 320
Units 1 & 2 Reserve Feedwater System Units 1 & 2 Reserve Feedwater System	RFW Transfer Pumps Piping		1	3	1	5	1	1	4	60 90
	[··r··o	1			- 4	ر	U	-	J	30

Undertaking 80, Attachment 1 Page 6 of 12

Common Systems

									P	age
			& Safety			ion	itives	nment	to Effect	nent Score
			Health	Output	Quality	Utilization	Altemative	Environmen	Time to	Equipmen
Units 1 & 2 Reserve Feedwater System Val Units 1 & 2 Bled Steam and Heater Drains H.F	lves P. Heater Drain Pump		2	1	1	1 5	6	1	3 5	18 50
Units 1 & 2 Bled Steam and Heater Drains Dra	ain Tank ain Tank	Instrumentation (Level Control)	2	1	1	5	3	1	3	90 90
Units 1 & 2 Bled Steam and Heater Drains L.P	P. Heater Drain Pumps	instrumentation (Lever Control)	2	1	1	5	1	1	3	30
	lives		2		1 1			1	4	240 48
	ak Off Steam Blow Down Valve (Turbine Blow Down) cuum Trip Device		4	1	1 1		6	1	5	600 76800
Main Steam & Reheat Steam; Turbine Drains Vac	cuum Unloading Device		1	4	8	5	2	1	5	1600
	mbined Reheat Valves ain Stop Valves		10		8 8		6	2	5	28800 96000
Main Steam & Reheat Steam; Turbine Drains Boi	iler Stop Valve iler Stop Valve	Pilot Valve	2	_	1 1	-		1	1	60 20
Main Steam & Reheat Steam; Turbine Drains Boi	iler Stop Valve	Pilot Valve Actuator (Motor)	2		1	5		1	1	20
	iler Stop Valve iler Stop Valve	Main Valve Main Valve Actuator (Motor)	4	1	1 1		6	1	1	120 120
Main Steam & Reheat Steam; Turbine Drains Sup	perheat Front Horizontal Spaced Support Tube Inlet Heade		4	4	1	5	6	1	5	2400 2400
Main Steam & Reheat Steam; Turbine Drains Sup	heat Horizontal Spaced Outlet Header perheat Front Horizontal Spaced Outlet Header		4	4	1	5	6	1	5	2400
	heat Horizontal Platen Inlet Header iler Water Wall	Boiler Tubing	4	3	1	5	6	2	5	2400 3600
Main Steam & Reheat Steam; Turbine Drains Boi	iler Water Wall iler Water Wall	Superheat Tubing Reheat Tubing	4	3	1	5	6	2	5	3600 3600
Main Steam & Reheat Steam; Turbine Drains Boi	iler Water Wall	Economizer Tubing	4	3	1	5	6	2	5	3600
	iler Water Wall Ding	Hangers (Rigid)	6	4	1	5	6	1	3 5	60 3600
Main Steam & Reheat Steam; Turbine Drains Pip	ping	Hangers (Tension)	6	4	1	5	6	1	5	3600
Main Steam & Reheat Steam; Turbine Drains Pip	oing oing	Pipe Insulation	4	1	1	5	6	1	1	3600 120
	oing Ives	Tap Offs Motorized Valves	6		1 1			1	3	1620 12
Main Steam & Reheat Steam; Turbine Drains Val	lves	Check Valves	2	1	1	1	. 6	1	1	12
	lves eam Air Preheaters	Manual Valves	4	1	1 1	1 5		1	2	4 80
Auxiliary Steam Suppy and Drain Con	ndensate Receiver Tank	Level Controls (Level Tv/Ctrl Values)	4	1	1 1	5	4	1	4	320 200
Auxiliary Steam Suppy and Drain Cor	ndensate Receiver Tank Indensate Receiver Tank	Level Controls (Level Tx/Ctrl Valves) Condensate Pumps	2	_	1	5	1	1	5	50
Units 1 & 2 Air & Flue Gas F.D	D. Fans D. Fan - West		6					6 4	5	
Units 1 & 2 Air & Flue Gas F.D	Fan Vibration Detector		1 6	4	8	5	2	1	5	1600
Units 1 & 2 Air & Flue Gas Sta Units 1 & 2 Air & Flue Gas Inle	et Dampers - 11th Floor		2	2	1	5	2	1	3	180 120
	et Air Ductwork		4	1	1	5	6	1	2	240 1440
Units 1 & 2 Air & Flue Gas 02	it Gas Ductwork and Breaching ! Analyzers		2	4	1	5	1	6	5	1200
	! Analyzer - West indbox		4	3	1	5	6	4	5	7200
Units 1 & 2 Air & Flue Gas Win	indbox/Furnace Diff Pressure TX		1	4	8	5	6	1	5	4800
Units 1 & 2 Air & Flue Gas But	rnace Pressure TX (Trip) rners		4	8	8	5	1	4	5	19200 25600
	rnace tary Air Heaters	Baskets	4	8	3	5	6	2	2	11520 2880
Units 1 & 2 Air & Flue Gas Rot	tary Air Heaters	Drive System	2	8	3	5	1	1	5	1200
	tary Air Heaters tary Air Heaters	Electric Drive Motor Pneumatic Drive Motor	2	1	1 1	5	6	1	5	600 300
	tary Air Heaters tary Air Heaters	Air Heater Seals Spray Nozzles	4	1	1 1	5		2	3	720 144
Units 1 & 2 Air & Flue Gas Rot	tary Air Heaters	Soot Blowers	4	8	1	5	6	1	2	1920
	tary Air Heaters tary Air Heaters	Rotating Element & Bearings Seal Air	4	1	3			2	5 5	800
Units 1 & 2 Air & Flue Gas Rot	tary Air Heaters tary Air Heaters	Gearbox Piping (Steam)	4	8	3	5	6	1	5	14400 300
Units 1 & 2 Air & Flue Gas Rot	tary Air Heaters	Piping (Air)	4		1	5	6	1	5	600
	Itary Air Heaters DILER SOOTBLOWING SYSTEM	Manual Valves RETRACTABLE SOOTBLOWERS	4	8			1	1	2	30 320
Units 1 & 2 Air & Flue Gas BO	DILER SOOTBLOWING SYSTEM DILER SOOTBLOWING SYSTEM	Soot Blower Steam Supply Valve Soot Blower Controls	2	8	1	5	6	1	2	960 240
Units 1 & 2 Fuel Oil System	NEEK SOOTBEOWING STSTEW	Duplex Basket Suction Strainer	2	8	8 8	5	1	4	5	12800
Units 1 & 2 Fuel Oil System Units 1 & 2 Fuel Oil System		Fuel Oil Pumps Fuel Oil Pump - West	4	1	8	5	1	6	5 3	19200 360
Units 1 & 2 Fuel Oil System		Header Pressure Control Valve	2	8	8 8	5	4	2	5	25600 19200
Units 1 & 2 Fuel Oil System Units 1 & 2 Fuel Oil System		Short Recirculation Valve Long Recirculatoin Valve	2	8	8	5	3	2	5	19200
Units 1 & 2 Fuel Oil System Units 1 & 2 Fuel Oil System		Combustion Control Valve Minimum Flow Valve	2	8	8 8	5	6	2	5	38400 600
Units 1 & 2 Fuel Oil System		Main Fuel Oil Trip Valve	3	4	8	5	6	2	5	28800
Units 1 & 2 Fuel Oil System Units 1 & 2 Fuel Oil System		Fuel Oil Heaters Fuel Oil Heater - West	4	1	. 1	5	1	4	3	4800 240
Units 1 & 2 Fuel Oil System Units 1 & 2 Fuel Oil System		Glycol Pots Duplex Autoklean Discharge Strainer - Not U	2 sed	4	1	5	6	2	2	960
Units 1 & 2 Fuel Oil System Bur	rners		2	8				4	5	12800
Units 1 & 2 Fuel Oil System But	rners rners	Oil Valve Steam Valve	4	2				4	5	2400 2400
Units 1 & 2 Fuel Oil System But Units 1 & 2 Fuel Oil System	rners	Scavenge Valve Atomizing Steam Valve	4	2				4	5 5	2400 38400
Units 1 & 2 Fuel Oil System		Steam Flex Lines	2	2	1	5	6	2	5	1200
Units 1 & 2 Fuel Oil System Units 1 & 2 Fuel Oil System		Oil Flex Lines FUEL OIL ACCUMULATOR	2	_	_			4	5 1	2400 10
Units 1 & 2 Fuel Oil System		Piping	2	8	1	5	6	6	5	14400
Units 1 & 2 Fuel Oil System Units 1 & 2 Fuel Oil System Flo	ow Meter	Manual Valves	2					2	5	96 38400
	el Additive System el Additive System	Bunker C Line Quill	2	1	1	5	2	4	2	160 20
Fuel Additive and Light Oil Flushing Systems Fue	el Additive System	Volume Control Pump	2	1	1	5	2	1	2	40
	el Additive System el Additive System	Unit Day Tank Fuel Additive Transfer Pump	2	1	1	5	2	1	2	40 40
Fuel Additive and Light Oil Flushing Systems Fue	el Additive System el Additive System	Fuel Additive Duplex Strainer Fuel Additive Main Storage Tank	2	1	1	5	2	1	2	40
Fuel Additive and Light Oil Flushing Systems Fue	el Additive System	Piping	1	1	1	5	6	1	2	60
Fuel Additive and Light Oil Flushing Systems Fue	el Additive System rner Management	Valves Burner Automation	6	1 8	1 1	5	3	1	2 5	60 345600
Combustion Air & Gas Instruments But	rner Management	Flame Scanners	4	8	8	5	1	4	5	25600
Combustion Air & Gas Instruments But	rner Management rner Management	Oil Flow Transmitter Air Flow Transmitters	1	3	8 8	5	3	4	5	38400 2700
Combustion Air & Gas Instruments But	rner Management rner Management	Elevation Aux Air Dampers Ignitor Air Regulator	2	_	_			4	5 5	3600 450
Ignitor Light Oil and Air Supply But	rner Management	Flow Control Valve	1	3	1	5	2	1	5	150
	rner Management ht Oil	Manual Valves Igniter Gun	2	3	1 1			1	1 5	30 600
Ignitor Light Oil and Air Supply Light	ht Oil	Igniter Spark Plug	2	3	1	5	2	2	5	600
Ignitor Light Oil and Air Supply Light	ht Oil ht Oil	Igniter Scanner Rod Igniter Control Box	2	3	1 1	5	6	2	5	600 1800
Ignitor Light Oil and Air Supply Light	ht Oil ht Oil	Pumps Pressure Control Valve	2					2	5 5	300 300
Ignitor Light Oil and Air Supply Light	tht Oil	Suction Strainers	2	3	1	5	1	2	5	300
	ht Oil ht Oil	Discharge Strainer Piping	2	3	1 1	5	6	2	5	900 1800
Ignitor Light Oil and Air Supply Light	ht Oil ht Oil	Trip Valve Hydro Pad	3	3	1	5	6	2	5 r	2700 600
	ht Oil	Air Flex Lines	2	3	1	5	6	1	5	900

Undertaking 80, Attachment 1 Page 7 of 12

			₽							core
			& Safety			u.	ives	nent	Effec	ant Sc
			realth 8	th dt	Quality	Jtilization	Altemath	invironmen	Time to Effec	Equipment Scor
Insites Links Oil and Air County	Light Oil	Links Oil Flan Lines	垩	3	ð 1	Ę.	A Ate	E E	Ë	ਤ 1800
Ignitor Light Oil and Air Supply Turbine Generator Aux Cooling System	Boiler Feed Pump Oil Cooler	Light Oil Flex Lines	1	4	1	5	6	1	3	360
Turbine Generator Aux Cooling System Turbine Generator Aux Cooling System	T.G. Auxiliary Cooling Heat Exchangers T.G. Auxiliary Cooling Heat Exchangers #2		2	4	3	5	1	1	3	360 30
Turbine Generator Aux Cooling System	T.G. Auxiliary Cooling Heat Exchangers #3		2	1	1	5	1	1	3	30
Turbine Generator Aux Cooling System Turbine Generator Aux Cooling System	T.G. Auxiliary Cooling Water Pumps T.G. Auxiliary Cooling Water Pumps (West)		2	4	3	5	1	1	5	600 40
Turbine Generator Aux Cooling System	Auxiliary Cooling Pump Suction Strainer (East)		1	1 1	1	5	2	1	2	20
Turbine Generator Aux Cooling System Turbine Generator Aux Cooling System	Auxiliary Cooling Pump Suction Strainer (West) Turbine Lube Oil Coolers		1 2	1 1	1 3	5	2	1	2	20 360
Turbine Generator Aux Cooling System	Turbine Lube Oil Coolers (South)		2	2 1	1	5	1	1	2	20
Turbine Generator Aux Cooling System Turbine Generator Aux Cooling System	T.G. Auxiliary Cooling Head Tank H2 Coolers		2	1 8	1	5	3	1	2	60 5760
Turbine Generator Aux Cooling System	H2 Cooling Valve		1	1 1	1	5	2	1	3	30
Turbine Generator Aux Cooling System Turbine Generator Aux Cooling System	H2 Cooling Control Piping		1	1 3	1	5	6	2	3	30 900
Turbine Generator Aux Cooling System	Valves		2	1	1	1	6	1	5	60
Condenser Air Extraction System Condenser Air Extraction System	Air Extraction Vacuum Pump Seals Mechanical Vacuum Pumps		2	8	3	5	1	1	5	600 1200
Condenser Air Extraction System	Vacuum Breakers		2	2 8	8	5	3	1	5	9600
Condenser Air Extraction System Condenser Air Extraction System	Piping Valves	Manual Valves	2	3	8	5 1	6 2	1	5 1	7200
Condenser Air Extraction System	Valves	Check Valves	2		3	5	2	1	5	900
Condenser Air Extraction System Turbine Generator System Stage 1	Valves Turbine Lube Oil System	Control Valves Lube Oil Tank	2	3	1	5	4 6	1 a	5 3	600 1440
Turbine Generator System Stage 1	Turbine Lube Oil System	Lube Oil Purification	6		1	5	2	1	2	120
Turbine Generator System Stage 1 Turbine Generator System Stage 1	Turbine Lube Oil System Turbine Lube Oil System	AC Oil Pumps AC Oil Pump - North	2	8	8	5	1	2	5	6400 50
Turbine Generator System Stage 1	Turbine Lube Oil System	DC Oil Pump	6		3	5	6	1	5	21600
Turbine Generator System Stage 1 Turbine Generator System Stage 1	Hydraulic Fluid System Hydraulic Fluid System	Fluid Pumps Oil Pump - South	4	8	8	5	1	2	5	12800 100
Turbine Generator System Stage 1	Hydraulic Fluid System	Accumulators	4	1 1	1	5	1	2	5	200
Turbine Generator System Stage 1 Turbine Generator System Stage 1	Hydraulic Fluid System Main Steam Chest Assembly	South accumulator	4	1 9	1	5	1	1	5	100 1920
Turbine Generator System Stage 1	Main Steam Chest Assembly	Control Valves	2	2 8	8	5	1	1	5	3200
Turbine Generator System Stage 1 Turbine Generator System Stage 1	Main Steam Chest Assembly HP Turbine	Stop Valves	2	4	1	5	6	1	5	1200 4800
Turbine Generator System Stage 1	IP Turbine		4	8	1	5	6	1	5	4800
Turbine Generator System Stage 1 Turbine Generator System Stage 1	LP Turbine LP Turbine	Front Standard	4	8	1	5	6	1	5	4800 360
Turbine Generator System Stage 1	LP Turbine	Overspeed Trip Device	4	8	1	5	1	2	5	1600
Turbine Generator System Stage 1 Turbine Generator System Stage 1	LP Turbine	Overspeed Trip Test Device Governor	4	8	1 8	5	6	2	5	76800
Turbine Generator System Stage 1	Reheat Steam Chest Assembly		4		1	5	6	1	2	1920
Turbine Generator System Stage 1 Turbine Generator System Stage 1	Reheat Steam Chest Assembly Steam Seal Regulator	Reheat/ICV Valves	2	8	8	5	1	1	5	3200 3200
Turbine Generator System Stage 1	Turning Gear		4	1	1	5	4	1	5	400
Turbine Generator System Stage 1 Turbine Generator System Stage 1	Turbine Drains Bled Steam		2	1 1	1	5	2	1	3	60 120
Generator System Stage 1	Rotor		4	8	8	5	6	2	5	76800
Generator Generator	Rotor Stator	Slip Rings/Brush Gear	4	8	1 8	5	6	2	3	5760 76800
Generator	Stator	Stand Off Insulators	4	8	1	5	6	1	5	4800
Generator Generator	Stator Stator	PT Cubicle Stator Relay (P&C)	4	8	1	5	6	1	5	2400 4800
Generator	Stator	Neutral Grounding Transformer (P&C)	4	8	1	5	6		5	4800
Generator Generator	Exciter Exciter	Bridges Channels	2	8	8	5	1	2	5	6400 6400
Generator	Exciter	Rectifying Transformer	4	8	8	5	5	2	5	64000
Generator Generator	Exciter Seal Oil System	Field Breaker Seal Oil Pumps	2	2 8	8	5	5	2	5	32000 200
Generator	Seal Oil System	AC Seal Oil Pumps	2	2 2	1	5	1	2	5	200
Generator Generator	Seal Oil System Seal Oil System	AC Seal Oil Pump - West DC Seal Oil Pump	1 2	2 2	1	5	3	2	5	600
Generator	Seal Oil System	AC Seal Oil Vacuum Pump	2	2 2	1	5	1	2	5	200
Generator Generator	Seal Oil System Seal Oil System	Vacuum Tank Vacuum Tank Level Control	2	2 2	1	5	1	2	5	200 200
Generator	Seal Oil System	Seals	2	8	3	5	6	2	5	14400
Generator Generator	Seal Oil System Seal Oil System	Piping Valves	2	2 1	1	5 1	6	2	3	1440 72
Generator	Seal Oil System	Pressure Transmitter	1	1	1	5	6	1	5	150
Generator Generator	Seal Oil System Seal Oil System	Regulator Regulator Filter	1	3	1	5	2	2	5 3	1200 60
Generator	Seal Oil System	Float Trap	4	3	1	5	2	2	3	720
Generator Generator	Seal Oil System Seal Oil System	Air Detraining Tank Hydrogen Detraining Tank	4	1 3	1	5 5	2	2	3	720 960
Generator Generator	Gas Control Cabinet	Purity Meter Scavenge Valve	2	4	1	5	2	1	5	400 200
Generator		Dew Point Meter	2	_	1	5	2	_	2	40
Generator Generator	Gas Purging System Emergency Hydrogen Venting		2	-	1	5 1	6 2		3	540 4
Powerhouse and Switchyard Single Line	258V DC System		6	3	4	5	6	4	5	43200
Powerhouse and Switchyard Single Line Powerhouse and Switchyard Single Line	258V DC System 258V DC System	Panel Battery	6		8	5	6	2	5	57600 14400
	258V DC System	Charger	4	4	3	5	6	2	5	14400
Powerhouse and Switchyard Single Line				1	1	5	4	1	4	480 1200
Powerhouse and Switchyard Single Line Powerhouse and Switchyard Single Line	258V DC System	Exhaust Fan	- 6	1 2	- 4		. 4		2	5400
Powerhouse and Switchyard Single Line	258V DC System UPS (Unit 1, Unit 2) UPS (Unit 1, Unit 2)	Exhaust Fan Charger/Controls 480V Battery Banks	4		1	5	6		э	
Powerhouse and Switchyard Single Line	258V DC System UPS (Unit 1, Unit 2) UPS (Unit 1, Unit 2) UPS (Unit 1, Unit 2)	Exhaust Fan Charger/Controls	_		1 1	5	6 1 6		5	150 480
Powerhouse and switchyard Single Line Circulating Water and Screen Wash System Circulating Water and Screen Wash System	258V DC System UPS (Unit 1, Unit 2) Vacuum Seal Pit Sluice Gate	Exhaust Fan Charger/Controls 480V Battery Banks	_		1 1 1	5			5	480
Powerhouse and Switchyard Single Line Circulating Water and Screen Wash System Circulating Water and Screen Wash System Circulating Water and Screen Wash System	2.58V DC System UPS (Unit 1, Unit 2) Vacuum Seal Pit Sluice Gatle General Service Heat Exchangers	Exhaust Fan Charger/Controls 480V Battery Banks Cooling Fans	_	i 3 i 3 i 2	1 1 1 1	5 5 5			5 1 3 3	480 180
Powerhouse and Switchyard Single Line Powerhouse Switchyard Single Line Powerhouse and Switchyard Single Line Circulating Water and Screen Wash System	2.58V DC System UpS (Unit 1, Unit 2) Vacuum Seal Pit Sluice Gate General Service Heat Exchangers Mechanical Vacuum Pump Heat Exchangers T. G. Auxillary Cooling Heat Exchangers	Exhaust Fan Charger/Controls 480V Battery Banks Cooling Fans	4	3 3 1 3 1 2 2 3 2 8	1	5 5 5 5 5		2 2 2	5 1 3 3	180 720 60
Powerhouse and switchyard Single Line Circulating Water and Screen Wash System	2.58V DC System UPS (Unit 1, Unit 2) UPS (Unit 1, U	Exhaust Fan Charger/Controls 480V Battlery Banks Cooling Fans Not Used	2 2	3 3 1 3 1 2 2 3 2 8		5 5 5 5		2 2 2	3 3 3 3	180 720
Powerhouse and switchyard Single Line Circulating Water and Screen Wash System	2.58V DC System UPS (Unit 1, Unit 2) Vacuum Seal Pit Sluice Gate General Service Heat Exchangers Mechanical Vacuum Pump Heat Exchangers T.G. Auxiliary Cooling Heat Exchangers Surface Condensers Condenser Strainers COMP UNITS COMP STRAINERS CONTROL OF STRAINERS	Exhaust Fan Charger/Controls 480V Battlery Banks Cooling Fans Not Used	2 2 2 2 4 4	36 3 3 1 3 2 2 3 3 2 2 3 3 4 3 3 4 3 3 4 8 8	1 1 8	5 5 5 5 5 5	1 6 2 3 2 3	2 2 2 2 1 1 1 1	3 3 3 3 5	180 720 60 540
Powerhouse and Switchyard Single Line Circulating Water and Screen Wash System	258V DC System UPS (Unit 1, Unit 2) UPS (Unit 1, Unit 2) UPS (Unit 1, Unit 2) Vacuum Seal PIX Sulice Gate General Service Heat Exchangers Mechanical Vacuum Pump Heat Exchangers Surface Condensers Condenser Strainers C.W. Pumps C.W. Pumps	Exhaust Fan Charger/Controls 480V Battery Banks Cooling Fans Not Used Not Used East Pump	2 2 2 4	36 3 3 1 3 2 2 3 3 2 2 3 3 4 3 3 4 3 3 4 8 8	1 1 8 1	5 5 5 5 5 5 5	1 6 2 3 2 3 3 3 6	2 2 2 2 1 1 1 1	3 3 3 3 3 5 5	180 720 60 540 19200 720
Powerhouse and switchyard Single Line Circulating Water and Screen Wash System	258V DC System UPS (Unit 1, Unit 2) UPS (Unit 1, Unit 2) UPS (Unit 1, Unit 2) Vacuum Seal Pit Sluice Gare General Service Heat Exchangers General Service Heat Exchangers T.G. Auxiliary Cooling Heat Exchangers Surface Condensers Condenser Strainers C.W. Pumps C.W. Pumps C.W. Pumps Dual Flow Travelling Screens	Exhaust Fan Charger/Controls 480V Battery Banks Cooling Fans Not Used Not Used East Pump West Pump	2 2 2 2 4 4	36 3 3 1 3 2 2 3 3 2 2 3 3 4 3 3 4 3 3 4 8 8	1 1 8	5 5 5 5 5 5	1 6 2 3 2 3 3 3 6	2 2 2 2 1 1 1 1		180 720 60 540
Powerhouse and Switchyard Single Line Circulating Water and Screen Wash System	2.58V DC System UPS (Unit 1, Unit 2) Vacuum Seal Pit Sluice Gate General Service Heat Exchangers Mechanical Vacuum Pump Heat Exchangers T. G. Auxiliary Cooling Heat Exchangers Surface Condensers Condenser Strainers C.W. Pumps Dual Flow Travelling Screens Recirculating Pump	Exhaust Fan Charger/Controls 480V Battery Banks Cooling Fans Not Used Not Used East Pump	2 2 2 2 4 4	3 3 3 1 3 1 2 2 3 2 8 2 8 8 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3	1 1 8 1	5 5 5 5 5 5 5 5	1 6 2 3 2 3 3 3 6	2 2 2 2 1 1 1 1		180 720 60 540 19200 720 720
Powerhouse and switchyard Single Line Groutaling Water and Sereen Wash System	2.58V DC System UPS (Unit 1, Unit 2) Vacuum Seal Pit Suice Gate General Service Heat Exchangers Mechanical Vacuum Pump Heat Exchangers T.G. Auxiliary Cooling Heat Exchangers Surface Condensers Condenser Strainers C.W. Pumps C.W. Booster Pumps	Exhaust Fan Charger/Controls 480V Battery Banks Cooling Fans Not Used Not Used East Pump West Pump	2 2 2 2 2 4 4 4 4 4 4 2 2 2 2 2 2 2 2 2	3 3 3 3 1 2 3 2 2 3 8 2 8 2 8 2 1 3 3 3 4 5 6 7 8 8 8 8 8 8 8 8 8 8 8 8 8	1 1 8 1 1 1 1	5 5 5 5 5 5 5 5 5 5 5 5	1 6 2 3 2 3 3 3 6	2 2 2 2 1 1 1 1		180 720 60 540 19200 720 720 480 50
Powerhouse and switchyard Single Line Circulating Water and Screen Wash System	258V DC System UpS (Unit 1, Unit 2) Vacuum Seal Pit Sluice Gate General Service Heat Exchangers General Service Heat Exchangers T.G. Auxiliary Cooling Heat Exchangers Surface Condensers Condenser Strainers C.W. Pumps C.W. Pumps C.W. Pumps Dual Flow Travelling Screens Recirculating Pump Screen Spray Wash Header	Exhaust Fan Charger/Controls 480V Battery Banks Cooling Fans Not Used Not Used East Pump West Pump	2 2 2 2 4 4 4 4 4	5 3 1 3 3 3 1 3 3 3 1 3 3 3 1 3 3 3 1 3 3 3 1 3 3 3 1 3 3 3 3 1 3	1 1 8 1 1 1 1 1	5 5 5 5 5 5 5 5 2 2 2 5	1 6 2 3 2 3 3 3 6	1 1 1 1 1 1 1 1 1 1		180 720 60 540 19200 720 720 480 50 20
Powerhouse and switchyard Single Line Greulating Water and Screen Wash System	258V DC System UPS (Unit 1, Unit 2) Vacuum Seal Pit Sluice Gate General Service Heat Exchangers General Service Heat Exchangers Mechanical Vacuum Pump Heat Exchangers T.G. Auxiliary Cooling Heat Exchangers Surface Condensers Condenser Strainers C.W. Pumps C.W. Pumps C.W. Pumps Dual Flow Travelling Screens Recirculating Pump C.W. Booster Pumps Screen Myah Pumps Screen Wash Pumps Screen Wash Pumps Screen Myah Wash Header CW Piping Manual Valves	Exhaust Fan Charger/Controls 480V Battery Banks Cooling Fans Not Used Not Used East Pump West Pump	2 2 2 2 2 4 4 4 4 4 4 2 2 2 2 2 2 2 2 2	5 3 1 3 3 1 3 2 2 3 3 4 3 3 1 3 3 3 1 3 3 3 1 3 3 3 1 3 3 3 1 3 3 3 1 3 3 3 1 3 3 3 3 1 3	1 1 1 1 1 1 1 1 1	5 5 5 5 5 5 5 2 2 2 5 5	1 6 2 3 3 3 3 6 6 6 1 1 1 1	1 1 1 1 1 1 1 1 1 1	5 5 3 5 1	180 720 600 540 19200 720 720 480 50 20 20 3840 24
Powerhouse and switchyard Single Line Circulating Water and Sereen Wash System	258V DC System UpS (Unit 1, Unit 2) Vacuum Seal Pit Sluice Gate General Service Heat Exchangers Mechanical Vacuum Pump Heat Exchangers T.G. Auxiliary Cooling Heat Exchangers Surface Condensers Condenser Strainers C.W. Pumps C.W. Pumps C.W. Pumps Dual Flow Travelling Screens Recirculating Pump Screen Wash Pumps Screen Spray Wash Header C.W. Piping Manual Valves Manual Valves Manual Valves UpS (W. Piping) Manual Valves	Exhaust Fan Charger/Controls 480V Battery Banks Cooling Fans Not Used Not Used East Pump West Pump	2 2 2 2 2 4 4 4 4 4 2 2 2 2 4	5 3 3 4 2 2 2 2 3 8 8 4 3 3 3 4 8 8 4 3 3 3 4 8 8 8 4 3 3 3 4 8 8 8 4 3 3 3 4 8 8 8 8	1 1 1 1 1 1 1 1 1	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	1 6 2 3 3 3 3 6 6 6 1 1 1 1	1 1 1 1 1 1 1 1 1 1	5 5 3 5 1	180 720 540 19200 720 720 480 50 20 20 3840 24 4800
Powerhouse and Switchyard Single Line Circulating Water and Sereen Wash System	258V DC System UPS (Unit 1, Unit 2) Vacuum Seal Pit Sluice Gate General Service Heat Exchangers Mechanical Vacuum Pump Heat Exchangers Surface Condensers Condenser Strainers C.W. Pumps C.W. Pumps C.W. Pumps Dual Flow Travelling Screens Recirculating Pump Screen Wash Pumps Screen Spray Wash Header C.W. Piping Manual Valves C.W. Piping Manual Valves Condenser Strainers C.W. Piping Manual Valves C.W. Piping C.W. Booster Pumps Screen Spray Wash Header C.W. Piping Manual Valves C.W. Discharge Valves Condensor Motorized Discharge Valves	Exhaust Fan Charger/Controls 480V Battery Banks Cooling Fans Not Used Not Used East Pump West Pump Not Used (Cooler Discharge)	4 4 4 4 4 4 4 4 4 2 2 2 2 2 4 4 4 4 4 4	5 3 3 3 4 2 2 2 3 3 4 3 3 3 4 3 3 4 3 3 4 3 3 4 3 3 4 3 3 4 3 3 4 3 3 4 3 3 4 3 3 4 3 3 4 3 3 4 3 3 4 3 3 4 3 3 4 3 3 4 3 3 4 3 3 3 3 4 3 3 3 3 4 3 3 3 4 3 3 3 4 3 3 3 4 3 3 3 4 3 3 3 4 3 3 3 4 3 3 3 4 3 3 3 3 4 3 3 4 3 3 3 4 3 3 3 4 3 3 3 4 3 3 4 3 3 3 4 3 3 4 3 3 3 4 3 3 4 3 3 4 3 3 4 3 3 4 3 3 4 3 3 4 3 3 4 3 4 3 4 3 4 3 4 3 4	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	11 66 22 33 33 66 66 11 11 11 11 16 63 33 22 23 33	1 1 1 1 1 1 1 1 1 1	5 5 3 5 1	180 720 60 540 19200 720 720 480 50 20 20 3840 24 4800 900
Powerhouse and Switchyard Single Line Circulating Water and Sereen Wash System Circulating Wa	258V DC System UPS (Unit 1, Unit 2) Vacuum Seal Pit Sluice Sate General Service Heat Exchangers General Service Heat Exchangers Mechanical Vacuum Pump Heat Exchangers T.G. Auxiliary Cooling Heat Exchangers Surface Condensers Condenser Strainers C.W. Pumps C.W. Pumps C.W. Pumps Dual Flow Travelling Screens Recirculating Pump C.W. Booster Pumps Screen Myah Pumps Screen Myah Pumps Screen Myah Pumps Screen Spray Wash Header CW Piping Manual Valves CW Dicharge Valves COndensor Motorized Discharge Valves	Exhaust Fan Chager/Controls 480V Battery Banks Cooling Fans Not Used Not Used East Pump West Fump Not Used	4 4 4 4 4 4 4 4 4 2 2 2 2 2 4 4 4 4 4 4	5 3 3 4 2 2 2 2 3 8 8 4 3 3 3 4 8 8 4 3 3 3 4 8 8 8 4 3 3 3 4 8 8 8 4 3 3 3 4 8 8 8 8	1 1 1 1 1 1 1 1 1 1 8 8	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	11 66 22 33 33 66 66 11 11 11 11 11 13 33 22 22 66	1 1 1 1 1 1 1 1 1 1	5 5 3 5 1	180 720 60 540 19200 720 720 720 480 50 20 20 3840 24 480 900
Powerhouse and Switchyard Single Line Circulating Water and Screen Wash System Circulating Wa	258V DC System UPS (Unit 1, Unit 2) Vacuum Seal Pit Sluice Sate General Service Heat Exchangers Mechanical Vacuum Pump Heat Exchangers T.G. Auxiliary Cooling Heat Exchangers Surface Condensers Condenser Strainers C.W. Pumps C.W. Pumps C.W. Pumps Dual Flow Travelling Screens Rectroulating Pump C.W. Booster Pumps Screen Mysh Pumps Screen Wash Pumps Screen Mysh Pumps C.W. Bootster Pumps C.W. Bootster Pumps Cornel Spray Wash Header C.W. Piging Manual Valves C.W. Discharge Valves Condensor Motorized Discharge Valves Condensor Motorized Discharge Valves Condensor Motorized Discharge Valves Control Valve (Pumematic) Copper Ion Injection System	Exhaust Fan Charger/Controls 480V Battery Banks Cooling Fans Not Used Not Used East Pump West Fump Not Used (Cooler Discharge) (Cooler Discharge) Control Panel	4 4 4 4 4 4 4 4 4 2 2 2 2 2 4 4 4 4 4 4	5 3 3 3 4 2 2 2 2 2 2 2 2 2 2 3 3 3 3 3 3	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	11 66 33 36 66 11 11 11 11 66 33 22 33 26 66 66 66 66 66 66 66 66 66 66 66 66	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	5 5 3 5 1	180 720 60 540 19200 720 720 480 20 20 20 24 4800 900 300 48

Undertaking 80, Attachment 1 Page 8 of 12

			1		_	_		_		
			fety				١.	١,	_ t	Equipment Score
			& Saf			i	Alternative		Time to Effec	lent;
			Health &	Output	Quality	Utilization	o.	1	Time to	uipu
L.P. Feedwater System	Surface Condensor	I	Ĭ 4	ő 8	đ					5 76800
L.P. Feedwater System	Surface Condensor	Hot Well	4	8	8	_	5	6	_	5 76800
L.P. Feedwater System L.P. Feedwater System	Surface Condensor Surface Condensor	Hot Well Flash Tank Salt Water Cooling	4	8			_		_	4 1440 5 76800
L.P. Feedwater System	Surface Condensor	Make Up Circuit	1	4	- 1	-				4 960
L.P. Feedwater System L.P. Feedwater System	Condensate Extraction Pumps Condensate Extraction Check Val	ves	1	3			5			5 4800 4 60
L.P. Feedwater System L.P. Feedwater System	Polisher Bypass Valve Gland Seal Condensor		1	4	8	3	5	2		5 1600 4 40
L.P. Feedwater System L.P. Feedwater System	Gland Seal Condensor	Exhausters	1	1	-			1	_	1 5
L.P. Feedwater System L.P. Feedwater System	L.P. Heaters L.P. Heaters	Safety Valves Steam	4	1	1		_		_	5 100 4 160
L.P. Feedwater System	L.P. Heaters	Safety Valves Water	4	2	-	L :	5	2	1	5 400
L.P. Feedwater System L.P. Feedwater System	L.P. Heaters L.P. Heaters	NRV Valves Tube Bundles	10	2	1				_	5 3000 2 80
L.P. Feedwater System	L.P. Heaters	Controls (Level)	2	2		L :	5	4	1	5 400
L.P. Feedwater System L.P. Feedwater System	L.P. Heaters L.P. Heaters	Manual Isolation Valves Purge Vents	2	1	1				_	1 4
L.P. Feedwater System	L.P. Heaters	Continuous Vents	2	1	- 3	L :	5	2	1	2 40
L.P. Feedwater System L.P. Feedwater System	L.P. Heater Controls (Water Indu L.P. Heater Controls (Water Indu		6	2					1	5 57600 5 600
L.P. Feedwater System	L.P. Heater Controls (Water Indu		2	2	-	1	5	6	1	5 600
L.P. Feedwater System L.P. Feedwater System	Cortrol System Cortrol System	Pumps	2	2	1	1 1				3 2880 4 160
L.P. Feedwater System	Cortrol System	Suction Tote Tank	2	2	- 1					2 160
L.P. Feedwater System L.P. Feedwater System	Cortrol System Ammonia System	Controls	6	2	- 1				_	3 180 3 4320
L.P. Feedwater System	Ammonia System	Pumps	2	2	- 1				2	3 120
L.P. Feedwater System L.P. Feedwater System	Ammonia System Ammonia System	Suction Tote Tank Controls	1	2	1				_	2 160 3 180
L.P. Feedwater System	Deaerator System	Deaerator	6		-	3	5	6	1	5 21600
L.P. Feedwater System L.P. Feedwater System	Deaerator System Deaerator System	Deaerator Storage Tank NRV Valves (2)	10		1				1	3 1620 5 3000
L.P. Feedwater System	Deaerator System	Heating Coil	2	1		L :	5	3	1	5 150
L.P. Feedwater System L.P. Feedwater System	Deaerator System Deaerator System	Pegging Steam Safety Valves	6		1					5 150 5 2700
L.P. Feedwater System	Deaerator System	DA Vent	2	1	-	L .	5			5 150
L.P. Feedwater System L.P. Feedwater System	Deaerator System Cont. Blow Down Flash Tank	Level Control	4	4	1		_		_	5 6400 3 24
L.P. Feedwater System	Condensate Polishers (Units 1, 2,		4		-	1 :	3	1	1	3 36
L.P. Feedwater System L.P. Feedwater System	Condensate Polishers (Units 1, 2, Condensate Polishers (Units 1, 2,		4		- 1	-	_		_	2 128 2 128
L.P. Feedwater System	Condensate Polishers (Units 1, 2,	Acid Pumps	4	1				4	4	2 128
L.P. Feedwater System L.P. Feedwater System	Condensate Polishers (Units 1, 2, Condensate Polishers (Units 1, 2,		2							2 128 5 3600
L.P. Feedwater System	Condensate Polishers (Units 1, 2,	Instrumentation and Controls	1	2		L :	5		1	3 120
L.P. Feedwater System L.P. Feedwater System	Condensate Polishers (Units 1, 2, Condensate Polishers (Units 1, 2,		2	1	1	-	_			5 30 5 30
L.P. Feedwater System	Condensate Polishers (Units 1, 2,	Piping	4	1	- 1	L	1	6	4	5 480
L.P. Feedwater System L.P. Feedwater System	Condensate Polishers (Units 1, 2, Piping	Valves (Water)	4	8	1					5 1440 4 1920
L.P. Feedwater System	Valves		2	1	-	L I	1	2	1	1 4
Unit 3 H.P. Feedwater System Unit 3 H.P. Feedwater System	Boiler Feed Boiler Feed	Boiler Feed Pumps Motorized Discharge Valves	2	8	3		_		_	5 25600 5 1800
Unit 3 H.P. Feedwater System	Boiler Feed	Suction Valve	4		-	3	5	3	1	5 3600
Unit 3 H.P. Feedwater System Unit 3 H.P. Feedwater System	Boiler Feed Boiler Feed	Suction Valve Limit Switch Suction Strainers	1	4	1					5 7200 3 90
Unit 3 H.P. Feedwater System	Boiler Feed	Suction Line Safety Valve	4	2	-					5 1200
Unit 3 H.P. Feedwater System Unit 3 H.P. Feedwater System	Boiler Feed Boiler Feed	Check Valves Aux Oil Pump	2	3	1	1 1	5	6	1	1 20 5 900
Unit 3 H.P. Feedwater System	Boiler Feed	Vibration Protection - Monitoring	1	1	1	L :	5	3		5 75
Unit 3 H.P. Feedwater System Unit 3 H.P. Feedwater System	Boiler Feed Boiler Feed	Gland Seal Feed (from Extraction Pumps) Gland Seal Backup Pump	2		1		_		_	5 150 5 150
Unit 3 H.P. Feedwater System	Boiler Feed	Gland Seal Controls	2		- 1		_			5 300
Unit 3 H.P. Feedwater System Unit 3 H.P. Feedwater System	Boiler Feed Boiler Feed	DA Recirculation Valve DA Recirculation Piping	2	2	1	-	_		_	5 1200 5 400
Unit 3 H.P. Feedwater System	Emergency Reheat Attempterato Start-up De-Superheater	r	2	1					_	2 40
Unit 3 H.P. Feedwater System Unit 3 H.P. Feedwater System	Superheater Attempterator Equip	Control Valves	4		-					5 600
Unit 3 H.P. Feedwater System Unit 3 H.P. Feedwater System	Superheater Attempterator Equip	Pneumatic Isolating Valves	6	1	-					5 450 5 8100
Unit 3 H.P. Feedwater System	Superheater Attempterator Equip Superheater Attempterator Equip	Superheater Header	1	3	-					5 8100
Unit 3 H.P. Feedwater System Unit 3 H.P. Feedwater System	Superheater Attempterator Equip Steam Drum	Primary Superheater	10		-					5 8100 4 4800
Unit 3 H.P. Feedwater System	Steam Drum	Level Control Transmitters	2	4	8	3	5	1	1	5 1600
Unit 3 H.P. Feedwater System Unit 3 H.P. Feedwater System	Steam Drum Steam Drum	Aquarians [Stage 2] Safety Valves (East & West)	2				_	_		5 50 5 600
Unit 3 H.P. Feedwater System	Continuous Blowdown	Tank	2	1	- 1	ı	1	2	2	3 24
Unit 3 H.P. Feedwater System Unit 3 H.P. Feedwater System	Continuous Blowdown Continuous Blowdown	Level Control Piping	2	1	1					3 60 3 180
Unit 3 H.P. Feedwater System	Continuous Blowdown	Drain Valve	2	1	- 1	L .	5	6	1	3 180
Unit 3 H.P. Feedwater System Unit 3 H.P. Feedwater System	Feed Water Flow Controls Feed Water Flow Controls	MOV Isolation Valves Main Feed Water Control Valve	4				_			5 200 5 38400
Unit 3 H.P. Feedwater System	Feed Water Flow Controls	LL Control Valve	2	3	:	3	5	3	1	5 1350
Unit 3 H.P. Feedwater System Unit 3 H.P. Feedwater System	H.P. Heaters H.P. Heaters	Safety Valves Steam	6 4		-		_			5 600 4 320
Unit 3 H.P. Feedwater System	H.P. Heaters	Safety Valves Water	4	1		L .	5	4	1	4 320
Unit 3 H.P. Feedwater System Unit 3 H.P. Feedwater System	H.P. Heaters H.P. Heaters	NRV Valves Tube Bundles	10		1					5 3000 3 60
Unit 3 H.P. Feedwater System	H.P. Heaters	Controls (Level)	2	1	- 1	L :	5	3	1	5 150
Unit 3 H.P. Feedwater System Unit 3 H.P. Feedwater System	H.P. Heaters H.P. Heaters	Motorized Bypass Valves Motorized Isolation Valves	2	1						5 3600 5 50
Unit 3 H.P. Feedwater System	H.P. Heaters	Purge Vents	4	1		L	1	2	1	2 16
Unit 3 H.P. Feedwater System Unit 3 H.P. Feedwater System	H.P. Heaters H.P. Heater Controls (Water Indu	Continuous Vents action Protection)	6		1					3 360 5 21600
Unit 3 H.P. Feedwater System	H.P. Heater Controls (Water Indu	Solenoid Valves	4	1	1	L :	5	6	1	5 600
Unit 3 H.P. Feedwater System Unit 3 H.P. Feedwater System	H.P. Heater Controls (Water Indu Economizer	Lever Probe & Module	4		1					5 600 5 4800
Unit 3 H.P. Feedwater System	Economizer	Economizer Check Valve	4	2		1 .	5	6	1	3 720
Unit 3 H.P. Feedwater System Unit 3 H.P. Feedwater System	Economizer Economizer	Recirculation Valve Economizer Isolation Valve	6		1					5 450 1 6
Unit 3 H.P. Feedwater System	Piping		2	2		1 .	5	6	1	3 360
Unit 3 H.P. Feedwater System Unit 3 Reserve Feedwater System	Valves High Level R.F.W. Tanks		4	1	1	1 :			_	1 4 3 180
Unit 3 Reserve Feedwater System	T.G. Cooling Water H.D. Tanks		2	1			5	2	1	4 80
Unit 3 Reserve Feedwater System Unit 3 Reserve Feedwater System	Low Level R.F.W. Tank Unit 3 RFW Transfer Pumps		4		1					2 320 4 60
Unit 3 Reserve Feedwater System	Piping		1	1				_	1	3 90
Unit 3 Reserve Feedwater System Unit 3 Bled Steam and Heater Drains	Valves H.P. Heater Drain Pump		2	1	1	L	5	1	1	3 18 5 50
Unit 3 Bled Steam and Heater Drains	Drain Tank		2	1		L :	5	3	1	3 90
Unit 3 Bled Steam and Heater Drains Unit 3 Bled Steam and Heater Drains	Drain Tank L.P. Heater Drain Pumps	Instrumentation (Level Control)	2	1		1	5		1	3 90
	•	•			•	•	•			

Undertaking 80, Attachment 1 Page 9 of 12

MEST				Health & Safety	Output	Quality	Utilization	Alternatives	Environment	Time to Effect	Equipment Score
Versit Profession Anthony Company Co	Unit 3 Bled Steam and Heater Drains	Pining		± 2	∂ 1	∂ 1					급 240
Man Description Propose	Unit 3 Bled Steam and Heater Drains	Valves			1	1		6		1 4	48
Company Comp			(Turbine Blow Down)		8	8					76800
Mars from Albert Verber Verber. Mars from Year Services. Mars from Y		Vacuum Unloading Device			4	8	5	2		1 5	1600
See See See See See See See See See Se											16000
March States Marc			Dilat Valva	2	1		_			1 1	60
March States Name States				2	1		5	2		1 1	20
See See Bear About March Tellor Dates 3 1 1 1 1 1 1 1 1											120
Man Seam A Referent Faces - Transfer Control Search Christ Headers	Main Steam & Reheat Steam; Turbine Drains	Superheat Front Horizontal Space	d Support Tube Inlet Header	4	4	1	5	6		1 5	2400
Section Sect						_				-	
Name Steam of Refuest Peters Select wider word September School Select Sel	Main Steam & Reheat Steam; Turbine Drains	Reheat Horizontal Platen Inlet He	ader	4	4	1	5	6		1 5	2400
Name Storm An Rebrest Protector Devices South Weather would Rebrest Protection A. 1 1 1 5 5 5 5 5 5											3600 3600
Name Steam Register Deliver Deliver Propriet Propriet Propri	Main Steam & Reheat Steam; Turbine Drains	Boiler Water Wall	Reheat Tubing	4	3	1	5	6		2 5	3600
Name States Anthone States The State										-	
March Source Paping Impulation	Main Steam & Reheat Steam; Turbine Drains	Piping	Hangers (Tension)	6	4	1	5	6		1 5	3600
Mary Seam A Refuest Seam Future Darket Page P											
March Section American Section Control S	Main Steam & Reheat Steam; Turbine Drains	Piping	Tap Offs	6		1	5	Е		1 3	1620
Management Selected Beauty Further Deliver Management Manage				_		_	_	_	H		
Conference Leader Segret	Main Steam & Reheat Steam; Turbine Drains	Valves		2	1	1	1	2	-	_	4
Condensity Research Supply and Dean Condensity Research Supply Condensity Research Supply Research Supply Condensity Researc											80 320
Austral Speam Suppy and Drain Austral Speam Suppy and Drain Speam Suppy an	Auxiliary Steam Suppy and Drain	Condensate Receiver Tank		2	1	1	5	4	:	1 5	200
10.01 20.0	Auxiliary Steam Suppy and Drain	Condensate Receiver Tank	Condensate Pumps	_							50 1920
Start A Pills Gas 1914 - M. Fill Gas 1915 - M. Fill Gas 1916 - M. Fill Gas 1916 - M. Fill Gas 1917 - M. Fill Gas 1918 -	Unit 3 Air & Flue Gas	F.D. Fans		6	8	8	5	3		5	172800
Met Daniegen : 11th The Col.	Unit 3 Air & Flue Gas	F.D Fan Vibration Detector									1600
UNIT 3 M. R. Filts Gist. 1	Unit 3 Air & Flue Gas			2	2	1	5	2		1 3	120
Grid 2 Mar S Plan Gills	Unit 3 Air & Flue Gas	Inlet Air Ductwork								1 2	240
2013 All AR Flue Gis										-	1440 1200
Girl 3 Mar & Plan Gis	Unit 3 Air & Flue Gas	Windbox								_	7200
GRIST 3 M. R. Place Gis											
United 3 Am Air Paul Code	Unit 3 Air & Flue Gas	Furnace Pressure TX (Trip)		4	4	8	5	6		1 5	19200
Moral Park R Place Gas											25600 11520
Unit 3 Am & False Gas	Unit 3 Air & Flue Gas	Rotary Air Heaters		6	8	1	5	6	:	1 2	2880
Direct 2016 2017											
Unit 3 Air & Rine Cois	Unit 3 Air & Flue Gas	Rotary Air Heaters	Pneumatic Drive Motor	2	1	1	5	6		1 5	300
Unit 3 Air & Fluc Gos						_					720 1920
Unit 3 Air & Flue Gas	Unit 3 Air & Flue Gas	Rotary Air Heaters	Rotating Element & Bearings	4		_	5	6		1 5	14400
Unit 3 Air & Thue Gas											
Unit 3 Air & Flue Gas SOLIE SOCIEDATIVES STREET 1 1 2 3 3 1 2 3 3 1 2 3 3 1 2 3 3 1 2 3 3 1 2 3 3 1 2 3 3 1 2 3 3 3 1 2 3 3 3 1 2 3 3 3 1 2 3 3 3 1 3 3 3 3 1 2 3 3 3 3 3 3 3 3 3	Unit 3 Air & Flue Gas	Rotary Air Heaters	Piping (Steam)	2	1	1	5	6		1 5	300
Unit 3 Air & Tisse Gas SOLIER SOOTELOWING SYSTEM RETRACTABLE SOOTELOWERS 4 8 1 5 5 1 2 2 326			Piping (Air) Manual Valves	2							600 30
Unit 3 Air & Flue Gas	Unit 3 Air & Flue Gas	BOILER SOOTBLOWING SYSTEM	RETRACTABLE SOOTBLOWERS		8	1	5	1		1 2	320
Unit 3 Faire Of System Main Faul Coll System											960
Unit 3 Face (10 System	Unit 3 Air & Flue Gas		#3 BOILER WATERLANCE	4	1	1	1	6	:	1 2	48
Header Pressure Control Valve									_		
Unit 3 Face Di System	Unit 3 Fuel Oil System		Header Pressure Control Valve	2	8	8	5	4	:	2 5	25600
Unit 3 Facel Oil System											19200
Unit 3 Faire Oil System Main Faire Oil Trip Valve	Unit 3 Fuel Oil System		Combustion Control Valves	2	8	8	5	6		2 5	38400
Unit 3 Fate Oil System										_	
Unit 3 Fuel Oil System	Unit 3 Fuel Oil System		Level Fuel Oil Trip Valves	3	4	8	5	6	:	2 5	28800
Unit 3 Fuel Oil System											4800
Unit 3 Fuel Oil System		Burners	diyeorros	2	8		5	1		4 5	12800
Durit 3 Fuel Oil System											2400
Unit 3 Fuel Oil System	Unit 3 Fuel Oil System				_	_	5	3			2400
Unit 3 Fuel Oil System						_				-	38400 1200
Unit 3 Fuel Oil System	Unit 3 Fuel Oil System		Oil Flex Lines	2		1	5	6	,	4 5	2400
Unit 3 Fuel Oil System	Unit 3 Fuel Oil System									_	14400
Combustion Air & Gas Instruments Burner Management Elame Scanners 4 8 8 5 6 6 5 34500				_							96
Combustion Air & Gas Instruments		Flow Motor		2	3	_	-	3	H	_	900
Combustion Air & Gas Instruments Burner Management Air Flow Transmitter 1 8 8 5 6 4 5 38400	Unit 3 Fuel Oil System		Burner Automation	D		8	5	1		4 5	25600
Combustion Air & Gas Instruments Burner Management Elevation Air Dampers 2 3 3 5 2 4 5 3600	Unit 3 Fuel Oil System Combustion Air & Gas Instruments	Burner Management		4			- 5				38400
Burner Management	Unit 3 Fuel Oil System Combustion Air & Gas Instruments Combustion Air & Gas Instruments Combustion Air & Gas Instruments	Burner Management Burner Management Burner Management	Flame Scanners Oil Flow Transmitter	1						+ı 5	
	Unit 3 Fuel Oil System Combustion Air & Gas instruments	Burner Management Burner Management Burner Management Burner Management Burner Management	Flame Scanners Oil Flow Transmitter Air Flow Transmitters Elevation Air Dampers	1	3	3	5	2		4 5	
Light Oil and Air Supply Light Oil Igniter Spark Plug 2 3 1 5 2 2 5 600 Ignitor Light Oil and Air Supply Light Oil Igniter Control Box 2 3 1 5 2 2 5 600 Ignitor Light Oil and Air Supply Light Oil Igniter Control Box 2 3 1 5 2 2 5 600 Ignitor Light Oil and Air Supply Light Oil Pumps 2 3 1 5 6 2 5 1800 Ignitor Light Oil and Air Supply Light Oil Pumps 2 3 1 5 6 2 5 300 Ignitor Light Oil and Air Supply Light Oil Pressure Control Valve 1 1 1 5 6 2 5 300 Ignitor Light Oil and Air Supply Light Oil Suction Strainers 2 3 1 5 6 2 5 300 Ignitor Light Oil and Air Supply Light Oil Discharge Strainer 1 3 1 5 6 2 5 300 Ignitor Light Oil and Air Supply Light Oil Discharge Strainer 1 3 1 5 6 2 5 300 Ignitor Light Oil and Air Supply Light Oil Piping 2 3 1 5 6 2 5 300 Ignitor Light Oil and Air Supply Light Oil Piping 2 3 1 5 6 2 5 500 Ignitor Light Oil and Air Supply Light Oil Piping 2 3 1 5 6 2 5 500 Ignitor Light Oil and Air Supply Light Oil Piping 2 3 1 5 6 2 5 200 Ignitor Light Oil and Air Supply Light Oil Piping 2 3 1 5 6 2 5 200 Ignitor Light Oil and Air Supply Light Oil Piping 2 1 1 5 6 2 5 200 Ignitor Light Oil and Air Supply Light Oil Hydro Pad 2 1 1 5 6 2 5 600 Ignitor Light Oil and Air Supply Light Oil Light Oil Hydro Pad 2 1 1 5 6 2 5 600 Ignitor Light Oil and Air Supply Light Oil Light Oil Flushing Systems Fuel Additive System Light Oil Flushing Systems Fuel Additive System Valuer Control Pump 2 1 1 5 2 1 2 4 Fuel Additive And Light Oil Flushing Systems Fuel Additive System Fuel Additive Duplex Strainer 2 1 1 5 2 1 2 4 Fuel Additive And Light Oil Flushin	Unit 3 Fuel Oil System Combustion Air & Gas Instruments Ignitrot Light Oil and Air Supply	Burner Management Burner Management Burner Management Burner Management Burner Management Burner Management	Flame Scanners Oil Flow Transmitter Air Flow Transmitters Elevation Air Dampers Ignitor Air Regulator	1 1 2	3	3 3	5	2		1 5	3600 450
Ight Oil Ight Oil and Air Supply Ight Oil Ight	Unit 3 Fuel OII System Combustion Air & Gas instruments Iginitor Light Oil and Air Supply Iginitor Light Oil and Air Supply	Burner Management Light Oil	Flame Scanners Oil Flow Transmitter Air Flow Transmitters Elevation Air Dampers Ignitor Air Regulator Manual Valves	1 1 2 1 2	3 3 1	3 1 1	5 5 5	2 6 3		1 5	3600
Ight Oil Pumps 2, 3, 1, 5, 1, 2, 5, 300 Ight Oil Pressure Control Valve 1, 1, 1, 1, 5, 6, 2, 5, 300 Ight Oil Pressure Control Valve 1, 1, 1, 1, 5, 6, 2, 5, 300 Ight Oil and Air Supply Ught Oil Suction Strainers 2, 3, 1, 5, 1, 2, 5, 300 Ight Oil Suction Strainers 2, 3, 1, 5, 1, 2, 5, 300 Ight Oil Suction Strainers 2, 3, 1, 5, 1, 2, 5, 300 Ight Oil Suction Strainers 1, 3, 1, 5, 6, 2, 5, 300 Ight Oil Ight Oil Discharge Strainer 1, 3, 1, 5, 6, 2, 5, 5, 300 Ight Oil I	Unit 3 Evel Oil System Combustion Air & Gas instruments Inginiter Light Oil and Air Supply Ignitor Light Oil and Air Supply	Burner Management Ught Oil	Flame Scanners Oil Flow Transmitter Air Flow Transmitters Elevation Air Dampers Ignitor Air Regulator Manual Valves Igniter Gun Igniter Spark Plug	1 2 1 2 2 2	3 3 1 3	3 1 1 1 1	5 5 5 5	2 6 3 2		1 5 1 1 2 5 2 5	3600 450 30 600 600
Ight Oil and Air Supply Light Oil Discharge Strainer 2 3 1 5 1 2 5 300 Ignitor Light Oil and Air Supply Light Oil Discharge Strainer 1 3 1 5 6 2 5 300 Ignitor Light Oil and Air Supply Light Oil Piping 2 3 1 5 6 2 5 300 Ignitor Light Oil and Air Supply Light Oil Piping 2 3 1 5 6 2 5 300 Ignitor Light Oil and Air Supply Light Oil Trip Valve 3 3 1 5 6 2 5 200 Ignitor Light Oil and Air Supply Light Oil Hydro Pad 2 1 1 5 6 2 5 600 Ignitor Light Oil and Air Supply Light Oil Hydro Pad 2 1 1 5 6 2 5 600 Ignitor Light Oil and Air Supply Light Oil Hydro Pad 2 1 1 5 6 2 5 600 Ignitor Light Oil and Air Supply Light Oil Light Oil Eight Oil Light Oil	Unit 3 Fuel Oil System Combustion Air & Gas Instruments Ignitor Light Oil and Air Supply	Burner Management Light Oil Light Oil	Flame Scanners Oil Flow Transmitter Air Flow Transmitters Elevation Air Dampers Ignitor Air Regulator Manual Valves Igniter Gun Igniter Spark Plug Igniter Spaner Rod	1 2 1 2 2 2 2 2	3 3 1 3 3	3 3 1 1 1 1	5 5 5 5 5 5	2 6 3 2 2 2		1 5 1 1 2 5 2 5 2 5	3600 450 30 600 600
Ight Oil Discharge Strainer 1 3 1 5 6 2 5 990 Ight Oil Piping 2 3 1 5 6 2 5 1800 Ight Oil Piping 2 3 1 5 6 2 5 1800 Ight Oil Piping 3 3 3 5 6 2 5 1800 Ight Oil Piping 3 3 3 5 6 2 5 1800 Ight Oil Piping 3 3 3 5 6 2 5 1800 Ight Oil Piping 3 3 3 5 6 2 5 2700 Ight Oil Piping 3 3 5 6 2 5 2700 Ight Oil Piping 3 7 7 7 Ight Oil Piping 3 7 7 7 Ight Oil Piping 2 1 1 5 6 2 5 2700 Ight Oil Piping 2 3 1 5 6 2 5 2700 Ight Oil Piping 2 3 1 5 6 2 5 2700 Ight Oil Piping 2 3 1 5 6 2 5 2700 Ight Oil Piping 2 3 1 5 6 2 5 2700 Ight Oil Piping 2 3 1 5 6 2 5 2700 Ight Oil Piping 2 3 1 5 6 2 5 2700 Ight Oil Piping 2 3 1 5 6 2 5 2700 Ight Oil Piping 2 3 1 5 6 2 5 2700 Ight Oil Piping 2 3 1 5 6 2 5 2700 Ight Oil Piping 2 3 1 5 6 2 5 2700 Ight Oil Piping 2 3 1 5 6 2 5 2700 Ight Oil Piping 2 3 1 5 6 2 5 2700 Ight Oil Piping 2 3 1 5 6 2 5 2700 Ight Oil Piping 2 3 1 5 6 2 5 2700 Ight Oil Piping 2 3 1 5 6 2 5 2700 Ight Oil Piping 2 3 1 5 6 2 5 2700 Ight Oil Piping Piping 2 3 1 5 6 2 5 2700 Ight Oil Piping Piping 2 3 1 5 6 2 5 2700 Ight Oil Piping	Unit 3 Fuel OII System Combustion Air & Gas Instruments Ignitor Light Oil and Air Supply	Burner Management Ught Oil Ught Oil Ught Oil Ught Oil	Flame Scanners Oil Flow Transmitter Air Flow Transmitters Elevation Air Dampers Ignitor Air Regulator Manual Valves Igniter Gun Igniter Spark Plug Igniter Scanner Rod Igniter Control Box Pumps	1 1 2 1 2 2 2 2 2 2	3 3 1 3 3 3 3	3 3 1 1 1 1 1 1 1	5 5 5 5 5 5 5 5	2 6 3 2 2 2 6		1 5 1 1 2 5 2 5 2 5 2 5 2 5	3600 450 30 600 600 600 1800 300
	Unit 3 Fuel Oil System Combustion Air & Gas instruments Ingrior Light Oil and Air Supply	Burner Management Unger Oil Ught Oil	Flame Scanners Oil Flow Transmitter Air Flow Transmitters Elevation Air Dampers [genitor Air Regulator Manual Valves Igniter Gun Igniter Spark Plug Igniter Spark Plug Igniter Scanner Rod Igniter Control Box Pumps Perssure Control Valve	1 1 2 1 2 2 2 2 2 2 2 1	3 3 3 3 3 3 3	3 3 1 1 1 1 1 1 1 1	5 5 5 5 5 5 5 5 5 5	2 6 3 2 2 2 2 6 1 6		1 5 1 1 1 1 2 5 2 5 2 5 2 5 2 5 2 5 2 5 2 5	3600 450 30 600 600 600 1800
	Unit 3 Fuel Oil System Combustion Air & Gas instruments Ignitor Light Oil and Air Supply	Burner Management Ught Oil	Flame Scanners Oll Flow Transmitter Air Flow Transmitters Elevation Air Dampers Ignitor Air Regulator Manual Valves Igniter Gun Igniter Spark Plug Igniter Spark Plug Igniter Control Box Pumps Pressure Control Valve Suction Strainers Discharge Strainer	1 1 2 1 2 2 2 2 2 2 2 1 1 2 1	3 3 3 3 3 3 3 3 3 1 1 3 3 3 3 3 3 3 3 3	3 3 1 1 1 1 1 1 1 1 1 1	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	2 6 3 2 2 2 2 6 1 6 6		1 5 1 1 2 5 2 5 2 5 2 5 2 5 2 5 2 5 2 5 2 5 2 5	3600 450 30 600 600 1800 300 300 300 900
Igntor Light Oil and Air Supply Light Oil Light Oil Flex Lines 2 3 1 5 6 2 5 1800	Unit 3 Evel Oil System Combustion Air & Gas instruments Equinter Light Oil and Air Supply Ignitor Light Oil and Air Supply	Burner Management Ught Oil	Flame Scanners Oil Flow Transmitter Air Flow Transmitters Elevation Air Dampers [genitor Air Regulator Manual Valves [geniter Gun Igniter Spark Plug Igniter Scanner Rod Igniter Scanner Rod Igniter Control Box Pumps Pressure Control Valve Suction Strainers Discharge Strainer Piping	1 1 2 2 2 2 2 2 2 2 2 1 1 2 2 2 2 2 2 2	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	3 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	55 55 55 55 55 55 55 55 55 55 55	2 6 3 2 2 2 2 6 1 6 6 6 6		1 5 1 1 2 5 2 5 2 5 2 5 2 5 2 5 2 5 2 5 2 5 2 5	3600 450 30 600 600 600 1800 300 300 300 900
Fuel Additive and Light Oil Flushing Systems Fuel Additive System 2 1 1 5 2 4 2 16	Unit 3 Fuel Oil System Combustion Air & Gas instruments Individual Combustion Air Air Supply Indiror Light Oil and Air Supply	Burner Management Light Oil	Flame Scanners Oil Flow Transmitter Air Flow Transmitters Elevation Air Dampers Elevation Air Dampers Ignitor Air Regulator Manual Valwes Igniter Gun Igniter Spark Plug Igniter Scanner Rod Igniter Scanner Rod Igniter Control Box Pumps Pressure Control Valve Suction Strainers Discharge Strainer Plping Trip Valve Hydro Pad	1 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	3 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	55 55 55 55 55 55 55 55 55 55 55 55 55	22 66 33 22 22 22 66 11 66 66 66 66		1 5 1 1 1 2 5 2 5 2 5 2 5 2 5 2 5 2 5 2 5 2 5 2 5	3600 450 30 600 600 1800 300 300 300 900 1800 2700
Fuel Additive and Light Oil Flushing Systems Fuel Additive System Volume Control Pump 2 1 1 5 2 1 2 4 Fuel Additive and Light Oil Flushing Systems Fuel Additive System Fuel Additive Transfer Pump 2 1 1 5 2 1 2 4 Fuel Additive and Light Oil Flushing Systems Fuel Additive System Fuel Additive Duplex Strainer 2 1 1 5 2 1 2 2 1 1 5 2 1 2 4 Fuel Additive and Light Oil Flushing Systems Fuel Additive System Fuel Additive Main Storage Tank 2 1 1 5 2 1 2 4 Fuel Additive and Light Oil Flushing Systems Fuel Additive System Fuel Additive System Fuel Additive System 1 1 1 1 5 2 1 2 6	Unit 3 Evel OII System Combustion Air & Gas Instruments Ingritor Light Oil and Air Supply Ignitor Light Oil and Air Supply	Burner Management Ught Oil	Flame Scanners Oil Flow Transmitter Air Flow Transmitters Elevation Air Dampers Ignitor Air Regulator Manual Valwes Igniter Gun Igniter Spark Plug Igniter Spark Plug Igniter Scanner Rod Igniter Control Box Pumps Pressure Control Valve Soutton Strainers Discharge Strainer Piping Trip Valve Hydro Pad Air Flex Lines	1 1 2 2 2 2 2 2 2 2 2 2 2 1 1 2 2 2 2 2	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	33 31 11 11 11 11 11 11 11 11 11 11 11	55 55 55 55 55 55 55 55 55 55 55 55 55	22 66 33 22 22 22 66 66 66 66 66		1 5 1 1 1 2 5 2 5 2 5 2 5 2 5 2 5 2 5 2 5 2 5 2 5	3600 450 30 600 600 600 1800 300 300 300 900 1800 2700
Fuel Additive and Light Oil Flushing Systems Fuel Additive System Unit Day Tank 2 1 1 5 2 1 2 44	Unit 3 Evel OII System Combustion Air & Gas Instruments I	Burner Management Ught Oil	Flame Scanners Oil Flow Transmitter Air Flow Transmitters Elevation Air Dampers Elevation Air Dampers Ignitor Air Regulator Manual Valves Igniter Gun Igniter Spark Plug Igniter Scanner Rod Igniter Scanner Rod Igniter Control Box Pumps Pressure Control Valve Suction Strainers Discharge Strainer Piping Trip Valve Hydro Pad Air Flex Lines Light Oil Flex Lines	1 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	3 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	55 55 55 55 55 55 55 55 55 55 55 55 55	22 66 33 22 22 22 66 66 66 66 66 66 66 22		11 51 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	3600 450 30 600 600 300 300 300 900 1800 2700 600 900
Fuel Additive and Light Oil Flushing Systems Fuel Additive System Fuel Additive Duplex Strainer 2 1 1 5 2 1 2 4 Fuel Additive and Light Oil Flushing Systems Fuel Additive System Fuel Additive Main Storage Tank 2 1 1 1 1 1 5 2 1 2 4 Fuel Additive and Light Oil Flushing Systems Fuel Additive System Fiping 1 1 1 1 5 6 1 2 6	Unit 3 Fuel Oil System Combustion Air & Gas instruments Ingrior Light Oil and Air Supply Ingrior Light Oil Air	Burner Management Ught Oil Ugh	Flame Scanners Oil Flow Transmitter Air Flow Transmitters Elevation Air Dampers [ignitor Air Regulator Manual Valves igniter Gun Igniter Spark Plug Igniter Spark Plug Igniter Control Box Pumps Pressure Control Valve Suction Strainers Discharge Strainer Piping Trip Valve Hydro Pad Air Flex Lines Light Oil Flex Lines Bunker C Line Quill	1 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	33 33 11 11 11 11 11 11 11 11 11 11 11 1	55 55 55 55 55 55 55 55 55 55 55 55 55	22 66 33 22 22 22 26 66 66 66 66 66 66 22 22		1 1 5 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	3600 450 30 600 600 1800 300 900 1800 2700 600 900 1800 20
Fuel Additive and Light Oil Flushing Systems Fuel Additive System Fuel Additive Main Storage Tank 2 1 1 5 2 1 2 1 2 4 Fuel Additive and Light Oil Flushing Systems Fuel Additive System Piping 1 1 1 5 6 1 2 66	Unit 3 Fuel Oil System Combustion Air & Gas instruments ignitor Light Oil and Air Supply Ignitor Light Oil Air Supply Ignitor Light Oil Air Supply Ignitor Light Oil	Burner Management Ught Oil Ugh	Flame Scanners Oil Flow Transmitter Air Flow Transmitters Elevation Air Dampers [gintor Air Regulator Manual Valves igniter Spark Plug igniter Spark Plug igniter Spark Plug igniter Scanner Rod igniter Control Box Pumps Pressure Control Valve Suction Strainers Discharge Strainer Plping Trip Valve Hydro Pad Air Flex Lines Light Oil Flex Lines Bunker C Line Quill Volume Control Pump Unit Day Tank	1 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	33 31 11 11 11 11 11 11 11 11 11 11 11 1	55 55 55 55 55 55 55 55 55 55 55 55 55	22 66 33 22 22 22 22 24 66 66 66 66 66 66 66 22 22 22 22 22 22		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	3600 450 300 600 600 1800 300 300 900 1800 2700 600 900 1800 2700 600 900 1800
	Unit 3 Fuel Oil System Combustion Air & Gas instruments I Gombustion Air & Gas instruments I Gombustion Air & Gas Instruments I gintor Light Oil and Air Supply I gintor Light Oil Flushing Systems Fuel Additive and Light Oil Flushing Systems Fuel Additive and Light Oil Flushing Systems Fuel Additive and Light Oil Flushing Systems	Burner Management Ught Oil Ugh	Flame Scanners Oil Flow Transmitter Air Flow Transmitters Elevation Air Dampers Elevation Air Dampers Ignitor Air Regulator Manual Valwes Igniter Gun Igniter Spark Plug Igniter Spark Plug Igniter Scanner Rod Igniter Sontrol Box Pumps Pressure Control Nave Suction Strainers Discharge Strainer Piping Trip Valve Hydro Pad Air Flex Lines Light Oil Flex Lines Bunker C Line Quill Volume Control Pump Unit Day Tank Fuel Additive Transfer Pump	1 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	33 33 11 11 11 11 11 11 11 11 11 11 11 1	55 55 55 55 55 55 55 55 55 55 55 55 55	22 66 33 22 22 22 26 66 66 66 66 66 66 22 22 22		1	3600 450 300 600 600 1800 300 300 900 1800 900 1800 2700 600 900 1800 20 40
Fuel Additive and Light Oil Flushing Systems Fuel Additive System Valves 2 1 1 5 3 1 2 60	Unit 3 Fuel Oil System Combustion Air & Gas instruments Individual Combustion Air Air Supply Indirect Light Oil and Air Supply Indirect Light Oil Indirect Air Supply Indirect Light Oil and Air Supply Indirect Light Oil Indirect Air Supply Indirect Light Oil Flushing Systems Fuel Additive and Light Oil Flushing Systems	Burner Management Light Oil Light	Flame Scanners Oil Flow Transmitter Air Flow Transmitters Elevation Air Dampers [legitor Air Regulator Manual Valves Igniter Gun Igniter Spark Plug Igniter Spark Plug Igniter Spark Plug Igniter Control Box Pumps Pressure Control Valve Suction Strainers Discharge Strainer Plping Trip Valve Hydro Pad Air Flex Lines Light Oil Flex Lines Bunker C Line Quill Volume Control Pump Unit Day Tank Fuel Additive Main Storage Tank	1 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 1 1 1 1 1	33 33 31 11 11 11 11 11 11 11 11 11 11 1	55 55 55 55 55 55 55 55 55 55 55 55 55	22 22 22 22 22 24 66 66 66 66 66 66 22 22 22 22 22 22 22		11	3600 450 30 600 600 1800 300 300 900 1800 2700 600 900 1800 40 40 40

Undertaking 80, Attachment 1 Page 10 of 12

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			Safet			_	8	at	fect	Equipment Score
			18.5	÷.	>	tio	ativ	u.	to Ef	men
			Health &	Outpul	Quality	Utilizati	Alternatives	Environmen	ime to Effec	di
Turbine Generator Aux Cooling System	Boiler Feed Pump Oil Cooler		1 1	0	o 1)	₹ 6		Ξ	360
Turbine Generator Aux Cooling System	T.G. Auxiliary Cooling Heat Excha	ngers	2	4	3	5			3	360
Turbine Generator Aux Cooling System	T.G. Auxiliary Cooling Water Pum		2	4	3	5		1	5	600
Turbine Generator Aux Cooling System Turbine Generator Aux Cooling System	Auxiliary Cooling Pump Suction St Auxiliary Cooling Pump Suction St		1	1	1	5	2	_	2	20 20
Turbine Generator Aux Cooling System Turbine Generator Aux Cooling System	Turbine Lube Oil Coolers	trainer (west)	2	3	3	- 5	1	1	4	360
Turbine Generator Aux Cooling System	T.G. Auxiliary Cooling Head Tank		2	1	1	5	3	1	2	60
Turbine Generator Aux Cooling System	H2 Coolers		4	8	3	5			2	5760
Turbine Generator Aux Cooling System	H2 Cooling Valve		1	1	1		2		3	30
Turbine Generator Aux Cooling System Turbine Generator Aux Cooling System	H2 Cooling Control Piping		1	3	1	5	6		5	30 900
Turbine Generator Aux Cooling System Turbine Generator Aux Cooling System	Valves		2	1	1	1	6		5	60
Turbine Generator Aux Cooling System	Synchronous Condensor Transmi	ssion Oil Cooler	1	3	1	1	6		4	72
Condenser Air Extraction System	Air Extraction Vacuum Pump Seal	ls	1	8	3		1		5	600
Condenser Air Extraction System	Mechanical Vacuum Pumps		2	8	3	5	1	1	5	1200
Condenser Air Extraction System Condenser Air Extraction System	Vacuum Breakers Piping		2	8	8	-	-	1	5	9600 7200
Condenser Air Extraction System	Valves	Manual Valves	2	1	1	1	-		1	4
Condenser Air Extraction System	Valves	Check Valves	2	3	3	5			5	900
Condenser Air Extraction System	Valves	Control Valves	2	3	1	5			5	600
Turbine Generator System Stage 2	Turbine Lube Oil System	Lube Oil Tank	4	1	1				3	1440
Turbine Generator System Stage 2 Turbine Generator System Stage 2	Turbine Lube Oil System Turbine Lube Oil System	Lube Oil Purification Shaft Driven Oil Pump	6	8	8				2	120 6400
Turbine Generator System Stage 2 Turbine Generator System Stage 2	Turbine Lube Oil System	Auxiliary Oil Pump	2	8	1	5			5	4800
Turbine Generator System Stage 2	Turbine Lube Oil System	AC Flushing Oil Pump	2	1	1	5		1	5	50
Turbine Generator System Stage 2	Turbine Lube Oil System	DC Oil Pump	6	8	3	5			5	21600
Turbine Generator System Stage 2	Turbine Lube Oil System	Jacking Oil Pump	2	1	1	5			5	300
Turbine Generator System Stage 2 Turbine Generator System Stage 2	Main Steam Chest Assembly Main Steam Chest Assembly	Control Valves	2	8	8	5	6	1	5	1920 3200
Turbine Generator System Stage 2 Turbine Generator System Stage 2	Main Steam Chest Assembly	Stop Valves	2	4		5	_	1	5	1200
Turbine Generator System Stage 2	HP Turbine		4	8	_	5	6	1	5	4800
Turbine Generator System Stage 2	IP Turbine		4	8	1	5			5	4800
Turbine Generator System Stage 2	LP Turbine	Frank Chandral	4	8	1	5			5	4800
Turbine Generator System Stage 2 Turbine Generator System Stage 2		Front Standard Electrical Trip Test Device	2	8	1 8	5	6		3	360 38400
Turbine Generator System Stage 2		Mechanical Overspeed Trip Device	4	8	1	5			5	9600
Turbine Generator System Stage 2		Overspeed Trip Test Device	2	1	1	1	6		5	60
Turbine Generator System Stage 2		Governor	4	8	8	5	6		5	76800
Turbine Generator System Stage 2	Reheat Steam Chest Assembly	0.1	4	8	1	5			2	1920
Turbine Generator System Stage 2 Turbine Generator System Stage 2	Reheat Steam Chest Assembly Steam Seal Regulator	Reheat/ICV Valves	2	8	8	5		2	5	3200 3200
Turbine Generator System Stage 2	Turning Gear		4	1	1	5	_	1	5	400
Generator	Rotor		4	8	8	5			5	76800
Generator	Rotor	Slip Rings/Brush Gear	4	8			_		3	5760
Generator	Stator	0. 10%	4	8	8				5	76800
Generator Generator	Stator Stator	Stand Off Insulators PT Cubicle	2	8	1				5	4800 2400
Generator	Stator	Stator Relay	4	8	1			_	5	4800
Generator	Stator	Neutral Grounding Transformer	4	8	1	5			5	4800
Generator	Exciter	Bridges	2	8	8			2	5	6400
Generator Generator	Exciter Exciter	Channels Rectifying Transformer	10	8	8	5		2	5	6400 160000
Generator	Exciter	Field Breaker	2	8	8				5	32000
Generator	Seal Oil System	Seal Oil Pumps	2	2	1	5	1	2	5	200
Generator	Seal Oil System	AC Seal Oil Pump	2	2	1	5	_	2	5	200
Generator	Seal Oil System	AC Seal Oil Vacuum Pump DC Seal Oil Pump	2	2	1	5	1	2	5	200 600
Generator Generator	Seal Oil System Seal Oil System	Vacuum Tank	2	2	1	5			5	200
Generator	Seal Oil System	Vacuum Tank Level Control	2	2	1	5	1		5	200
Generator	Seal Oil System	Seals	2	8	3	5	6	2	5	14400
Generator	Seal Oil System	Piping	2	2	1	5	_		3	1440
Generator Generator	Seal Oil System Seal Oil System	Valves Pressure Transmitter	2	1	1	3	6		3	72 150
Generator	Seal Oil System	Regulator	4	3	1	5	2		5	1200
Generator	Seal Oil System	Regulator Filter	1	1	1	5			3	60
Generator	Seal Oil System	Float Trap	4	3	1		2	_	3	720
Generator	Seal Oil System	Air Detraining Tank	4	3	1	5	_	_	3	720
Generator Generator	Seal Oil System Gas Control Cabinet	Hydrogen Detraining Tank Purity Meter	2	3	1	5	_		5	960 300
Generator		Scavenge Valve	2	4	1				5	200
Generator		Dew Point Meter	2	1	1	5	2	1	2	40
Generator	Gas Purging System		2	3	1				3	540
Generator Generator	Emergency Hydrogen Venting Syncronous Condensor	Pony Motor	2	4	1	1	6		1	4 240
Generator	Syncronous Condensor	Gearbox	2	4	1				5	240
Generator	Syncronous Condensor	SSS Clutch	2	4	1				5	240
Generator	Syncronous Condensor	Run Up Controls	1	4	1				5	120
Generator	Syncronous Condensor 258V DC System	Thrust Bearing	2	8	8	5			5	19200
Powerhouse and Switchyard Single Line Powerhouse and Switchyard Single Line	258V DC System 258V DC System	Panel Battery	6	4	8	5	6		5	57600 14400
Powerhouse and Switchyard Single Line	258V DC System	Charger	4	4	3	5	6	-	5	14400
Powerhouse and Switchyard Single Line	258V DC System	Exhaust Fan	6	1	1	5			4	480
Powerhouse and Switchyard Single Line	UPS (Unit 3)	Charger/Controls	4	3	1	5			5	1200
Powerhouse and Switchyard Single Line	UPS (Unit 3)	480V Battery Banks	6	3	1	5			5	5400
Powerhouse and Switchyard Single Line Circulating Water and Screen Wash System	UPS (Unit 3) Vacuum Seal Pit	Cooling Fans	4	3	1	5	6		1	150 480
Circulating Water and Screen Wash System	General Service Heat Exchangers		2	3	1	5			3	180
Circulating Water and Screen Wash System	Mechanical Vacuum Pump Heat E		2	8	1	5	3	1	3	720
Circulating Water and Screen Wash System	T.G. Auxiliary Cooling Heat Excha	ngers	2	1	1	5			3	60
Circulating Water and Screen Wash System Circulating Water and Screen Wash System	Temperature Control Valve (Pnue C.W. Pumps	ematic)	4	3 8	1 8		_		3 5	90 19200
Circulating Water and Screen Wash System Circulating Water and Screen Wash System	Dual Flow Travelling Screens		4	8	_	5		1	3	19200 480
Circulating Water and Screen Wash System	C.W. Booster Pumps		2	1	1	5	1		5	50
Circulating Water and Screen Wash System	Screen Wash Pumps		2	2	1				1	20
Circulating Water and Screen Wash System	Screen Spray Wash Header		2	2	1				1	20
Circulating Water and Screen Wash System Circulating Water and Screen Wash System	Screen Spray Wash Pinch Valve CW Piping		4	2 8	1				4	20 3840
Circulating Water and Screen Wash System Circulating Water and Screen Wash System	Manual Valves		2	1	1	2	3		2	3840
Circulating Water and Screen Wash System	CW Discharge Valves		4	_ 3	8		2	1	5	4800
Circulating Water and Screen Wash System	Condensor Motorized Discharge	Valves	4	3	1	5			5	900

CRITICALITY DEFINITIONS

	Equipment Factors	
FACTOR	1 - Health and Safety	
Level	Definition	Score
1	Minor	1
2	A medical treatment incident or minor damage to plant is foreseeable less than 2 hours D/T	2
3	A lost time incident or serious damage to plant is foreseeable 2 hours to 8 hours D/T	4
4	A disability or catastrophic damage to plant more than 8 hours D/T	6
5	Loss of life or plant incident that is reportable to Department of Labour more than 8 hr D/T	10
Explanation:	- Covers both maintenance and operation. Can cover both people and p	lant.

FACTOR	2 - Output (Unit Capacity derating/outage - time and impac	t)
Level	Definition	Score
1	No effect	1
2	Reduced rate minor effect	2
3	Reduced rate serious effect or off between 10 mins and 2 hours	3
4	Off 2 hours to 8 hours	4
5	Off for more than 8 hours	8
Explanation:	- Based on 100% unit availability requirement at all times.	

FACTOR	3 - Quality Of Desired Output	
Level	Definition	Score
1	No effect or Planned Shutdown	1
3	Controlled Shutdown	3
4	Trip/Under Frequency Load Shed	8
Explanation:- Do not chose the worst case but one that is reasonably foreseeable.		

FACTOR	4 - Utilization	
Level	Definition	Score
1	Used less than 33% of the time	1
2	Used between 33% and 66% of the time	2
3	Used more than 66% of the time	3
4	Used 100% of time	5
Explanation:- The percentage time when its functionality is required for continuous plant operation.		

CRITICALITY DEFINITIONS

FACTOR	5 - Alternatives (Same as Loss Mitigation)	
Level	Definition	Score
1	Standby or alternative route readily available	1
2	Standby or alternative route available but with minor difficulty	2
3	Standby or alternative route available with difficulty OR loss of unit capacity	3
4	No standby or alternative route available without extreme difficulty	4
5	No alternative	6

FACTOR	6 - Environment	
Level	Definition	Score
1	No effect	1
2	Minor local effect - can be contained on site eg noise/smell	2
3	More serious local / minor off-plant - liable to result in discharge to atmosphere or water course eg ammonia/fumes/oil	4
4	Reportable or exceeds consents - has potential for prosecution	6
5	More serious off-plant or off-site effect which involves outside services	10

Explanation:- Use reasonably foreseeable effects rather than worse case. Include dust, noise, gas, liquids etc. Use this factor where the effect on the environment is important. Include any effect caused while the equipment is breaking down, any knock off effect and any environmental effect due to the maintenance itself.

FACTOR	7 - Time to Effect	
Level	Definition	Score
1	Negligible effect	1
2	More than 24 hours	2
3	Between 2 hours and 24 hours	3
4	Between 30 mins and 2 hours	4
5	Immediate	5
Explanation: Sometime the effect of a breakdown is not felt immediately because buffer storage is		

Explanation:- Sometime the effect of a breakdown is not felt immediately because buffer storage is provided.