Decommissioning of a Processing Plant and CHP Systems

Presented by **CHA Consulting, Inc.**

Hailey Slamka, MEng, EIT
Electrical Engineer (High Voltage Electrical Group)

Chris Csernyei, M.E.Sc, P.Eng
Mechanical Engineer (Thermal Mechanical Group)

IDEA2019
The Energy for More Resilient Cities
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CHA

Agenda

- Introduction
- Decommissioning Process
- Project Description
- Corrosion Inhibitors
- Electrical Decommissioning
- Mechanical Decommissioning
- Questions

Introduction

What?

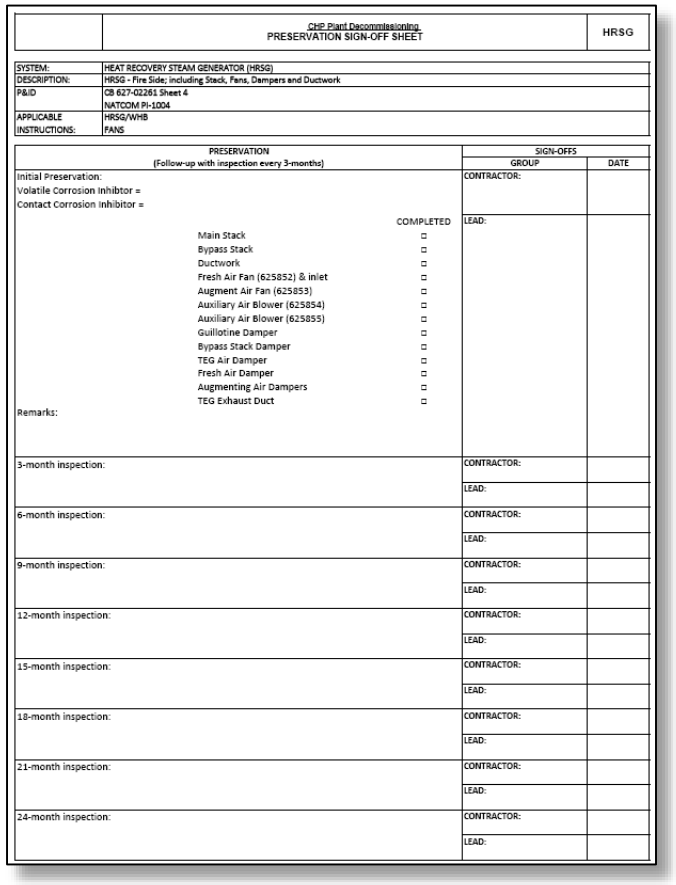
Officially take a factory or other industrial building out of use and make the area safe.

Important considerations:

- Communicate
- Availability of information for existing equipment
- Existing procedures?
- **Assist & recommend <u>DON'T</u> control & override**

Decommissioning Process

Communication



CHP Plant Decommissioning
PRESERVATION SIGN-OFF SHEET — HRSG

SYSTEM:	HEAT RECOVERY STEAM GENERATOR (HRSG)
DESCRIPTION:	HRSG - Fire Side; including Stack, Fans, Dampers and Ductwork
P&ID	CB 627-02261 Sheet 4 NATCOM PI-1004
APPLICABLE INSTRUCTIONS:	HRSG/WHB FANS

PRESERVATION (Follow-up with inspection every 3-months)		SIGN-OFFS GROUP	DATE
Initial Preservation: Volatile Corrosion Inhibtor = Contact Corrosion Inhibitor =		CONTRACTOR:	
	COMPLETED	LEAD:	
Main Stack	☐		
Bypass Stack	☐		
Ductwork	☐		
Fresh Air Fan (625852) & inlet	☐		
Augment Air Fan (625853)	☐		
Auxiliary Air Blower (625854)	☐		
Auxiliary Air Blower (625855)	☐		
Guillotine Damper	☐		
Bypass Stack Damper	☐		
TEG Air Damper	☐		
Fresh Air Damper	☐		
Augmenting Air Dampers	☐		
TEG Exhaust Duct	☐		
Remarks:			
3-month inspection:		CONTRACTOR:	
		LEAD:	
6-month inspection:		CONTRACTOR:	
		LEAD:	
9-month inspection:		CONTRACTOR:	
		LEAD:	
12-month inspection:		CONTRACTOR:	
		LEAD:	
15-month inspection:		CONTRACTOR:	
		LEAD:	
18-month inspection:		CONTRACTOR:	
		LEAD:	
21-month inspection:		CONTRACTOR:	
		LEAD:	
24-month inspection:		CONTRACTOR:	
		LEAD:	

End Goal

- Full or partial decommissioning?
- End result of equipment:
  - Demolition
  - Abandon in place
  - Preserve for future use
  - Preserve for sale (i.e. relocation)

Deliverable

- How will the end goal be communicated?
- Possible deliverables:
  - Decommissioning procedures
  - Preservation instructions
  - Checklists
  - Report
  - Photographs

Project Description

Facility: Processing plant equipped with Solar Taurus 70 GTG package w/ HRSG, and Solar Centaur 40 GTG package w/ HRSG

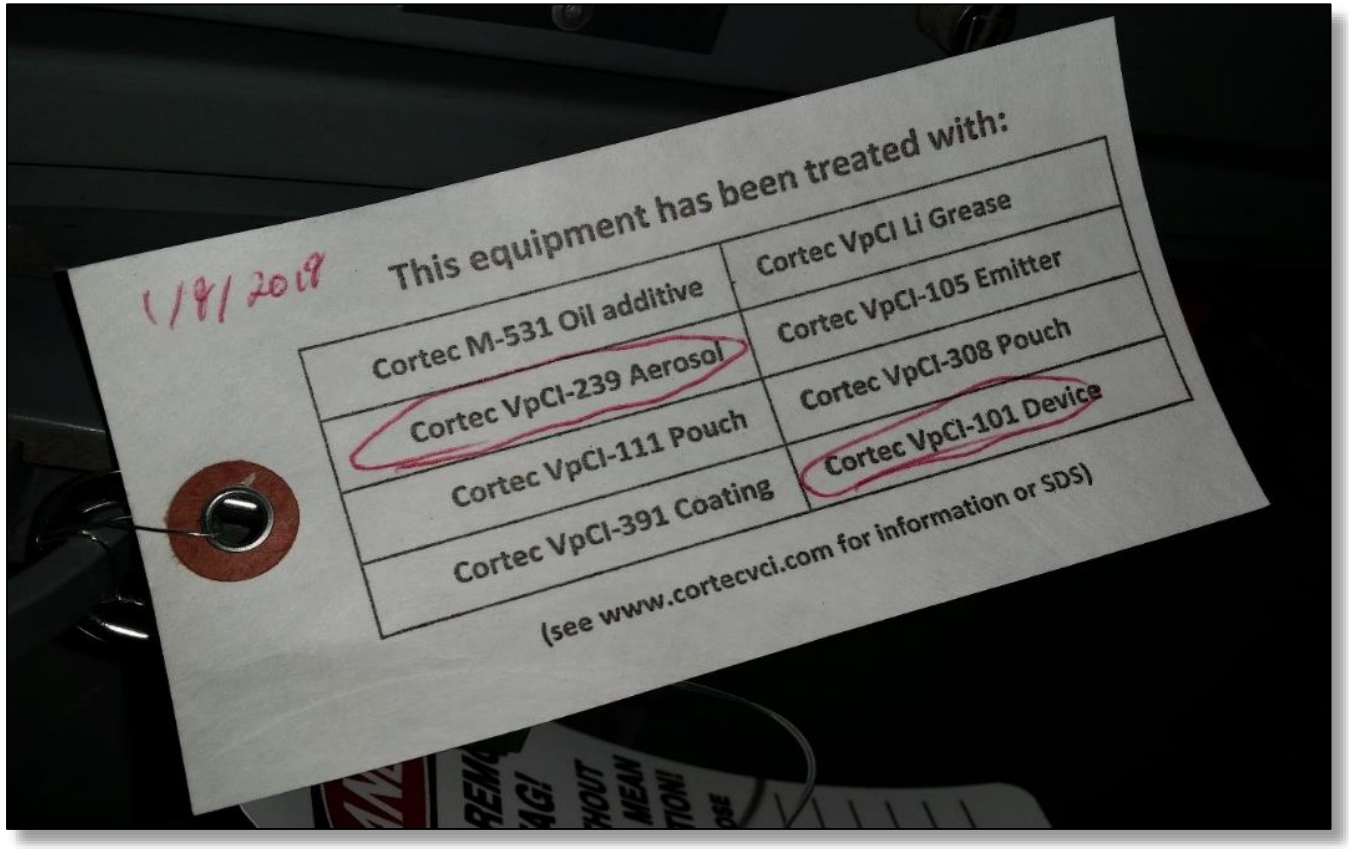
End Goal

- Part of the plant was to remain with limited function
- Remainder of plant to be decommissioned
  - Equipment with motors >100HP to be preserved
  - GTG's to be relocated
  - Remaining equipment will be abandoned in place or returned to vendors

Deliverable

- No established deliverable (worked with the client to determine appropriate deliverable)

Corrosion Inhibitors



Different Application Types

- Oil additive
- Aerosol
- Pouch
- Coating
- Emitter
- Device
- Grease

Electrical Decommissioning

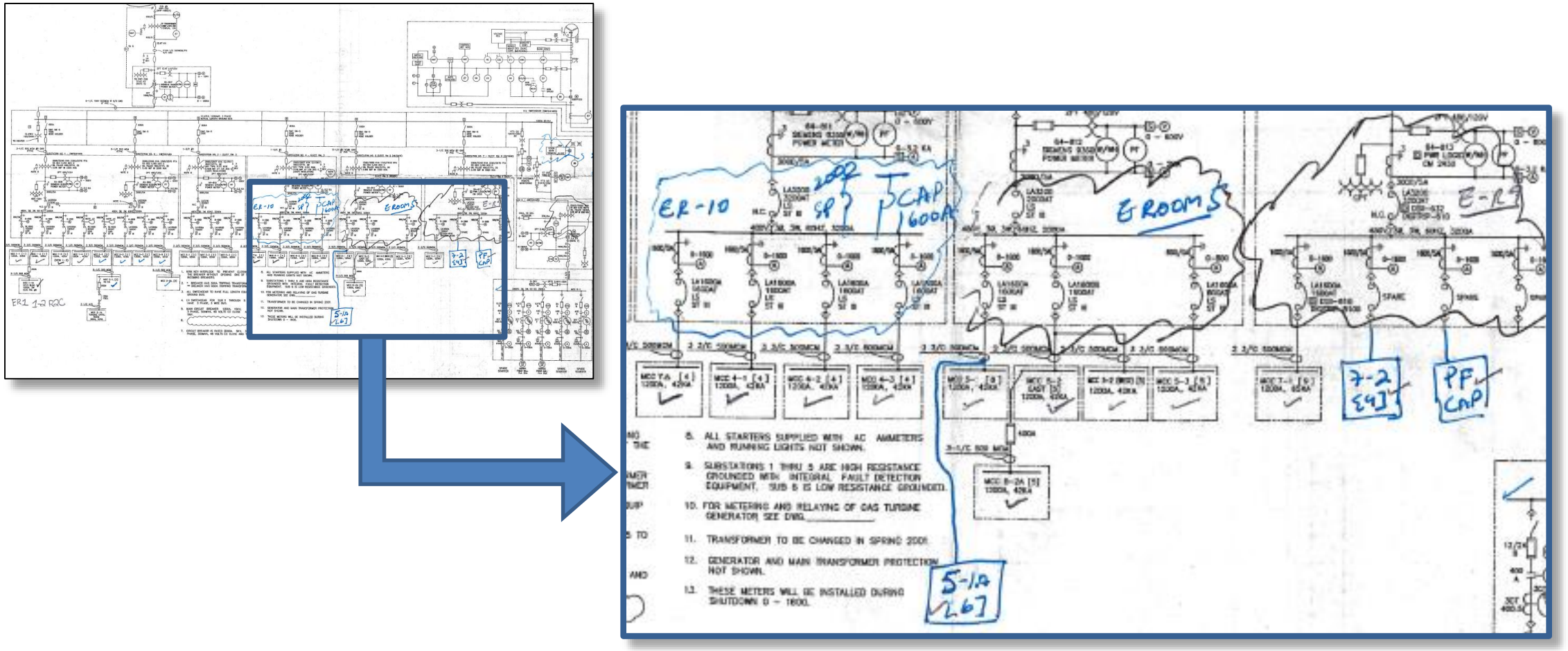
Electrical Decommissioning

Availability of Information

- Existing single line was out of date
- No documentation of existing MCC configurations and loads

Steps Taken

- Survey entire facility
- Updated existing SLD for reference
- Record every MCC and MCC load within each E-Room within the facility
- Generate a table for each E-Room listing all MCCs/loads


ER-10
PCAP 1600A
E ROOMS
7-2 E93
PF CAP
5-1A L67
6. ALL STARTERS SUPPLIED WITH AC AMMETERS AND RUNNING LIGHTS NOT SHOWN.
9. SUBSTATIONS 1 THRU 5 ARE HIGH RESISTANCE GROUNDED WITH INTEGRAL FAULT DETECTION EQUIPMENT. SUB 6 IS LOW RESISTANCE GROUNDED.
10. FOR METERING AND RELAYING OF GAS TURBINE GENERATOR SEE DWG.
11. TRANSFORMER TO BE CHANGED IN SPRING 2001
12. GENERATOR AND MAIN TRANSFORMER PROTECTION NOT SHOWN.
13. THESE METERS WILL BE INSTALLED DURING SHUTDOWN 0 - 1800.

Generation of Deliverables

- Create a preliminary decommissioning checklist
  - Determined which loads were to be shut down/remain active
- Submitted for client to review and adjust
- Create a set of decommissioning instructions for contractor
- Finalize checklist with following details:
  - End State
  - Layup/preservation requirements
  - Decommission Date
  - Electrical Contractor sign off
- Create a list of instructions/procedures and final report

Decommissioning Instructions

- **MCC Load Decommissioning Procedure**
  - Lockout/Tagout at each MCC bucket/local disconnects (if applicable)
  - Inject preservatives into decommissioning MCC buckets
  - For fully decommissioned MCCs, lockout/tagout at upstream substation
- **HV Switchyard Decommissioning Procedure**
  - Remain as is per utility agreement (will vary, based on project)
- **HV Switchgear/CHP Decommissioning Procedure**
  - Same as MCC Load Decommission with the addition of:
    - E.O.D.O breakers – racked out with control fuses removed, lockout/tagout
    - Relay Software – download and give copies to client
    - Annual switchgear cleaning

	Plant Decommissioning Electrical Instructions	E-Rooms and MCCs

NOTE: This is a general list of instructions for how the electrical equipment decommissioning is to be conducted.

List of Instructions:

Decommissioning of MCCs:

1. Follow the electrical decommissioning checklist, categorized by electrical room and MCC to determine which loads are to be kept active and which loads are to be decommissioned.

   NOTE: All spare breakers and breakers with blank labels are to be decommissioned.

2. For loads being decommissioned, follow electrical **LOCKOUT / TAGOUT** procedure and process **LOCKOUT / TAGOUT** procedure. Keys to be handed over to the plant manager.
3. Ensure any motor load with local disconnects undergo **LOCKOUT / TAGOUT** procedure at the local disconnect in addition to its corresponding MCC breaker. Keys to be handed over to the plant manager.
4. All the decommissioned switchgears, panels, MCCs, and junction boxes to be preserved against corrosion.

Preservation and Inspection of MCC Motor Loads:

1. For motors of 100HP or greater being preserved, refer to the corresponding MESI for instruction details.

Decommissioning of Substations and Switchyards:

1. Substation configurations are to be left "as is" unless otherwise noted.
2. Decommissioning of MCCs must be completed prior to making configuration alterations to the substations and switchyards.
3. Substation 1 and 2:
   a. Substation 1 will be used to provide power to the downstream switchgear.
   b. Substation 2 will be decommissioned.
   c. Follow electrical **LOCKOUT/TAGOUT** procedure for substation 2 fused switch found in the HV switchgear located in the switchyard. Keys to be handed over to the plant manager.
4. Substation 4:
   a. Substation 4 will be decommissioned.
   b. Follow electrical **LOCKOUT/TAGOUT** procedure for the following switchgear circuit breakers located within ER-10: substation 4 low voltage main breaker, MCC 4-1, MCC 4-2, MCC 4-3, MCC Y-D, cap banks, and spare. Keys to be handed over to the plant manager.
   c. Follow electrical **LOCKOUT/TAGOUT** procedure for primary substation 4 transformer fused switch found in the HV switchgear located in the switchyard. Keys to be handed over to the plant manager.
5. Substation 5:

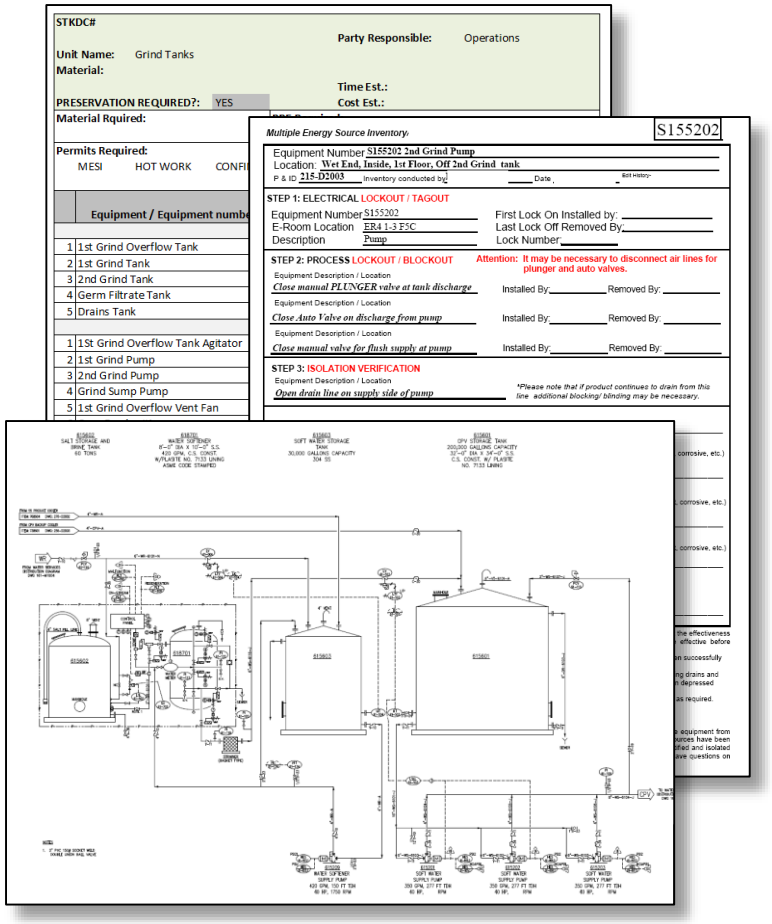
Plant Decommissioning
ELECTRICAL E-ROOM AND MCC CHECKLIST
(E-Room 2)

Date: 02/11/2019
CHA Project No:
Rev: PA

Dwg Ref.	Tag No.	Equipment / Material	Decommissioning Date	Decommissioning By	End State	Location / Boundary	Recommendations	Layup Requirement	Preservation Measures	Remarks	Inspection Date	
											Contractor	CHA
	525212	ISO Column Sump Pump		N/A	Closed	5C		N/A		Break Station		1/28/2019
		Welding Receptbale El. 100ft. Col E.7		Contractor	Lock and Tag	5D		Switch off the disconnect. Lock and tag.	Cortec VpC-239 Aerosol, Cortec VpCI-101 Device			1/28/2019
		Welding Receptbale El. 100ft. Col B.6		Contractor	Lock and Tag	5D		Switch off the disconnect. Lock and tag.	Cortec VpC-239 Aerosol, Cortec VpCI-101 Device			1/28/2019
		Size 1 Spare w/CPT		Contractor	Lock and Tag	5E		Switch off the disconnect. Lock and tag.	Cortec VpC-239 Aerosol, Cortec VpCI-101 Device			1/28/2019
		No Tag		Contractor	Lock and Tag	5F		Switch off the disconnect. Lock and tag.				1/28/2019
		Welding Receptable El. 124ft. Col D.7		N/A	Closed	5F		N/A				1/28/2019
		Space		N/A		6A		N/A				1/28/2019
		Space		N/A		6B		N/A				1/28/2019
		Space		N/A		6C		N/A				1/28/2019
	725201	Adsep Recir Pump #1		Contractor	Lock and Tag	6D		Switch off the disconnect. Lock and tag.	Cortec VpC-239 Aerosol, Cortec VpCI-105 Emitter			1/28/2019
	23811	Fiber Pre-Dewtr. Paddle Screen #3		Contractor	Lock and Tag	7A		Switch off the disconnect. Lock and tag.	Cortec VpC-239 Aerosol, Cortec VpCI-105 Emitter			1/28/2019
	72520	Adsep Recir Pump #2		Contractor	Lock and Tag	7B		Switch off the disconnect. Lock and tag.	Cortec VpC-239 Aerosol, Cortec VpCI-105 Emitter			1/28/2019
Equipment MCC 2-1 (Rear)												
	716703	Bulk Carbon Rotary Airlock		Contractor	Lock and Tag	1A		Switch off the disconnect. Lock and tag.	Cortec VpC-239 Aerosol, Cortec VpCI-101 Device			1/28/2019
	716704	Fitler Aid Conveyor		Contractor	Lock and Tag	1B		Switch off the disconnect. Lock and tag.	Cortec VpC-239 Aerosol, Cortec VpCI-101 Device			1/28/2019
	718891A	CarbonHopper Dust Collector Index Drive		Contractor	Lock and Tag	1C		Switch off the disconnect. Lock and tag.	Cortec VpC-239 Aerosol, Cortec VpCI-101 Device			1/28/2019
		Space		N/A		1D		N/A				1/28/2019
	718893A	Filt. Aid Hopper Dust Collector Bag Cleaner		Contractor	Lock and Tag	1E		Switch off the disconnect. Lock and tag.	Cortec VpC-239 Aerosol, Cortec VpCI-101 Device			1/28/2019
	718893B	Filt. Aid Hopper Dust Collector Index Drive		Contractor	Lock and Tag	1F		Switch off the disconnect. Lock and tag.	Cortec VpC-239 Aerosol, Cortec VpCI-101 Device			1/28/2019
	735221	Adsep De-rator Sup Pmp		Contractor	Lock and Tag	2A		Switch off the disconnect. Lock and tag.	Cortec VpC-239 Aerosol, Cortec VpCI-101 Device			1/28/2019
	458103	Precoat Tank Agitator		Contractor	Lock and Tag	2B		Switch off the disconnect. Lock and tag.	Cortec VpC-239 Aerosol, Cortec VpCI-101 Device			1/28/2019
	455206	Precoat Tank Pump		Contractor	Lock and Tag	2C		Switch off the disconnect. Lock and tag.	Cortec VpC-239 Aerosol, Cortec VpCI-111 Pouch			1/28/2019
		Space		N/A		2D		N/A				1/28/2019
	716702	Filt. Aid Hopper Rotary Airlock		Contractor	Lock and Tag	2E		Switch off the disconnect. Lock and tag.	Cortec VpC-239 Aerosol, Cortec VpCI-101 Device			1/28/2019
	435206	Seal Water Return Pump		Contractor	Open	3A		Switch off the disconnect. Lock and tag.		Future Decommissioning		1/28/2019
	436701	Spent Filter Aid Conveyor		Contractor	Lock and Tag	3B		Switch off the disconnect. Lock and tag.	Cortec VpC-239 Aerosol, Cortec VpCI-101 Device			1/28/2019
	438101	Filter Aid Slurry Agitator		Contractor	Lock and Tag	3C		Switch off the disconnect. Lock and tag.	Cortec VpC-239 Aerosol, Cortec VpCI-101 Device			1/28/2019
	715896	Filter Aid Hopper Exhaust Fan		Contractor	Lock and Tag	3D		Switch off the disconnect. Lock and tag.	Cortec VpC-239 Aerosol, Cortec VpCI-101 Device			1/28/2019
		Blank Label		Contractor	Lock and Tag	3E		Switch off the disconnect. Lock and tag.				1/28/2019
	715897	Carbon Hopper Dust Fan		Contractor	Lock and Tag	3F		Switch off the disconnect. Lock and tag.	Cortec VpC-239 Aerosol, Cortec VpCI-101 Device			1/28/2019

Mechanical Decommissioning

Mechanical Decommissioning



- What?
  - GTG
  - HRSG/WHB
  - Deaerator
  - Gas Compressor(s)
  - Chemical systems
  - Pumps & Blowers
  - Piping
  - Process equipment
- Where is it located?
- How will it be decommissioned?
- Same 3 steps for **ALL** equipment:
  - Disconnected (LOTO) > Clean > Seal

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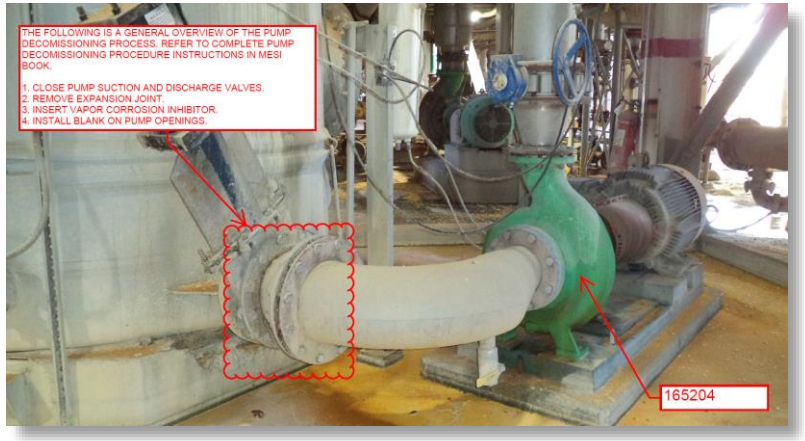
GTG

- T70 & C40
- Preserved by equipment vendor (Solar)
- Borescope inspection and equipment assessment (Solar)
- GT skid & generator (preserved)
- Lube oil system (leave in service)
- Controls (preserved)

HRSG

- Gas side & water side
- Purge gas path
- General inspection of drums
- Drain > clean > seal
- Vapor corrosion inhibitor for internals
- Contact corrosion inhibitor for externals
- Wrap exposed areas where water ingress could occur (i.e. PSV trough region)

- Chemical feed:
  - tubing drained & purged (nitrogen then compressed air) then returned to vendor
  - Chemical vendor instructions to be followed
- Deaerator
  - Drained and inspected
  - Vapor corrosion inhibitor for internals
  - Open ends sealed
  - NPFA 57 for safe venting
- Gas Compressor
  - NPFA 57 for safe venting
  - Fuel gas piping to be purged with nitrogen; 5 – 10 psig nitrogen fill for layup
  - Gas compressor skids to be purged and prepared for return to vendor

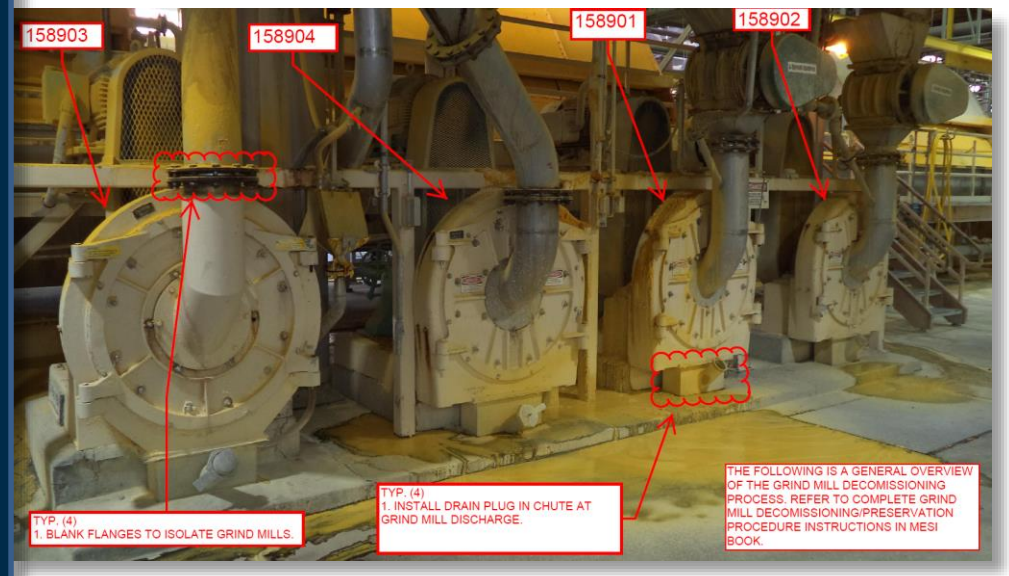


- Pumps & Blowers:
  - Identify access point (fittings/flanges/valves)
  - Clean
  - Internal (vapor) & external (contact) corrosion inhibitors
  - Bearings (grease inhibitor/oil inhibitor)
  - Wrap exposed shafts
- Piping
  - Ammonia – nitrogen then air purge; clean & dry; internal & external inhibitors; seal
  - Fuel gas – nitrogen purge; 5-10 psig nitrogen layup
  - Instrument air - nitrogen purge; 5-10 psig nitrogen layup
  - Feedwater – drain; clean & dry; internal & external inhibitors; seal
  - “As-is” – Drain; dry; seal

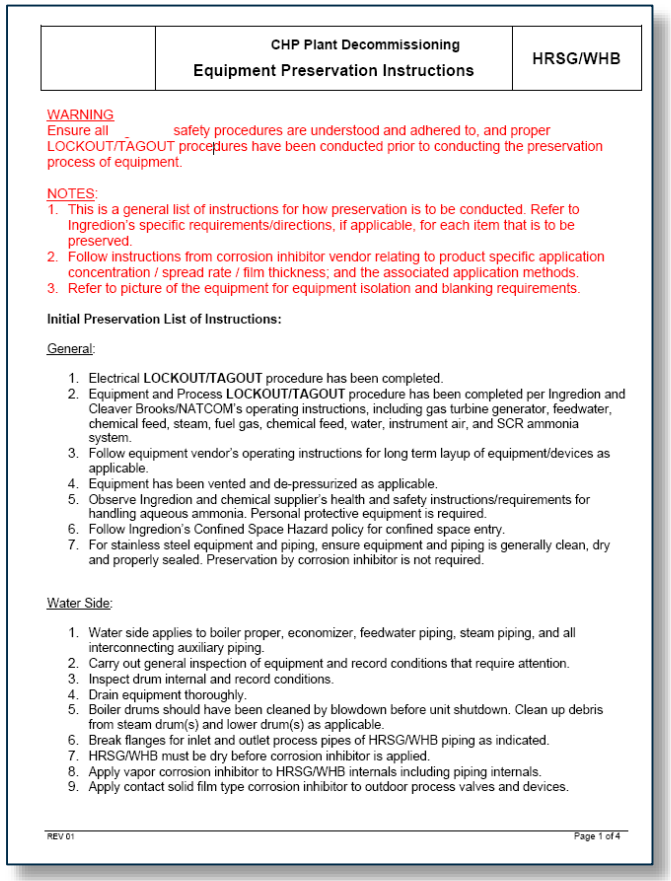

Install blank at HV-10300 outlet flange
AMMONIUM HYDROXIDE
Isolate 60 psig natural gas supply header isolation valve (HV-10300)
115892
THE FOLLOWING IS A GENERAL OVERVIEW OF THE FAN DECOMISSIONING PROCESS. REFER TO COMPLETE FAN DECOMISSIONING/PRESERVATION PROCEDURE INSTRUCTIONS IN MESI BOOK.
1. DISCONNECT FAN INLET AND OUTLET FROM ATTACHED DUCTING.
2. INSERT VAPOR CORROSION INHIBITOR.
3. INSTALL BLANK ON INLET AND OUTLET OPENINGS.
THE FOLLOWING IS A GENERAL OVERVIEW OF THE PUMP DECOMISSIONING PROCESS. REFER TO COMPLETE PUMP DECOMISSIONING/PRESERVATION PROCEDURE INSTRUCTIONS IN MESI BOOK.
TYP. (2):
1. CLOSE PUMP SUCTION AND DISCHARGE VALVES.
2. REMOVE EXPANSION JOINT.
3. INSERT VAPOR CORROSION INHIBITOR.
4. INSTALL BLANK ON PUMP OPENINGS.
155201
155202
THE FOLLOWING IS A GENERAL OVERVIEW OF THE PUMP DECOMISSIONING PROCESS. REFER TO COMPLETE PUMP DECOMISSIONING/PRESERVATION PROCEDURE INSTRUCTIONS IN MESI BOOK.
TYP. (2):
1. CLOSE PUMP SUCTION AND DISCHARGE VALVES.
2. REMOVE EXPANSION JOINT.
3. INSERT VAPOR CORROSION INHIBITOR.
4. INSTALL BLANK ON PUMP OPENINGS.

Process equipment (to be preserved)

- Empty & clean
- Apply internal & external corrosion inhibitors
- Seal openings



Major deliverables



	CHP Plant Decommissioning Equipment Preservation Instructions	HRSG/WHB

WARNING
Ensure all safety procedures are understood and adhered to, and proper LOCKOUT/TAGOUT procedures have been conducted prior to conducting the preservation process of equipment.

NOTES:
1. This is a general list of instructions for how preservation is to be conducted. Refer to Ingredion's specific requirements/directions, if applicable, for each item that is to be preserved.
2. Follow instructions from corrosion inhibitor vendor relating to product specific application concentration / spread rate / film thickness; and the associated application methods.
3. Refer to picture of the equipment for equipment isolation and blanking requirements.

Initial Preservation List of Instructions:

General:

1. Electrical **LOCKOUT/TAGOUT** procedure has been completed.
2. Equipment and Process **LOCKOUT/TAGOUT** procedure has been completed per Ingredion and Cleaver Brooks/NATCOM's operating instructions, including gas turbine generator, feedwater, chemical feed, steam, fuel gas, chemical feed, water, instrument air, and SCR ammonia system.
3. Follow equipment vendor's operating instructions for long term layup of equipment/devices as applicable.
4. Equipment has been vented and de-pressurized as applicable.
5. Observe Ingredion and chemical supplier's health and safety instructions/requirements for handling aqueous ammonia. Personal protective equipment is required.
6. Follow Ingredion's Confined Space Hazard policy for confined space entry.
7. For stainless steel equipment and piping, ensure equipment and piping is generally clean, dry and properly sealed. Preservation by corrosion inhibitor is not required.

Water Side:

1. Water side applies to boiler proper, economizer, feedwater piping, steam piping, and all interconnecting auxiliary piping.
2. Carry out general inspection of equipment and record conditions that require attention.
3. Inspect drum internal and record conditions.
4. Drain equipment thoroughly.
5. Boiler drums should have been cleaned by blowdown before unit shutdown. Clean up debris from steam drum(s) and lower drum(s) as applicable.
6. Break flanges for inlet and outlet process pipes of HRSG/WHB piping as indicated.
7. HRSG/WHB must be dry before corrosion inhibitor is applied.
8. Apply vapor corrosion inhibitor to HRSG/WHB internals including piping internals.
9. Apply contact solid film type corrosion inhibitor to outdoor process valves and devices.

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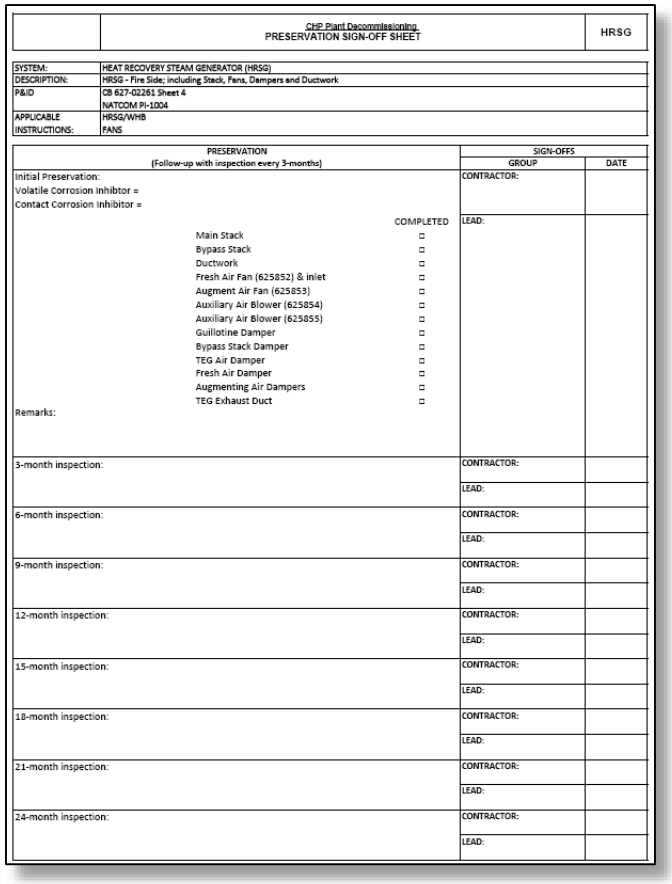
- Contractor scope of work
- Preservation instructions
- Preservation check-lists
- Photographs
- Index of mechanical equipment



	CHP Plant Decommissioning PRESERVATION SIGN-OFF SHEET	HRSG

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DESCRIPTION:	HRSG - Fire Side; including Stack, Fans, Dampers and Ductwork
P&ID	CB 627-02261 Sheet 4 NATCOM PI-1004
APPLICABLE INSTRUCTIONS:	HRSG/WHB FANS

PRESERVATION (Follow-up with inspection every 3-months)		SIGN-OFFS GROUP	DATE
Initial Preservation: Volatile Corrosion Inhibtor = Contact Corrosion Inhibitor =		CONTRACTOR:	
	COMPLETED	LEAD:	
	Main Stack ☐		
	Bypass Stack ☐		
	Ductwork ☐		
	Fresh Air Fan (625852) & inlet ☐		
	Augment Air Fan (625853) ☐		
	Auxiliary Air Blower (625854) ☐		
	Auxiliary Air Blower (625855) ☐		
	Guillotine Damper ☐		
	Bypass Stack Damper ☐		
	TEG Air Damper ☐		
	Fresh Air Damper ☐		
	Augmenting Air Dampers ☐		
	TEG Exhaust Duct ☐		
Remarks:			
3-month inspection:		CONTRACTOR:	
		LEAD:	
6-month inspection:		CONTRACTOR:	
		LEAD:	
9-month inspection:		CONTRACTOR:	
		LEAD:	
12-month inspection:		CONTRACTOR:	
		LEAD:	
15-month inspection:		CONTRACTOR:	
		LEAD:	
18-month inspection:		CONTRACTOR:	
		LEAD:	
21-month inspection:		CONTRACTOR:	
		LEAD:	
24-month inspection:		CONTRACTOR:	
		LEAD:	

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MECHANICAL EQUIPMENT DECOMMISSIONING SCOPE

Dwg Ref.	Tag No.	Equipment / Material	Decommissioning Date	Decommissioning By	End State	Location / Boundary	Material / Design Conditions	Condition before Shutdown / Medium in Pipe System	Inspection / Testing before Decommissioning	Action prior to Layup	Provisions req'd for Layup	Layup Requirement	Action req'd during Layup Period	Reference Photographs	Remarks	Rev.
Gas Turbine Generator System (TTG)																
		GT Skid and Generator	Nov 15, 2018 To be confirmed	Solar	Preservation mode except lube oil system	From GT air inlet to exhaust		Operating equipment	N/A	• All openings to be sealed	by Solar	by Solar	by Solar		• Borescopic inspection of turbine before mothball the unit	
		Lube Oil System	Nov 15, 2018 To be confirmed	Part of Solar's scope	Leave in Service			Lube oil	As required by Solar	• Corrosion inhibitor added to lube oil per Solar instructions	by Solar	by Solar	by Solar		• Lube oil system is required for periodic turning of turbine and generator	
		Generator and GTG Controls	Nov 15, 2018 To be confirmed	Part of Solar's scope	Preserved as part of Electrical Equipment				by Solar	by Solar	by Solar	by Solar	by Solar			
Heat Recovery Steam Generator																
		HRSG - Water Side, including economizer, feedwater piping and Steam piping	when GTG mothballed	Contractor	Preservation mode	From feedwater control valve skid to steam stop										
		HRSG - Fire Side, including bypass stack, ductwork	when GTG mothballed	Contractor	Preservation mode	From byp... main										
		Dampers - Guillotine Damper, Bypass Stack Damper, TEG Air Damper, Fresh Air Damper, Augmenting Air Dampers	when GTG mothballed	Contractor	Preserved as part of HRSG fire side	Part of th... sy...										
		Fresh Air Fan, Augmenting Air Fans, and Auxiliary Air Blowers	when GTG mothballed	Contractor	Preservation mode	Equipm...										
		Duct Burner and Fuel Train Skid, including Scanner	when GTG mothballed	Contractor	Preserved as part of 60 psig Fuel Gas Piping											
		BMS and HRSG Control Panel	when GTG mothballed	Contractor	Preserved as part of Electrical Panels											
		Steam Drum PSVs	when GTG mothballed	Contractor	Preserved as part of HRSG Water Side	Equipm...										
		Cont. Blowdown Heat Recovery & Piping Blowdown Tank & Piping	when GTG mothballed	Contractor	Preservation mode	Equipm...										
NATCOM-P1-1003		SCR Ammonia Skid	when GTG mothballed	Contractor	Preservation mode	From tran... inside con... vapo...										

EQUIPMENT PRESERVATION SUMMARY LIST
(Equipment with motor 100 HP and larger)

Date:	11/14/2018
CHA Project No.:	35099
Rev:	PA

Book/MESI	Item	Description	Tag	HP	System	Category	Preserve Motor	Preserve Equipment	Comment
1	3	Corn Unloading Dust Collector Fan	115892	100	Corn Unloading	Blower/Fan	Y	Y	
	9	E-1 Bucket Elevator	116703	125	Corn Unloading	Elevator/Conveyor/Misc fans&pumps	Y	Y	
	10	E-2 Bucket Elevator	116704	200	Corn Unloading	Elevator/Conveyor/Misc fans&pumps	Y	Y	
	14	D-7 Corn Supply Conveyor	116719	100	Corn Unloading	Elevator/Conveyor/Misc fans&pumps	Y	Y	
3	1	Steep Advance Pump (Recirculation)	145201	125	Corn Steeping	P...			
	2	West Sluice Pump	145202	125	Corn Steeping	P...			
	17	East Sluice Pump	145231	125	Corn Steeping	P...			
4	2	1st Grind Pump	155201	150	Corn Grinding	P...			
	3	2nd Grind Pump	155202	125	Corn Grinding	P...			
	11	1st Grind Mill #1	158901	100	Corn Grinding	T...			
	12	1st Grind Mill #2	158902	100	Corn Grinding	T...			
	14	2nd Grind Mill #1	158903	100	Middlings Concentration	Grin...			
	15	2nd Grind Mill #2	158904	150	Middlings Concentration	Grin...			
7	1	Fiber Sep Supply Pump	165201	125	Fiber Separation	P...			
	2	1st Fiber Wash Supply Pump	165202	125	Fiber Separation	P...			
	3	2nd Fiber Wash Supply Pump	165204	125	Fiber Separation	P...			
	28	Fiber Mill #1	168901	600	Fiber Separation	T...			
	29	Fiber Mill #2	168902	600	Fiber Separation	T...			
9	1	Primary Supply Pump	175201	100	Primary Separation	P...			
	11	Middling Concentrator	178802	200	Primary Separation	M...			
	12	Primary Separator - Small	178803	150	Primary Separation	M...			
	14	Primary Separator - Big	178812	300	Primary Separation	M...			
	22	MST - Mill Starch Thickener	188801	150	Middlings Concentration	M...			
10	4	2nd Stage Pump	195205	100	Starch Washing	P...			
	5	3rd Stage Pump	195206	100	Starch Washing	P...			
	6	4th Stage Pump	195207	100	Starch Washing	P...			
	7	5th Stage Pump	195208	100	Starch Washing	P...			
	8	6th Stage Pump	195209	100	Starch Washing	P...			
	9	7th Stage Pump	195210	100	Starch Washing	P...			
	10	8th Stage Pump	195211	100	Starch Washing	P...			
	11	9th Stage Pump	195212	100	Starch Washing	P...			
	12	10th Stage Pump	195213	100	Starch Washing	P...			
	13	11th Stage Pump	195214	100	Starch Washing	P...			
	14	12th Stage Pump	195215	100	Starch Washing	P...			
	15	13th Stage Pump	195216	100	Starch Washing	P...			
	18	ABS to Starch Station	195219	100	Starch Washing	P...			
	19	ABS to Starch Station	195220	100	Starch Washing	P...			
11	11	Starch Dryer Fan West (#1)	315891	200	Starch Dewatering/Drying	Blow...			
	12	Starch Dryer Fan East (#2)	315894	200	Starch Dewatering/Drying	Blow...			
	15	Starch Transport Blower	316702	100	Starch Dewatering/Drying	Elevator/Conveyo...			
	27	Starch Dewatering Centrifuge (reineveld) Main Drive	318803	200	Starch Dewatering/Drying	M...			

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Mechanical Decommissioning

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Conclusion


Communication
• "End Goal"
• Deliverable
Gap Analysis
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• LOTO?
• Safety?
Site Survey
• What?
• Where?
• How?
Documentation Development
• Checklist
• Markups
• Specification
Progress Visit
• What's been done?

Thank You

For more information, please contact:

Hailey Slamka, MEng, EIT
Electrical Engineering
High Voltage Electrical Group
p. 289-273-7334
e. hslamka@chacompanies.com

Christopher Csernyei, P.Eng
Mechanical Engineer
Thermal Mechanical Group
p. 289-273-7098
e. ccsernyei@chacompanies.com

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