

Deer Park Energy Center Procedures Manual

PROCEDURE: WINTER READINESS PLAN

NUMBER:

REVISION: 2021

DPEC-IW-0001

DocuSigned by:
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Richard Davis

PLANT MANAGER

DS
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11-30-2021

DATE

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PURPOSE

The purpose of this plan is to describe the process to be used when preparing the Deer Park Energy Center for reliable operation during the winter period.

This plan is to support the safe and reliable plant operation through normal and extreme temperatures, weather patterns, and grid operating conditions that are specific to the Winter Season.

This plan is to be used in conjunction with Calpine Standard CSN-102A as the guiding document coupled with plant specific seasonal readiness checklists & procedures.

SCOPE

This Winter Readiness Plan refers to the management and documentation of the scope of work activities to be completed to support winter readiness in advance of the onset of inclement weather. In addition it gives the specific checklist and procedures for dealing with inclement weather as it occurs. For purposes of winter readiness, the winter period is the period from November 1 through March 15. This plan the associated checklist & procedures apply to the Deer Park Energy Center.

Preparation for seasonal readiness declaration shall be managed through the adherence of an established set of milestones. Each milestone has an owner and a defined set of deliverables and completion date.

Definitions

Winter Period: November 1 through March 15 (may vary for specific plant locations – any variance from this definition, must be included in the plant specific Winter Readiness Plan)

Critical Equipment: plant equipment that, during cold weather events, has the potential to: initiate a unit trip, impact unit startup, initiate an automatic runback, adversely affect environmental controls that may cause an outage or derate, adversely affect the delivery of fuel or water supply to the unit, or create a safety hazard. The intent is to identify reliability issues that are directly related to cold weather, not reliability issues in general.

References

CSN-102A (Winter Readiness Preparation and Operation)

Responsibilities

Regional Operations Vice Presidents

The Regional Operations Vice Presidents (RVPs) are responsible for certifying their region's Winter Readiness to the EVP for Power Operations after reviewing formal readiness attestations by the Plant/Area/General Managers. The RVPs are responsible for assuring each Plant/Site in their region has site specific Winter Readiness Plans and Winter Operations Procedures in place, based on the guidelines in this Standard. The RVP's should also share lessons learned across the Calpine fleet.

Plant/Area/General Manager

The Plant/Area/General Managers are responsible for ensuring that all site activities required for reliable Winter Operations are implemented, including:

- Developing and revising (based on lessons learned) the plant specific Winter Readiness Plan and the plant specific Winter Operations Procedure. **The plans and procedures shall include all the recommendations included in this Standard as applicable to the specific plant/site.**
- Performing or delegating site Winter Readiness Site Coordinator responsibilities
- Approving site-specific Winter readiness plans and activities, and assuring all winter readiness work that is identified is completed prior to the required winter completion date for all such work.
- Assure all site-specific Winter Readiness activities that are planned, and identified corrective work, are Maximo PM's or corrective work orders. All winter readiness planned and repair work is required to be documented in Maximo (using the program category "Seasonal", and the task category "Winter").
- Routinely updating the RVP on the site's Winter readiness status.
- Verifying the site's Winter readiness and formally certifying that readiness to the RVP prior to Winter.
- During cold weather operation, assure the site specific Winter Operations Procedure is being implemented, and any issues identified are corrected in a timely manner to assure continued reliable winter operation.

Maintenance Manager

The Maintenance Manager is responsible for:

- Implementing the plant specific Winter Readiness Plan, and revising the Plan as required based on lessons learned.
- Assuring the Winter Readiness PM's and other activities are in Maximo and implemented in accordance with the timeline included in the plant's Winter Preparedness Plan (and document the implementation in Maximo using the program category "Seasonal", and the task category "Winter").
- Initial stocking of any consumables and supplies required to be on hand prior the winter period (list shall be included in the plant's Winter Readiness Plan).
- During Winter Operation, ensure that equipment deficiencies identified (that could impact plant reliable operation during cold weather) are addressed and corrected in a timely manner, with all repairs properly documented in Maximo.

Operations Manager

The Operations Manager is responsible for:

- Implementing the plant specific Winter Operations Procedure, and revising the procedure as required based on lessons learned.
- Review the Winter Operations procedure prior to each winter to ensure the site operating procedures, checklists, and instructions are current and include any new equipment that may have been added to the plant configuration since the last winter.
- Review the on-going operations activities that are implemented during cold weather events, included the rounds sheets, and other checklists, as identified in the plant specific Winter Operations Procedure.
- Verifying that communications system is operational and backup communications are in place.
- Re-ordering any consumables and supplies required to be on hand prior to any significant cold weather event (list included in the Winter Readiness Plan) that may have been used during weather events to assure continued supply for the entire winter season.

Site Winter Readiness Coordinator

Plant/Area/General Managers designate a Winter Readiness Coordinator for the site. The Site Winter Readiness Coordinators are responsible for communicating and tracking activities needed to achieve sustained reliability and availability during extreme weather events, and for routinely reporting to the Plant/Area/General Manager the status of the site's Winter readiness preparations. The Site Winter Readiness Coordinator supports the Operations and Maintenance Managers as required in performing their responsibilities as outlined above.

Specific responsibilities include:

- Chairing scheduled Winter Readiness meetings at intervals appropriate to the site.
- Tracking and reporting status of the site's winter readiness preparations.
- Procuring and positioning winter readiness consumables and supplies required to be on hand prior to any significant cold weather event (list included in the Winter Readiness Plan).

Procedures

Plant Specific Winter Readiness Plan Guidelines

In adherence to the Calpine Winter Readiness Preparation and Operation standard (CSN-102A) Deer Park Energy Center has developed specific preventive maintenance work scopes, checklist and procedures to ensure reliable operations during the Winter Season. The specific PMs, checklist and procedures that apply are identified in the following.

Note: Items 1-15 and 20 are ERCOT requirements and Item 21 is a PJM requirement

1. Document the minimum plant design operating temperature with consideration to determine the lowest ambient temperature at which the unit is able to reliably operate (taking into account wind chill considerations). Review any modifications performed to the plant over the past year to assure these modifications meet the minimum plant design operating temperature, or if different, document the minimum temperature limitations of these modifications.

(Attachment: 8)

(Maximo PM #110176)

2. Review of the past winter's issues and experience with any equipment freezing issues. Document this review and the changes required to prevent reoccurrence. Any identified Action Items are to be documented and tracked in the Maximo system.

(Maximo PM #110177)

3. Identify the Critical Equipment to the plants operation that may be impacted by cold weather. List this equipment in the plan as an attachment.

(Attachment: 9)

(Maximo PM #110178)

4. Identify what type of heat tracing (constant wattage, parallel constant wattage, mineral insulated, power limiting, and self-regulating) is used for the critical equipment, and develop PM's for annual testing prior to winter (include testing methods and historical results). Provide list in the Readiness Plan as an attachment showing the circuits, and testing methods. Record the ambient temperature at the time of the testing. Develop PM's in Maximo for testing the critical heat tracing annually prior to winter operation and monthly from November 1 to March 31 (document actual testing performed including amperage readings compared to past historical data for each critical equipment's circuit). Document in Maximo the repairs of all heat tracing for the critical equipment that was performed.

(Attachment: 5) Unit 1 (Maximo PM #55282)

Unit 2 (Maximo PM #55283)

Unit 3 (Maximo PM #55284)

Unit 4 (Maximo PM #55285)

Unit 6 (Maximo PM #107763)

13. PM's shall be in place to verify the correct operation of all instrument box heaters (O'Brian, Hoffman, etc.). These boxes (with locations) should be listed as attachments to the Winter Readiness Procedure.
(Attachment: 5) (Maximo PM #110183)
14. PM's in place to install temporary wind breaks and place temporary heaters. Note: plywood should not be used for flooring over grating for temporary wind break areas. If tarps are used, make sure heavy duty material that will last for the entire winter period. A map showing the location of temporary tarps should be included in the plan.
(Attachment: 5 / Attachment: 10)(Maximo PM #110184)
15. A list of equipment that requires draining for the entire winter operation needs to be included. Examples include: evaporative coolers, inlet fogging, chillers, etc. This must be a Winter Readiness PM in Maximo.
(Attachment: 6 as needed) No equipment at Deer Park is drained for the entire winter.
16. This item of the standard does not apply.
17. This item of the standard does not apply.
18. This item of the standard does not apply.
19. The Plant Manager, Maintenance Manager, Operations Manager, Plant Engineer, and Site Winter Readiness Coordinator should review the Standard annually prior to the initial winter readiness meeting conducted at the plant each year.
(Maximo PM #110185)
20. The plant specific Winter Readiness Plan shall include a Winter Readiness Action Timeline, which should be included in the plant specific Winter Readiness Plan (dates to be site specific). Key milestones that must be included (recommended month(s) for completion of the task is included in parenthesis):
(Attachment: 2)
- a. Initial Site-Specific Pre-Winter Maintenance, Operations, and Procurement Meeting (May - July): (Maximo PM #110188)
 - i. Review the implementation of the Plant Winter Readiness Plan.
 - ii. All required PM's and corrective work must be scheduled in Maximo.
 - iii. Corrective Work Orders should be reviewed that are related to winter operation reliability and those that must be completed prior to winter prioritized.
 - b. Final work scope and actions required prior to winter in place and approved by the Plant Manager (August - September).
(Maximo PM #110189)
 - c. Site-Specific Winter Operation Procedures reviewed and updated based on Plant lessons learned, new equipment added, Calpine fleet lessons learned (to be provided by RVP's), NERC lessons learned, and general industrial best practices that may have become known (October).

- (Maximo PM #110190)
- d. Complete training on Winter Readiness for plant personnel prior to winter (November). Review any changes to the plans and procedures from the past year.
(Maximo PM #110191)
- e. Site-Specific Pre-Winter Readiness Reviews and Certification of Readiness (Plant Manager to RVP). This date to be provided to the Plant Manager by the RVP each year (typically in November).
(Maximo PM #110192)
- f. Post-Winter meeting to review issues and incorporate lessons learned into the Winter Readiness Plan and the Winter Operations Procedure (March-April).
(Maximo PM #110193)
- g. Date when all Winter Preparations, including training must be completed. **This is December 1 for all Calpine generation facilities.** Note that in some areas of the country this date may be earlier (or later) than December 1. Exceptions to this completion date must be approved by the RVP for a specific plant.

21. This item of the standard does not apply.

Plant Specific Winter Operations Procedure Guidelines

Deer Park utilizes a series of PMs, checklist and process procedures to manage the issues associated with the Winter Season. The PMs, checklist and process procedures are implemented according the prescribed time line or ambient conditions. In addition Deer Park has a monthly inclement weather meeting to discuss and document any issues. The inclusive list of PMs, individual checklist and procedures are attached to this document. All of the data collected in the process is organized into a yearly binder with tabs for easy reference.

1. Unit/area operational checklist to be used during freezing weather. The operational checklist should be incorporated into the shift rounds. The Winter Operations Procedure should include check lists for heaters in buildings and compartments, equipment strip heaters, instrument boxes, heat tracing panels, equipment required to be in operation, temporary heaters, heat lamps, wind breaks, and heat trace. The operational checklist should include (examples – not an all-inclusive list):

Note: These operational checks should be initiated at some point in time, or implemented based on ambient temperature. At Deer Park Energy Center pre-winter season checks are completed according to the prescribed timeline and operator checks are initiated when the ambient temperature falls [REDACTED] by implementing the "Extreme Cold Weather Guidelines" (DPEC-IW-0002).

Building heater operational checks

- a. Chemical tank heaters checked
 - b. Temporary heaters in place and in operation
 - c. Verify temporary heat tracing in operation
 - d. Check freeze protection breaker panels
 - e. Check Combustion Turbine inlets for icing
 - f. Verify lube oil temperatures
 - g. Verify safety shower heat tracing
 - h. Check O'Brian/Hoffman instrument box heaters
 - i. Check temporary wind breaks
 - j. Verify doors closed in areas of protection required
 - k. Drains open as a required by the Winter Operations Procedure
 - l. Strip heaters operations checked
 - m. Heat Lamps checked
 - n. Equipment that should be in service as required by the Winter Operations Procedure verified
 - o. Transformer oil levels
 - p. Water vents cracked open if required by Winter Operations Procedure
 - q. Check for cooling tower icing
 - r. Monitor instrument air system dew point, and maintain above plant design dew point temperature.
2. Procedure for the operations of the plants cooling towers during winter weather conditions to prevent icing.
 3. Procedures for draining (and operating) equipment that is off line and not in operation when temperature falls below a specific temperature (systems that are designed to be drained in these weather conditions). This includes for example: HRSG's, Aux Boilers,

- Feedwater pumps and condensate system, and cooling water systems without glycol. The procedure may also include operating pumps to maintain flow to prevent freezing if require (for example: start condensate pumps and re-circulate to the hotwell on the condenser).
4. Monitor and report any insulation missing or damaged insulation.
 5. Periodically, during the winter period, check the inventory of the consumables and supplies listed in the Winter Readiness Plan. Re-order supplies as required.
 6. Provide for personnel training on this procedure annually prior to the winter period. This should include all plant personnel involved with implementing this Winter Operations Procedure. Operations personnel should be trained on alternative instrumentation should the primary plant instrumentation become unreliable for the critical equipment.
 7. Provide for operator training for events that may occur during winter operation.
 8. Maintain plant communications equipment and backup communications equipment (radios, satellite phones, etc.), which may refer to a procedure already in place at the specific plant.
 9. Safety is the highest priority during winter weather events. Job safety briefings should be conducted prior to and during extreme weather events. Appropriate clothing and PPE should be worn. Slip hazards need to be a focus. Work boots should not have smooth heels if worn in icing conditions.
 10. Winter readiness drills should be conducted periodically (and documented).

Pre-Winter Site Status Reviews and Readiness Certification

Prior to the onset of the Winter Period each Plant Manager verifies winter readiness and formally communicates site status to the RVP (see example Attachment 1 - Winter Readiness Certification). RVPs review regional Winter Readiness status and certify status to the EVP Operations.

Records

Any records generated as a result of this process shall be filed and retained in accordance with CPN-714 (Records Management). Processes and standards referenced in this document shall prescribe any specific records requirements within those documents.

Support Documents

Attachment 1(Typical Winter Readiness Certification Letter)

Attachment 2(Winter Readiness Actions Timeline)

Attachment 3(Lessons Learned Appendix)

Attachment 4(Maximo Seasonal Winter Maximo-PMs)

Attachment 5(Pre-Winter Season Checklist)

Attachment 6(Extreme Cold Weather Guidelines Sub-35 degrees F Processes & Checklist)

Attachment 7(Document Binder Tab)

Attachment 8(Plant Specification Design Criteria)

Attachment 9(Critical Equipment List)

Attachment 10(Map of Temporary Enclosures)

Attachment 11(List of Stationary Heaters)

Attachment 12(IA Dryer Design and Suggested Maintenance)

To: (Regional VP,
Operations Name) From:
(Plant/General Manager
Name) Subject: Winter
Readiness Certification

(Plant Name) has reviewed the requirements of the Plant Specific Plans and Procedures related to Winter Readiness preparation and Winter Operation, and by copy of this letter is ready to certify (Plant Name) winter readiness. [Plant] has completed review of plant winter readiness and implemented preventive and corrective actions required to provide reasonable assurance of operation during foreseeable winter conditions at the site. In-progress items relating to winter operation are summarized below.

A. The basis for our certification is as follows:

1. Significant outcomes of system reviews
2. Status of preventive maintenance affecting Winter Readiness
3. Status of corrective maintenance affecting Winter Readiness
6. Status of modifications/projects affecting Winter Readiness
7. Status of Operations Winter Readiness Procedures/Checklists
8. Status of Winter Readiness supplies
9. Other

B. Winter readiness items not completed

1. Reason
2. Open Actions Items
3. Owner & Due Date

Attachment 2: Winter Readiness Actions Timeline

Key Milestone	Recommended Completion	Comments
Initial Annual Pre-Winter Readiness Meeting	May - July	Meeting to review: Plant Winter Readiness Plan, Open Corrective "Winter" Work Orders and PM's
Final Workscope and Actions Required	August - September	Finalized workscope approved by Plant Manager to implement prior to winter
Operations Procedures Reviewed and Updated as Required	October	Site specific Winter Operations Procedures reviewed and updated based on lessons learned and new equipment added
Winter Readiness Training	November	Complete training for plant personnel involved with Winter Preparedness and Winter Operations
Winter Readiness Certification by the Plant Manager	November	Provided to RVP. Reference Attachment 1.
Winter Readiness Activities Completed	December 1	This date may vary for specific plants based on location
Post – Winter Meeting	March – April	Review specific plant lessons learned from the past winter.

Attachment 3: Lessons Learned and NERC, FERC, and PJM Guidance/Requirements

FERC GUIDANCE:

FERC - Recent Weather Impacts on the Bulk Power System Jan. 16, 2014

<http://www.ferc.gov/eqa/staff-reports/2014/01-16-14-bulk-power.pdf>

FERC - Commission and Industry Actions Relevant to Winter 2013-14 Weather Events – October 16, 2015

<http://www.ferc.gov/media/news-releases/2014/2014-4/10-16-14-A-4-presentation.pdf>

NERC GUIDANCE:

Reliability Guide – Generating Unit Winter Readiness – Current Industry Practices 12-3-2012 -

Contains numerous detailed recommendations, including establishing a procedure for ensuring weather readiness is routinely addressed

http://www.nerc.com/comm/OC/Reliability%20Guideline%20DL/Generating_Unit_Winter_Weather_Readiness_Final.pdf

Winter Preparation for Severe Weather Events Dec. 2012 – 64 page PowerPoint

http://www.nerc.com/pa/rrm/Website%20DL/NERC_Winter_Prep_Webinar_presentation_20121210.pdf

FERC NERC Findings and Recommendations

<http://www.nerc.com/pa/rrm/ea/ColdWeatherTrainingMaterials/FERC%20NERC%20Findings%20and%20Recommendations.pdf>

http://www.nerc.com/pa/RAPA/ra/Reliability%20Assessments%20DL/2013WRA_Final.pdf

2014 Polar Vortex Review Sep. 30, 2014 - NERC

http://www.nerc.com/pa/rrm/January%202014%20Polar%20Vortex%20Review/Polar_Vortex_Review_29_Sept_2014_Final.pdf

2014 Essential Reliability Services NERC Staff Report – August 20, 2014

http://www.ncsl.org/documents/summit/summit2014/onlineResources/M_lauby.pdf

2012/2013 Winter Reliability Assessment Nov. 2012

http://www.nerc.com/files/2012WRA_FINAL.pdf

2013/2014 Winter Reliability Assessment Nov. 2013

http://www.nerc.com/pa/RAPA/ra/Reliability%20Assessments%20DL/2013WRA_Final.pdf

2014/015 Winter Reliability Assessment Nov. 2014

http://www.nerc.com/pa/RAPA/ra/Reliability%20Assessments%20DL/2014WRA_Final.pdf

2015 Winter Performance Update – 08-12-2015

http://www.nerc.com/pa/rrm/ea/ColdWeatherTrainingMaterials/Winter_Review_2015.pdf

NERC LESSONS LEARNED – COLD WEATHER

All NERC Lessons Learned are available at

<http://www.nerc.com/pa/rrm/ea/Pages/Lessons-Learned.aspx>

- Gas and Electricity Interdependency – 9/12/2012
- Transmission Facilities and Winter Weather Operations – 1/6/2012
- Winter Storm Inlet Air Duct Icing – 9/22/2012
- Transformer Oil Level Issues During Cold Weather – 9/12/2012
- Plant Operator Training to Prepare for a Winter Weather Event – 1/6/2012
- Plant Onsite Material and Personnel Needed for a Winter Weather Event – 1/6/2012

-
- Plant Fuel Switching and Cold Weather – 10/19/2011
 - Plant Instrument and Sensing Equipment Freezing due to Heat Trace and Insulation Failures – 10/19/2011
 - Generating Unit Temperature Design Parameters and Extreme Weather Conditions – 9/28/2011
- Adequate Maintenance and Inspection of Generator Freeze Protection – 9/28/2011

PJM Manual 14D Operational Requirements and PJM Manual 14D Attachment N Cold Weather Checklist

<http://www.pjm.com/~media/documents/manuals/m14d.ashx>

7.5.2 Generation Resource Cold Weather Checklist

Attachment N of the Manual M14D contains the PJM generation resource Cold Weather Preparation Guidelines and Checklist. This Checklist or a similar one developed by the generation resource owner, is to be used annually prior to the winter season to prepare generation resources for extreme cold weather event operation. Prior to December 15th each year, the generation resource owner's representative shall verify via eDART that the represented generation resources have completed the items on the checklist, or a substantially equivalent one developed by the generation Owner.

Attachment 4: Maximo Seasonal Winter PMs

PM	Description	System	Location	Asset	Asset Owner	Estimated Next Due	Earliest Next Due	Plant Condition	Work Group	Status	Program	Category	Task Category
				10225576	DK	10/1/2017	11/15/2018	OPERATING	DK-I&C	INACTIVE	SEASON		WINTER
						12/7/2018	12/7/2018	OPERATING		ACTIVE	SEASON		WINTER
						12/10/2018	12/10/2018		DK-I&C	ACTIVE	SEASON		WINTER
						1/1/2019	1/1/2019	OPERATING		ACTIVE	SEASON		WINTER
						2/1/2019	8/1/2019	OPERATING	DK-ENG	ACTIVE	SEASON		WINTER
						3/1/2019	3/1/2019	OPERATING		ACTIVE	SEASON		WINTER
						3/1/2019	3/1/2019	OPERATING		ACTIVE	SEASON		WINTER
						3/15/2019	3/15/2019		DK-SAFE	ACTIVE	SEASON		WINTER
						5/15/2019	5/15/2019	OPERATING	DK-ALL	ACTIVE	SEASON		WINTER
						6/1/2019	6/1/2019	OPERATING		ACTIVE	SEASON		WINTER
						6/1/2019	6/1/2019	OPERATING		ACTIVE	SEASON		WINTER
						6/1/2019	6/1/2019	OPERATING		ACTIVE	SEASON		WINTER
						8/1/2019	8/1/2019			ACTIVE	SEASON		WINTER
						9/1/2019	9/1/2019	OPERATING	DK-ALL	ACTIVE	SEASON		WINTER
						9/1/2019	9/1/2019	OPERATING		ACTIVE	SEASON		WINTER
						10/1/2019	10/1/2019	OPERATING		ACTIVE	SEASON		WINTER
						10/1/2019	10/1/2019	OPERATING		ACTIVE	SEASON		WINTER
						10/1/2019	10/1/2019	OPERATING		ACTIVE	SEASON		WINTER
						10/1/2019	10/1/2019	OPERATING		ACTIVE	SEASON		WINTER
						10/15/2019	10/15/2019	OPERATING		ACTIVE	SEASON		WINTER
					DK	10/19/2019	10/21/2019	OPERATING	DK-I&C	ACTIVE	SEASON		WINTER
					DK	10/19/2019	10/21/2019	OPERATING		ACTIVE	SEASON		WINTER
					DK	10/19/2019	10/21/2019	OPERATING		ACTIVE	SEASON		WINTER
					DK	10/19/2019	10/21/2019	OPERATING		ACTIVE	SEASON		WINTER
					DK	10/19/2019	10/21/2019	OPERATING		ACTIVE	SEASON		WINTER
						11/1/2019	11/1/2019	OPERATING	DK-I&C	ACTIVE	SEASON		WINTER
						11/1/2019	11/1/2019		DK-ALL	ACTIVE	SEASON		WINTER
						11/1/2019	11/1/2019	OPERATING		ACTIVE	SEASON		WINTER
						11/1/2019	11/1/2019	OPERATING		ACTIVE	SEASON		WINTER
						12/1/2019	12/1/2019	OPERATING	DK-I&C	ACTIVE	SEASON		WINTER
						12/1/2019	12/1/2019	OPERATING	DK-I&C	ACTIVE	SEASON		WINTER
						12/1/2019	12/1/2019	OPERATING	DK-I&C	ACTIVE	SEASON		WINTER

Attachment 5: Pre-Winter Season Checklist

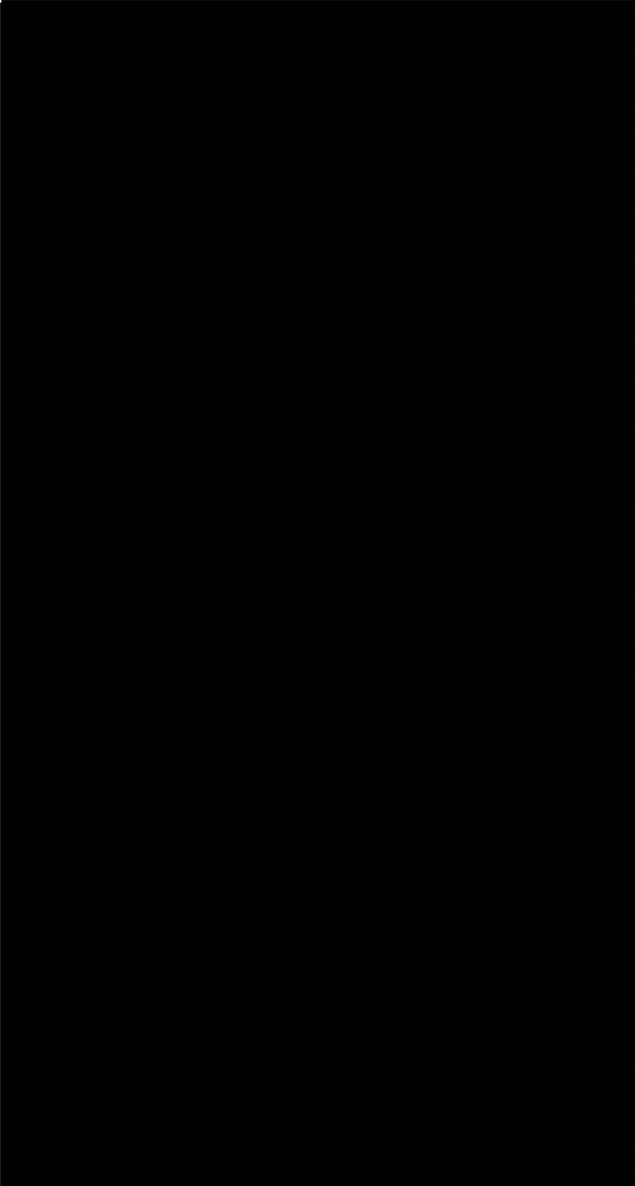
Attachment 5: DPEC-IW-0004 Winterization Checklist Rev6.xls exists in the Inclement Weather Procedure folder on the admin drive. For full size copies of these sheets print directly from the excel spreadsheet.

Salamander Portable Heaters Testing & Setup				
		Issues	Initials	Date
Pull heaters from storage from warehouse.				
Add fuel to heaters and test fire.				
Stage heaters in areas where freezing may occur.				
After the threat of freezing passes for the Winter Season heaters should be emptied and stored in the warehouse.				
<p>*Care must be taken when refueling the portable heaters.</p> <p>*Turn heater off while fueling.</p> <p>*Set thermostats at 40 degrees. Fuel will last approximately 6 hours during freezing conditions.</p> <p>*Typically 3 heaters required with 2 spares.</p>				

Attachment 5: Pre-Winter Season Checklist

[illegible]

Attachment 5: Pre-Winter Season Checklist

Trace Circuitry Inspection & Testing			
Location	# of Active Circuits		
	This panel has 24 active circuits.		
	Issues	Initials	Date

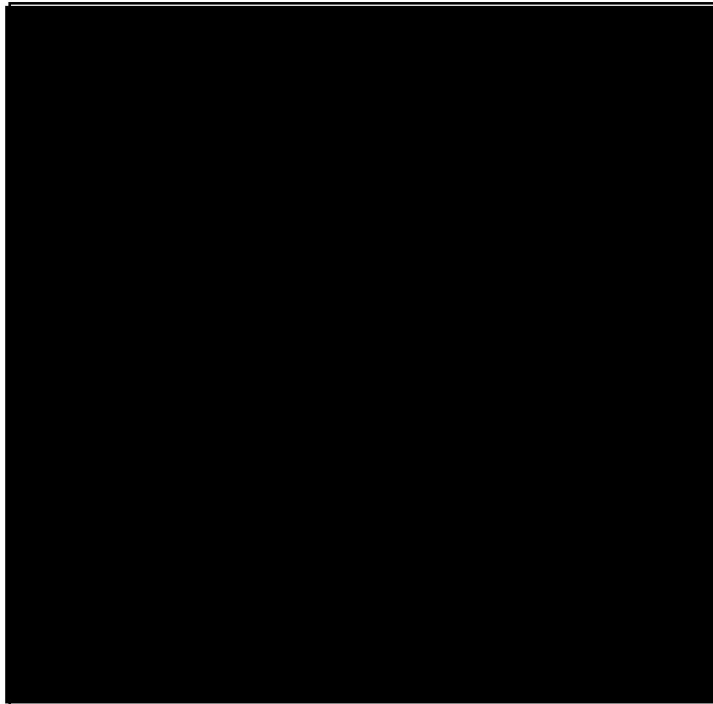
Attachment 5: Pre-Winter Season Checklist

	Location	# of Active Circuits		
		This panel has 31 active circuits.		
	Issues	Initials	Date	

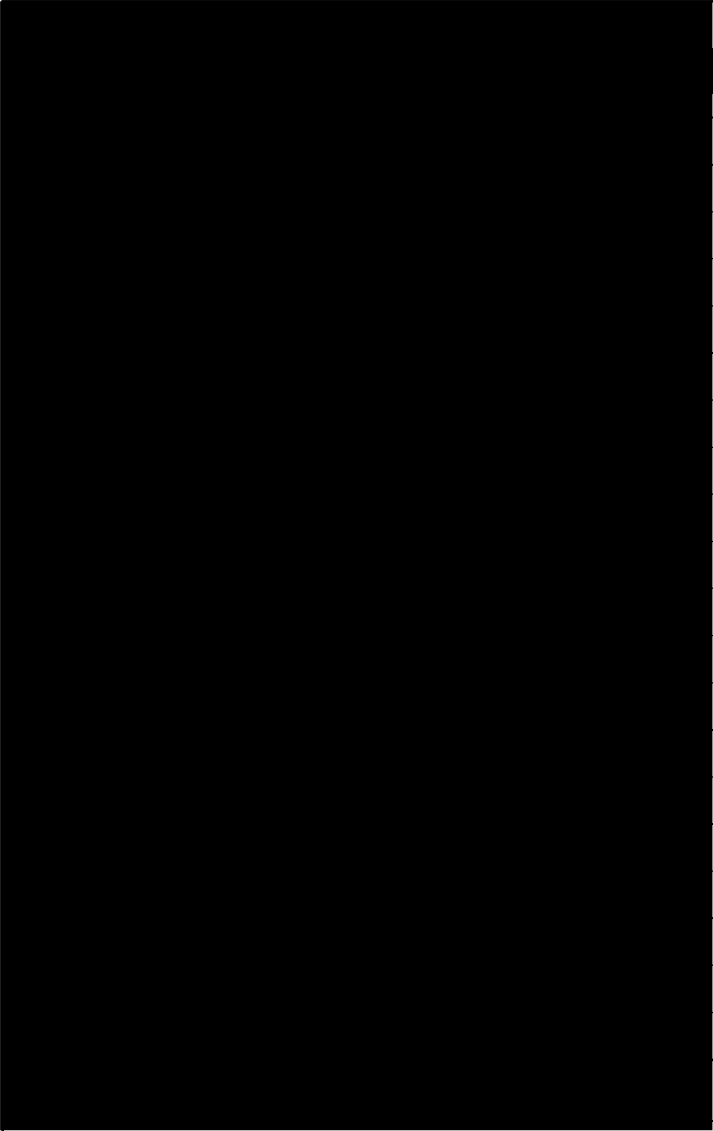
Attachment 5: Pre-Winter Season Checklist

[illegible]

Attachment 5: Pre-Winter Season Checklist

Trace Circuitry Inspection & Testing			
Location	# of Active Circuits		
	This panel has 7 active circuits.		
	Issues	Initials	Date

Attachment 5: Pre-Winter Season Checklist

Trace Circuitry Inspection & Testing		# of Active Circuits	
Location			
		This panel has 17 active circuits.	
	Issues	Initials	Date

Attachment 5: Pre-Winter Season Checklist

[illegible]

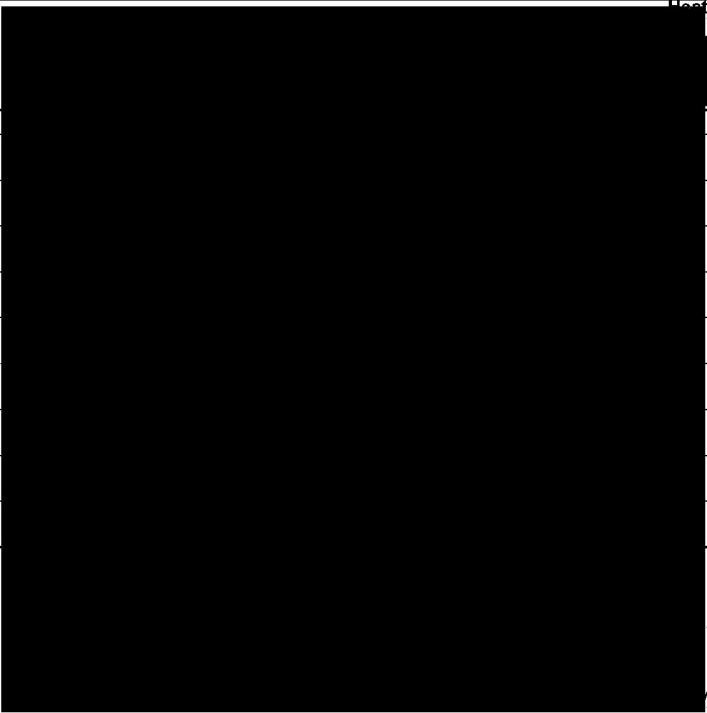
Attachment 5: Pre-Winter Season Checklist

[illegible]

Attachment 5: Pre-Winter Season Checklist

[illegible]

Attachment 5: Pre-Winter Season Checklist

Heat Trace Circuitry Inspection & Testing		# of Active Circuits
Location		
	This panel has 6 active circuits.	
	Issues	Initials

Attachment 5: Pre-Winter Season Checklist

	Location	# of Active Circuits	
		This panel has 28 active circuits.	
	Issues	Initials	Date

Attachment 5: Pre-Winter Season Checklist

[illegible]

Attachment 5: Pre-Winter Season Checklist

Temporary Scaffold & Tarp Windbreak Installations					
BOP					
Type	Location	Heater Type Salamander or Electric	Issues	Initials	Date
Scaffold & Tarps	Demin Acid Skid				
Cabled Tarps	Belt Press				
Scaffold & Tarps	Lab Closed Cooling Water Skid				
Metal Building and Rollup Doors	HRSG Boiler Chemical Building				
Metal Building and Rollup Doors	Cooling Tower Chemical Building				
Cabled Tarps	Pretreatment Chemical Building				
Cabled Tarps	Outfall Chemical Injection Building				
Scaffold & Tarps	Unit 1 Ammonia Skid				
Scaffold & Tarps	Unit 2 Ammonia Skid				
Scaffold & Tarps	Unit 3 Ammonia Skid				
Scaffold & Tarps	Unit 4 Ammonia Skid				
Scaffold & Tarps	Unit 6 Ammonia Skid				
Cabled Tarps	Unit 1 Hydraulic Skid				
Cabled Tarps	Unit 2 Hydraulic Skid				
Cabled Tarps	Unit 3 Hydraulic Skid				
Cabled Tarps	Unit 4 Hydraulic Skid				
Cabled Tarps	Unit 6 Hydraulic Skid				

*Take necessary precautions to prevent tarps from contacting hot surfaces or rotating equipment.
 *Erect scaffold and tarp enclosures with a means of access.

Attachment 5: Pre-Winter Season Checklist

Temporary Scaffold & Tarp Windbreak Installations					
BOP					
Type	Location	Heater Type Salamander or Electric	Issues	Initials	Date
Scaffold & Tarps	Header "A" Pressure Transmitter on mezzanine deck.				
Scaffold & Tarps	Header "B" Pressure Transmitter on mezzanine deck.				
Scaffold & Tarps	North Flow Transmitter Station at ground level.				
Scaffold & Tarps	Middle Flow Transmitter Station at ground level.				
Scaffold & Tarps	South Flow Transmitter Station at ground level.				
Scaffold & Tarps	Unit 1 Duct Burner Skid				
Scaffold & Tarps	Unit 2 Duct Burner Skid				
Scaffold & Tarps	Unit 3 Duct Burner Skid				
Scaffold & Tarps	Unit 4 Duct Burner Skid				
Scaffold & Tarps	Unit 6 Duct Burner Skid				
Scaffold & Tarps	Steam Turbine Hydraulic Skid				
Scaffold & Tarps	Steam Turbine Pressure/Flow Instrument Rack				
Cabled Tarps	Unit 1 Fogger Skid				
Cabled Tarps	Unit 2 Fogger Skid				
Cabled Tarps	Unit 3 Fogger Skid				
Cabled Tarps	Unit 4 Fogger Skid				
Cabled Tarps	Unit 6 Fogger Skid				

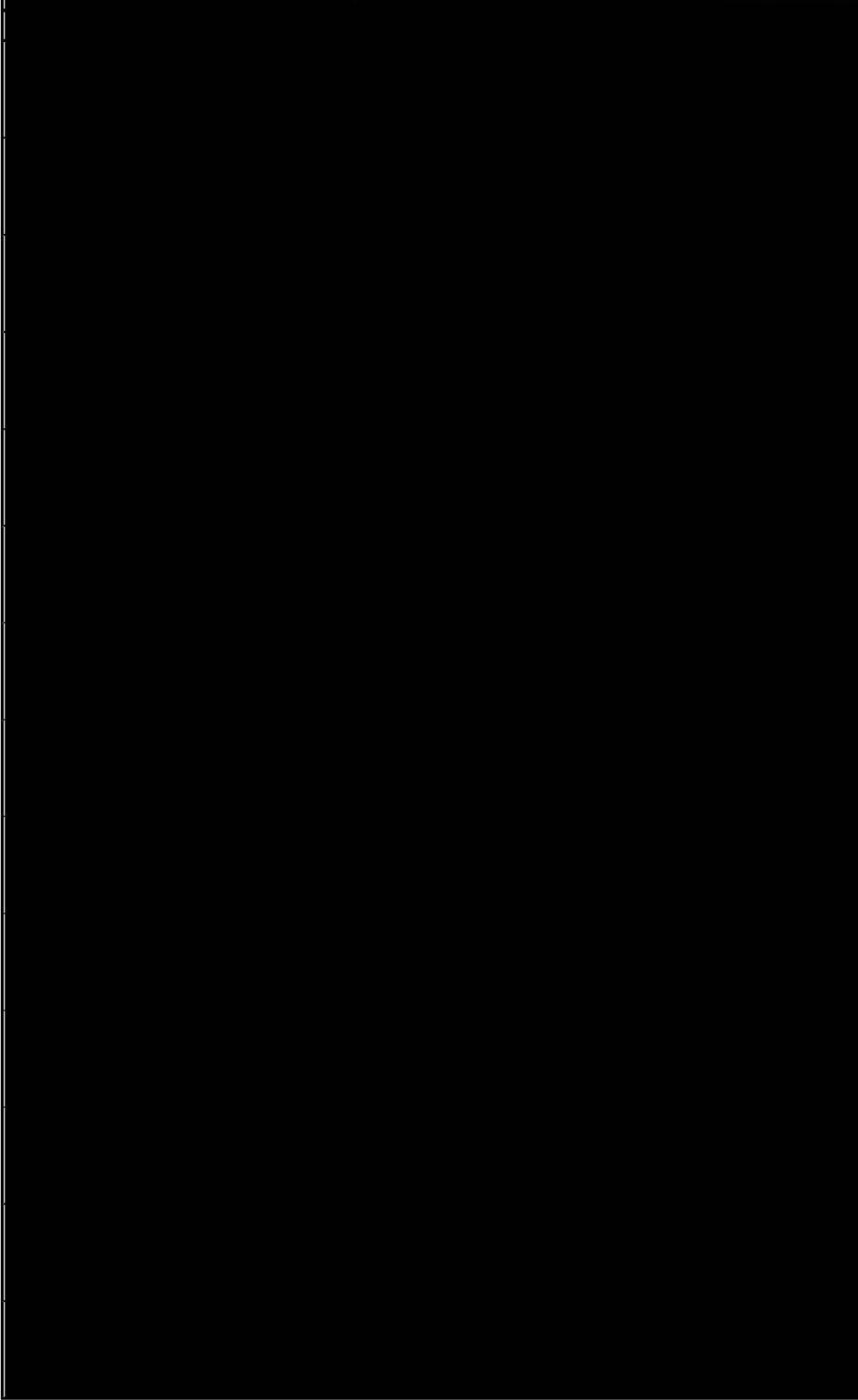
*Take necessary precautions to prevent tarps from contacting hot surfaces or rotating equipment.
 *Erect scaffold and tarp enclosures with a means of access.

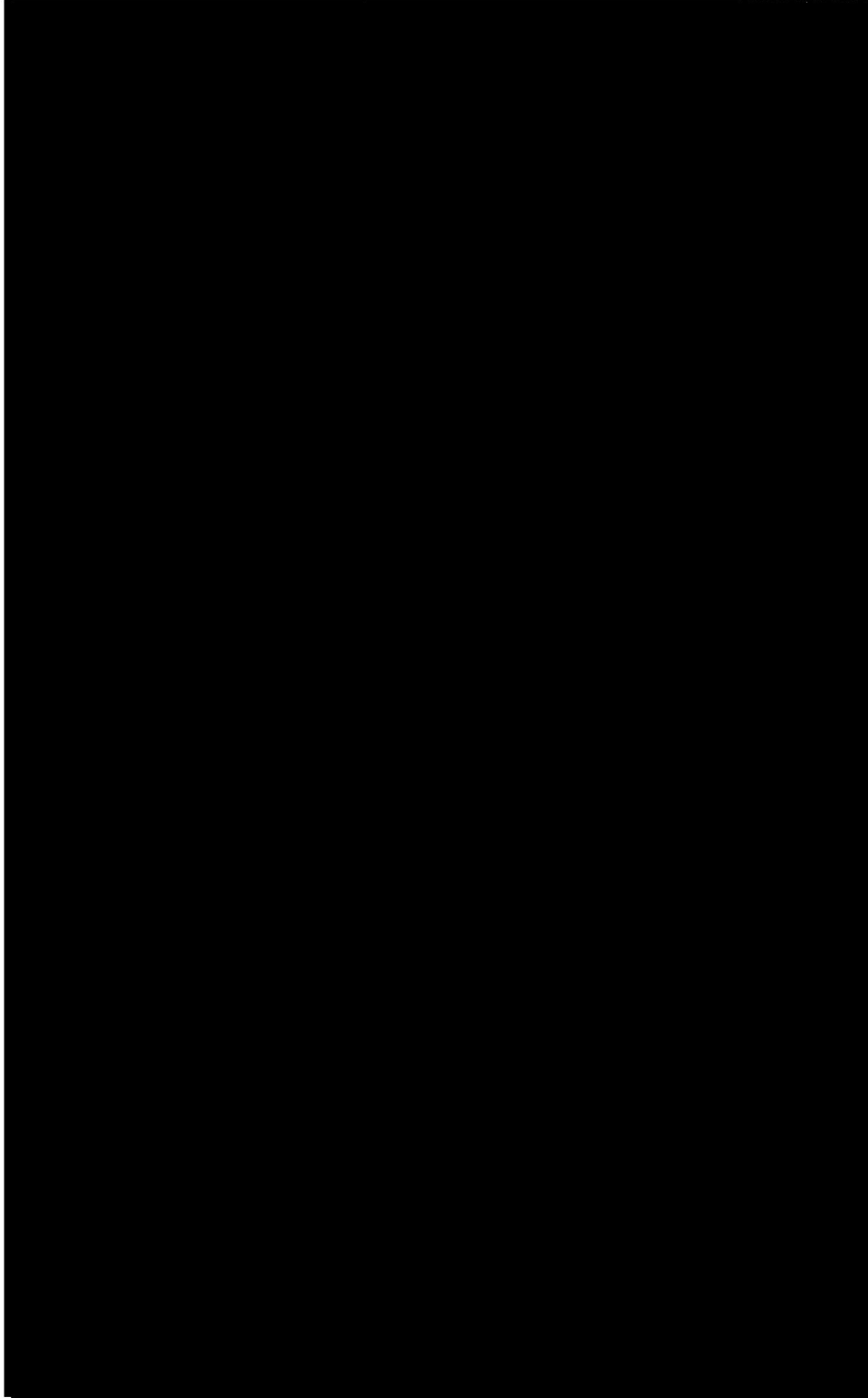
Attachment 5: Pre-Winter Season Checklist

Heater Block Check List		Date:		
		Time:		
Rotor Air Coolers		Initials:		
		Ambient Temp:		
	Transmitters	Issues, Notes/Location	Amp Read	Volt Read

O'Brien Box Temp Check List	Date:		
	Time:		
	Initials:		
	Ambient Temp:		
Unit 1		Amp Read	Temp

O'Brien Box Temp Check List Unit 2	Date:		
	Time:		
	Initials:		
	Ambient Temp:		
	Amp Read	Temp	

O'Brien Box Temp Check List Unit 3	Date:		
	Time:		
	Initials:		
	Ambient Temp:		
		Amp Read	Temp

O'Brien Box Temp Check List Unit 4	Date:		
	Time:		
	Initials:		
	Ambient Temp:		
		Amp Read	Temp
			

O'Brien Box Temp Check List Unit 6		Date:		
		Time:		
		Initials:		
		Ambient Temp:		
OB#	Transmitters	Issues, Notes/Location	Amp Read	Temp
		Ground Level		

O'Brien Box Temp Check List Unit 6	Date:		
	Time:		
	Initials:		
	Ambient Temp:		
	Amp Read	Temp	

O'Brien Box Temp Check List Unit 6	Date:		
	Time:		
	Initials:		
	Ambient Temp:		
	Amp Read	Temp	

Attachment 5: Pre-Winter Season Checklist

On Hand Materials					
Material	Desired Quantity	Actual Quantity	Comments		
Self Regulating Heat Trace Cable	100'				
Spare Extension Cords	20				
Hand Held Torches or Electric Heat Guns	10				
Tarps	20				
Reinforced polyethelene	1 roll				
Salamander Heaters	12				
Electric Space Heaters	15				
Small Propane for Torches	24				
Duct Tape	5 Rolls				
#16 Gage Wire	5 Rolls of 200'				
Rope	100 ft				
Flashlights	16				
Rolls of Caution Tape	3				
Rolls of Danger tape	3				
Tie Wraps	4 Bags				
<p align="center">General Preparation for Freezing Events</p> <p>*During low heat load conditions coupled with freezing conditions operations will alternate cooling tower fans to prevent ice build up in the cells.</p> <p>*Top off all chemical tanks 2 days prior to any anticipated freezing events.</p> <p>*Maintain clear communications with the QSE and Steam Host.</p> <p>*Diesel/Kerosene deliveries will have to be set for every 12 hours to maintain all salamanders during freezing conditions.</p> <p>*Add additional personnel to assist with extra duties.</p> <p>*Establish contractor support potential for the season with a time & material purchase order in place if needed for support personnel.</p>					



Attachment 6: Extreme Cold Weather Guidelines

Deer Park Energy Center Procedure Manual

PROCEDURE: EXTREME COLD WEATHER GUIDELINES

NUMBER: DPEC-IW-0002 REV: 2019 Richard Davis 11-11-19
PLANT MANAGER DATE

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Purpose and Scope

Provide instructions for protecting equipment during extreme cold weather season (November 1st to March 15th of the following year) when outside air temperature is predicted to decrease or decreases to the following conditions:

LESS THAN or EQUAL to [REDACTED] for with predictions of following below [REDACTED]

Provide instructions for Restoration from Freezing Weather

Definitions

DCS: digital control system

EHS: Environmental Health and Safety

ERCOT ISO: Electrical Reliability Council of Texas Independent System Operator

MCC: motor control centers

TCEQ: Texas Commission of Environment Quality

General Information

The Plant Manager SHALL implement this procedure prior to or upon a National Weather Service or company meteorologist prediction of falling temperatures within the limits described in the plan.

The temperature indication for determining the outside air temperature to decide when to enter this procedure or change to a different condition SHALL be used in following order:

DCS air temperature.

Nearest National Weather Service weather observation location (typically the nearest airport).

Failure to maintain the Battery Room temperature [REDACTED] MAY result in degrading the discharge capability of the battery should a loss of offsite power occur.

Failure to maintain either MCC room temperature [REDACTED] MAY result in degrading the discharge capability of the MCC battery should a loss of offsite power occur.

IF an instrument is suspected of freezing, THEN the instrument indication SHALL be monitored to verify reliability.

IF an instrument indication is unreliable, THEN an alternate method of monitoring the affected process variable SHOULD be established.

IF an instrument freezes, THEN actions SHALL be taken to return the instrument to service.

Equipment/systems outside the confines of heated buildings SHALL be inspected per this guideline.

WOs SHALL be implemented as soon as practical to repair any equipment/system deficiency that could promote freezing.

Out-of-Service equipment SHALL be evaluated for cold weather preparation (e.g., isolation/drainage of tanks, isolation/drainage non-essential equipment, installing temporary shelters, installing temporary heaters, and installing temporary insulation).

IF outside temperature is [REDACTED] THEN all Freeze Protection Panels SHALL be monitored for operability at least every four hours.

Follow Electrical Safety Precautions of EHS-17 (Electrical Safety) when accessing Heater Controls. Open, energized circuits exist inside the heater control enclosures.

Some Freeze Protection Circuits have Remote High Temperature Switches to prevent **local boiling in small dead legs of piping** (e.g. outside eyewash stations) or for when during normal operations the piping is full of hot water/steam but may be subject to freezing when shutdown. (i.e., HP, IP, and LP Drum instrument lines). In these cases, the heat trace is NOT ENERGIZED if the piping/tubing is "Hot" when the freeze protection panels are placed in "Hand/On" unless the piping/tubing system is below the applicable temperature switch set point.

References

Procedures:

- (DPEC-CT-0004), Inlet Fogger Operation
- (DPEC-IW-0004), Severe Weather Plan
- DPEC-IW-001, Winter Readiness Plans
- (DPEC-IW-0005), Freezing Weather Guidelines
- EHS-17, Electrical Safety
- (DPEC-HRSG-0005), Boiler Feed water
- (DPEC-WT-0004), Raw Water

P&ID's:

- (B&R Electrical Drawings), Freeze Protection Panel
- (B&R Drawing M129 sheets 1-4), Inlet Fogger
- (B&R Drawing M104 sheets 1-4), Boiler Feed Water
- (B&R Drawing M110 sheet 1), Raw Water

Responsibilities

The Plant Manager is responsible for ensuring overall implementation of this procedure.

Deciding that emergency actions are necessary to prevent equipment damage OR lost power production during any declared severe weather condition (cold).

Maintaining all pertinent Checklists.

Logging emergency action taken, date/time in Control Room Logbook.

The Operations Manager is responsible for:

Ensuring operator actions are implemented in a timely manner to support implementation of this procedure.

Ensuring equipment deficiencies are properly prioritized to support continued plant operations.

The Maintenance Manager is responsible for:

Ensuring maintenance activities are performed in a timely manner to support implementation of this procedure.

Ensuring equipment deficiencies that could result impact continued plant operations are addressed according to priority of importance.

Operators are responsible for:

Implementing the procedure as directed in a timely manner.

Reporting equipment deficiencies that could impact cold weather operations as soon as possible.

Maintenance Technicians are responsible for:

Implementing work activities as directed by the Maintenance Manager in support of this procedure.

Reporting equipment deficiencies which could impact cold weather operations as soon as possible.

General Freeze Protection Actions

WHEN outside air temperature decreases to OR is predicted to decrease to LESS THAN or EQUAL to [REDACTED] with predictions of falling below [REDACTED] THEN IMPLEMENT the following actions:

RECORD the date and time for declaring Extreme Cold Weather Conditions in the Control Room Logbook.

PERFORM Addendum 1 (Cold Weather Readiness Actions),
Prior To Outside air Temperature reaching [REDACTED]

REVIEW Checklist (Cold Weather Checklist – Severe Weather Condition) for additional actions that MAY be necessary to perform.

IF any additional actions are necessary to perform, THEN RECORD the additional actions taken in the Control Room Logbook.

ENSURE equipment/systems that are not enclosed by or inside protective permanent plant buildings SHALL be inspected using the attached checklist and log sheets.

ENSURE all Freeze Protection Systems are in operation and operable or in repair.

ENSURE all instrument enclosure space heaters are in operation and operable or in repair.

ENSURE to inspect any existing temporary instrument or temporary equipment is properly protected to ensure adequate compensatory actions are implemented to prevent freezing.

IF any Deluge Valve House, Fire Pump Room, or CEMS Room Temperature is [REDACTED], THEN ENSURE the appropriate Room Heaters have energized.

IF any MCC Room Temperature is [REDACTED], THEN ENSURE the appropriate Room Heaters have energized.

IF the Plant Battery Room Temperature is [REDACTED] THEN ENSURE the Room Heater has energized.

WHEN outside air temperature decreases to OR is predicted to decrease to LESS THAN or EQUAL to [REDACTED] with predictions of following [REDACTED]

THEN IMPLEMENT the following actions:

IF the Main Cooling Tower Blow Down piping is **NOT** in service, THEN DRAIN the blow down line to prevent freezing.

MONITOR the Plant Battery Room temperature.

IF the Plant Battery Room temperature is approaching [REDACTED] THEN PLACE one electric heater in the Plant Battery Room.

ENSURE **NO** potential for Flames in Battery Room

MONITOR the MCC room temperature.

IF a MCC room temperature is approaching [REDACTED] THEN PLACE one electric heater in the affected MCC.

ENSURE **NO** potential for Flames in MCC.

SECURE the Combustion Turbine Inlet Air Fogging System.

ENSURE the CT Inlet Fogging piping systems are drained and blown dry with air.

CT-1 Piping system

CT-2 Piping system

CT-3 Piping system

CT-4 Piping system

ENSURE ALL Water Treatment Building heaters are energized and working.

ENSURE ALL Water Treatment Building Doors are kept CLOSED.

ENSURE ALL HRSG Chemical Pump Skid Doors are kept CLOSED.

NOTE

Room Temperature logs MAY be taken every 6 hours until room air temperatures drop **below** [REDACTED], then room temperature logs SHOULD be taken every 4 hours. The Plant Manager MAY request room temperature logs be taken at shorter intervals of time as the weather dictates.

ENSURE the following logs have been initiated to monitor the room temperatures every 4 to 6 hours:

- Log sheet 1
- Log sheet 2
- Log sheet 3

Support Documents

Addendum 1 (Cold Weather Readiness Actions)

Logsheet 1 (Instrument Enclosure Inspection Logsheet)

Page 48 of 81

This form, when completed, SHALL be retained for a minimum of 5 years.

Logsheet 2 (Room Temperature Inspection Logsheet)

Logsheet 3 (Freeze Protection Panel Inspection Logsheet)

This form, when completed, SHALL be retained for a minimum of 5 years.

Cold Weather Readiness Actions Prior To outside air TemperatureNOTE

Addendum 1 (Cold Weather Readiness) MAY be performed in sections or in its entirety at the discretion of the Plant Manager.

Performance of Addendum 1 (Cold Weather Readiness), log sheet is a maintaining expectation for Cold Weather Operations and is expected to be performed ONCE PER SHIFT during Cold Weather Operations.

1.0 Outside Operators SHALL verify that ALL of these equipment enclosure space heaters operate properly at least ONCE PER SHIFT during cold weather Operations. Document the inspections on Log sheet.

2.0 Walk down ALL exposed equipment focusing on instrumentation to ensure insulation, insulation covers and heat tracing are in place. This SHOULD be done as soon as possible whenever freezing weather is forecasted.

3.0 Verify chemical inventories are sufficient to support plant operations and identify any critical shipments expected during the cold weather forecasted period. Critical deliveries SHALL include margin (time and volume) of existing inventory.

4.0 Verify fuel supplies (e.g., diesel fuel, gasoline, kerosene, propane, etc...) are sufficient to support plant operations and identify any critical shipments expected during the cold weather forecasted period. Critical deliveries SHALL include margin (time and volume) of existing inventory.

- 5.0 Additional necessary actions taken are recorded in the Control Room Logbook.
- 6.0 ENSURE EHS has requested discretionary enforcement from TCEQ related to possible air emission exceedances necessary to protect grid reliability.
- 7.0 ENSURE temporary wind breaks or enclosures are built to protect sensitive instrumentation.
- 8.0 ENSURE Operations and Maintenance staffing levels are increased to provide around the clock coverage.

NOTE

At LEAST one Mechanical Maintenance Technician AND at LEAST one I&E Technician SHALL be assigned to dayshift and nightshift. Contractor personnel MAY be used to supplement staffing levels to meet the around the clock staffing requirements.

- 9.0 ENSURE the Operations or Maintenance Manager is assigned to provide backshift managerial coverage during winter weather event.
- 10.0 ENSURE sufficient food, blankets, cots, drinking water, etc... is available at the plant should roads become impassable due to inclement weather.
- 11.0 ENSURE sufficient bulk chemicals are available.
- 12.0 ENSURE sufficient fuel for portable heaters is available.
- 13.0 SUSPEND all discretionary maintenance that could affect plant availability.
- 14.0 SEVERE WEATHER CONDITION actions complete OR in progress.
- 15.0 Additional necessary actions taken are recorded in the Control Room Logbook.
- 16.0 SUSPEND all discretionary maintenance that could affect plant availability.
- 17.0 Freeze Protection Panels in operation.
- 18.0 Susceptible Out-Of-Service equipment drained OR protected.
- 19.0 Susceptible In-Service equipment is protected.
- 20.0 Non-Essential HVAC is secured.
- 21.0 CT Inlet Air Fogging System drained and dried.
- 22.0 Temporary Shelters are inspected.

- 23.0 Temporary Heat Tracing in place & operating.
- 24.0 Increased inspection frequency of high freeze potential areas.
- 25.0 Temporary Logs initiated to monitor room temperatures.
- 26.0 Personnel assigned to place and refuel portable heaters.
- 27.0 Outside air temperature continuously displayed in Control Room.
- 28.0 Additional necessary actions taken are recorded in the Control Room Logbook.

Manager Reviewing Addendum 1: _

Date Initiated: _____

Time Initiated: _____

Date Ended: _____

Time Ended: _____

EXTREME COLD WEATHER GUIDELINES

PROCEDURE NUMBER: DPEC-IW-0002

REVISION: 2019

Log sheet 1 Attachment #6 (Extreme Cold Weather Guidelines
Processes & Checklist)

Page 3 of 11

Temporary Scaffold & Tarp Windbreak Installations Daily Walkdown								
Location	Type	Date						
		Time						
		S or EHTR	If no issues put your initials, if there are issues explain them					
	Scaffold & Tarps							
	Cabled Tarps							
	Scaffold & Tarps							
	Metal Bld and Rollup Doors							
	Metal Bld and Rollup Doors							
	Cabled Tarps							
	Cabled Tarps							
	Scaffold & Tarps							
	Scaffold & Tarps							
	Scaffold & Tarps							
	Scaffold & Tarps							
	Scaffold & Tarps							
	Cabled Tarps							
	Cabled Tarps							
	Cabled Tarps							
	Cabled Tarps							
	Cabled Tarps							
	Scaffold & Tarps							
	Scaffold & Tarps							
	Scaffold & Tarps							
	Scaffold & Tarps							
		Scaffold & Tarps	Page 53 of 81					
*Take necessary precautions to prevent tarps from contacting hot surfaces or rotating equipment.								
*Erect scaffold and tarp enclosures with a means of access.								

EXTREME COLD WEATHER GUIDELINES

PROCEDURE NUMBER: DPEC-IW-0002

REVISION: 2019

Log sheet 1 Attachment #6 (Extreme Cold Weather Guidelines [REDACTED] Processes & Checklist) Page 4 of 11

Temporary Scaffold & Tarp Windbreak Installations Daily Walkdown								
Location	Type	Date						
		Time						
		S or EHTR	If no issues put your initials, if there are issues explain them					
	Scaffold & Tarps							
	Scaffold & Tarps							
	Scaffold & Tarps							
	Scaffold & Tarps							
	Scaffold & Tarps							
	Scaffold & Tarps							
	Scaffold & Tarps							
	Cabled Tarps							
	Cabled Tarps							
	Cabled Tarps							
	Cabled Tarps							
	Cabled Tarps							

*Take necessary precautions to prevent tarps from contacting hot surfaces or rotating equipment.
 *Erect scaffold and tarp enclosures with a means of access.

This form, when completed, SHALL be retained for a minimum of 5 years.

EXTREME COLD WEATHER GUIDELINES

PROCEDURE NUMBER: DPEC-IW-0002

REVISION: 2019

Buildings and Shelter Installations Daily Walkdown						
Location	Low/High Temps	Date				
		Time				
		Int'l				

This form, when completed, SHALL be retained for a minimum of 5 years.

This form, when completed, SHALL be retained for a minimum of 5 years.

EXTREME COLD WEATHER GUIDELINES

PROCEDURE NUMBER: DPEC-IW-0002

REVISION: 2019

Log sheet 1 Attachment #6 (Extreme Cold Weather Guidelines
Processes & Checklist)

Page 6 of 11

O'Brien Box Temp Check List Unit 1	Date:			
	Time:			
	Initials:			
	Ambient Temp:			
		Temp	Temp	Temp

This form, when completed, SHALL be retained for a minimum of 5 years.

--	--	--	--	--

This form, when completed, SHALL be retained for a minimum of 5 years.

EXTREME COLD WEATHER GUIDELINES

PROCEDURE NUMBER: DPEC-IW-0002

REVISION: 2019

Log sheet 1 Attachment #6 (Extreme Cold Weather Guidelines
Processes & Checklist)

Page 8 of 11

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This form, when completed, SHALL be retained for a minimum of 5 years.

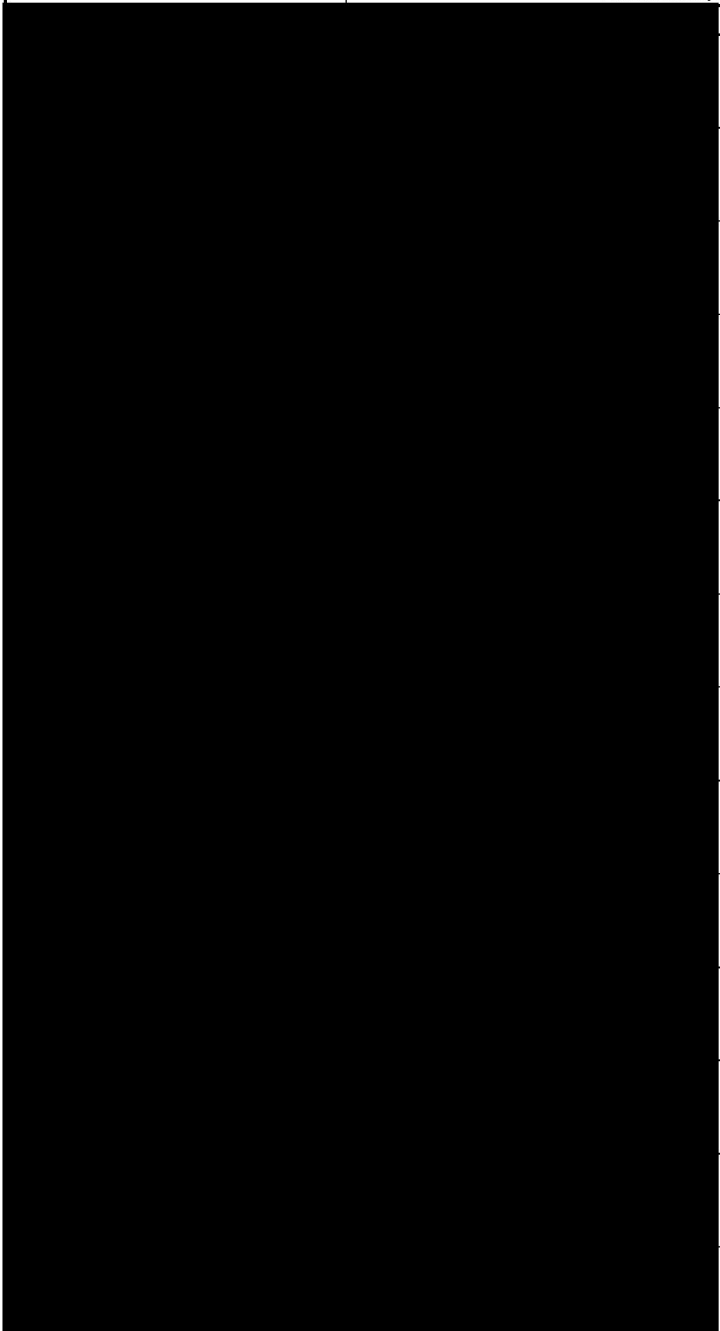
EXTREME COLD WEATHER GUIDELINES

PROCEDURE NUMBER: DPEC-IW-0002

REVISION: 2019

Log sheet 1 Attachment #6 (Extreme Cold Weather Guidelines
Processes & Checklist)

Page 9 of 11

O'Brien Box Temp Check List Unit 4	Date:			
	Time:			
	Initials:			
	Ambient Temp:			
		Temp	Temp	Temp

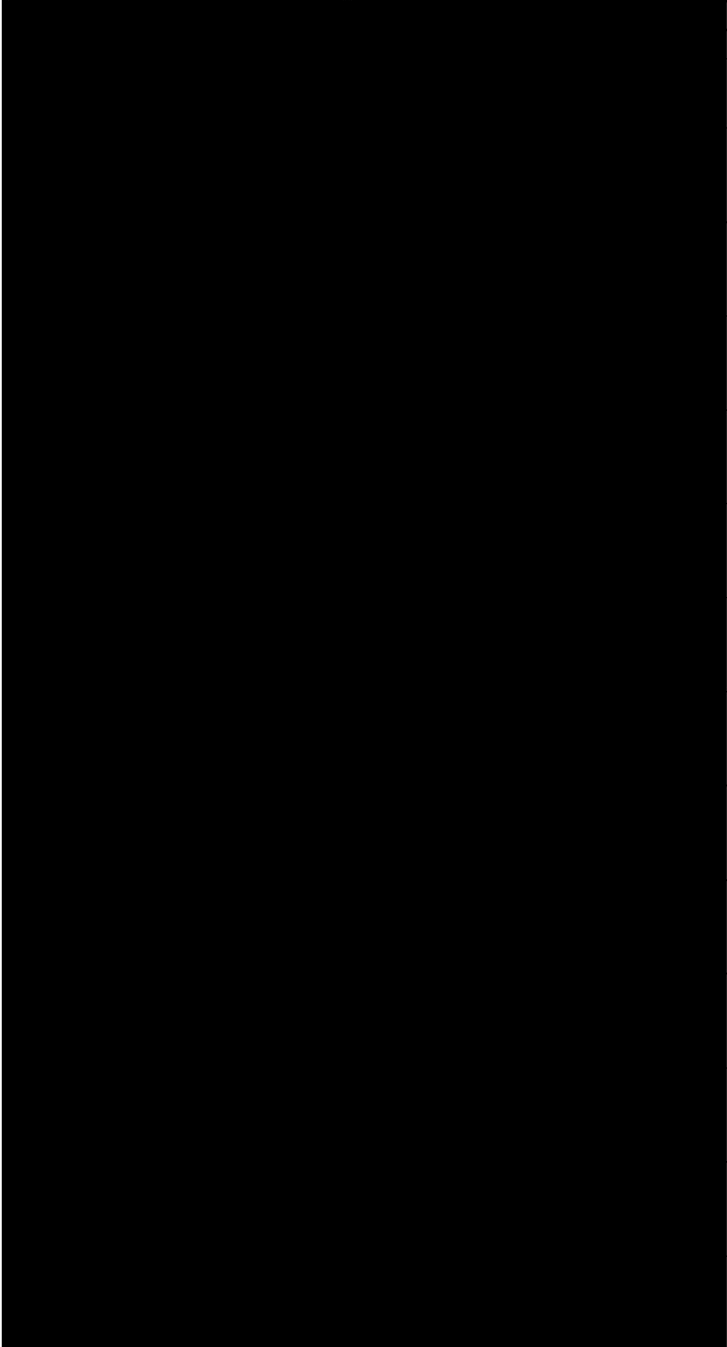
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EXTREME COLD WEATHER GUIDELINES

PROCEDURE NUMBER: DPEC-IW-0002

REVISION: 2019

Log sheet 1 Attachment #6 (Extreme Cold Weather Guidelines [REDACTED] Page 10 of 11
Processes & Checklist)

O'Brien Box Temp Check List Unit 6	Date:			
	Time:			
	Initials:			
	Ambient Temp:			
		Temp	Temp	Temp

This form, when completed, SHALL be retained for a minimum of 5 years.

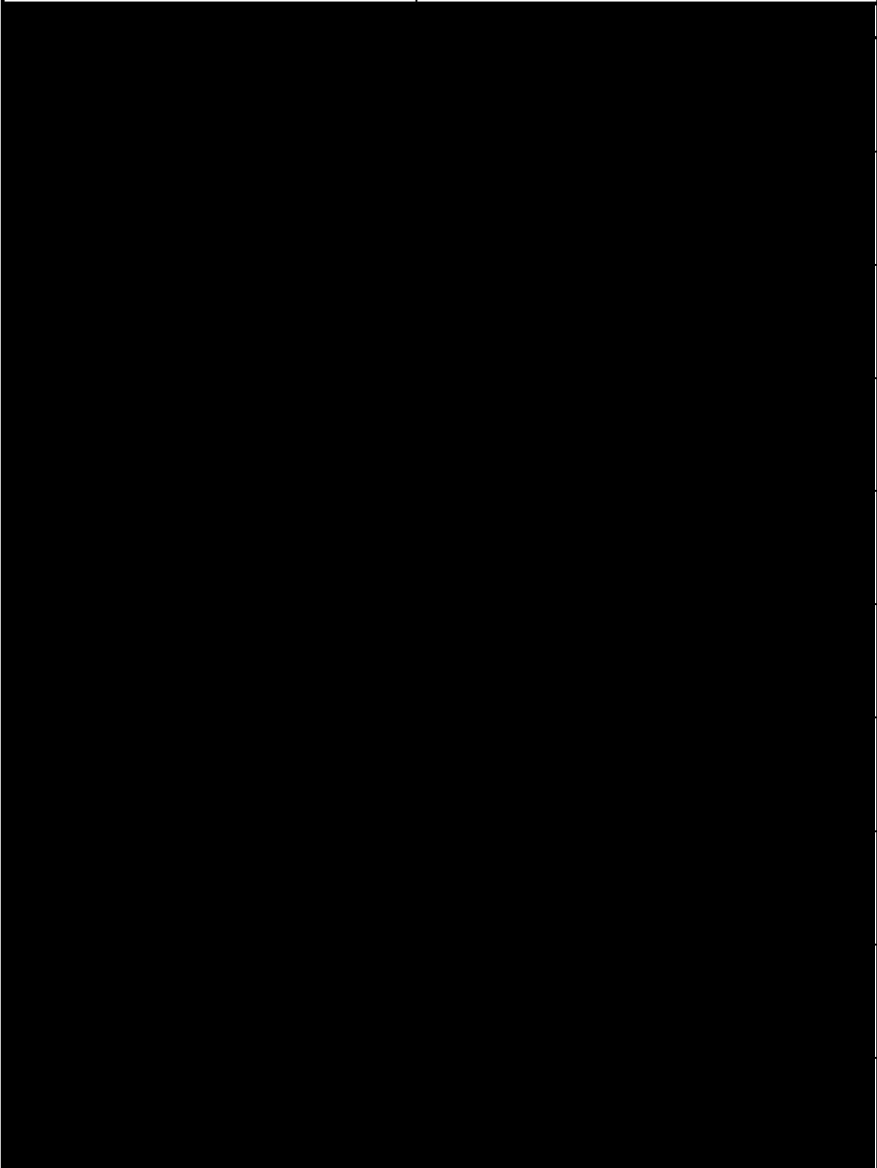
EXTREME COLD WEATHER GUIDELINES

PROCEDURE NUMBER: DPEC-IW-0002

REVISION: 2019

Log sheet 1 Attachment #6 (Extreme Cold Weather Guidelines
Processes & Checklist)

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O'Brien Box Temp Check List Unit 6	Date:			
	Time:			
	Initials:			
	Ambient Temp:			
		Temp	Temp	Temp

This form, when completed, SHALL be retained for a minimum of 5 years.

EXTREME COLD WEATHER GUIDELINES

PROCEDURE NUMBER: DPEC-IW-0002

REVISION: 2019

Log sheet 1 Attachment #6 (Extreme Cold Weather Guidelines
Processes & Checklist)

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Notes

1. Record SAT/UNSAT to denote operability of Instrument Enclosure Space Heaters.
2. WOs SHALL be written for failed space heaters.
3. Notify CRO of any inoperable Freeze Protection Circuits and implement compensatory freeze protection measures to determined necessary.

This form, when completed, SHALL be retained for a minimum of 5 years.

Log Sheet 3

Freeze Protection Panels Inspection Log sheet

Date: _____ **Ambient Temperature:** _____

[illegible]

Notes

1. Record SAT/UNSAT to denote operability of Freeze Protection Panels.
2. WOs SHALL be written for failed circuits.
3. Notify CRO of any inoperable Freeze Protection Circuits and implement compensatory freeze protection measures to determined necessary.

This form, when completed, SHALL be retained for a minimum of 5 years.

Log Sheet 3

Freeze Protection Panels Inspection Log sheet

Date: _____ Ambient Temperature: _____

Panel Number	Panel Location	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800

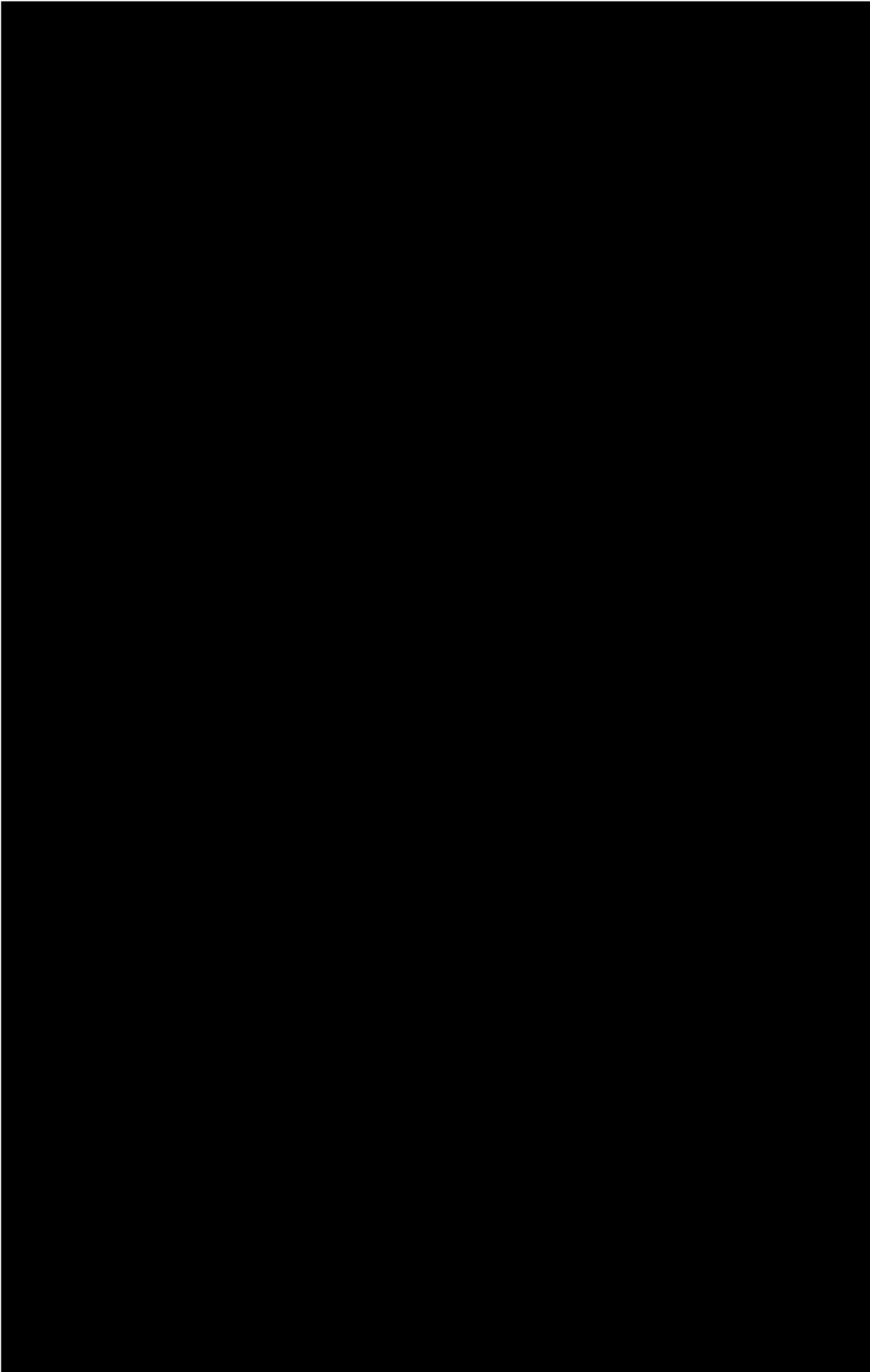
Notes

1. Record SAT/UNSAT to denote operability of Freeze Protection Panels.
2. WOs SHALL be written for failed circuits.
3. Notify CRO of any inoperable Freeze Protection Circuits and implement compensatory freeze protection measures to determined necessary

This form, when completed, SHALL be retained for a minimum of 5 years.

Attachment 7: Document Binder Tabs

Tab 1	Winter Readiness Preparation and Operation Standard
Tab 2	DPEC Winter Readiness Plan
Tab 3	Completed Critical Equipment Review
Tab 4	Completed Winter Preparation Checklist
Tab 5	Completed Maximo PMs and CMs
Tab 6	Annual Certification Letter
Tab 7	Monthly Meeting Minutes
Tab 8	Training Roster and Training Material
Tab 9	Miscellaneous Information



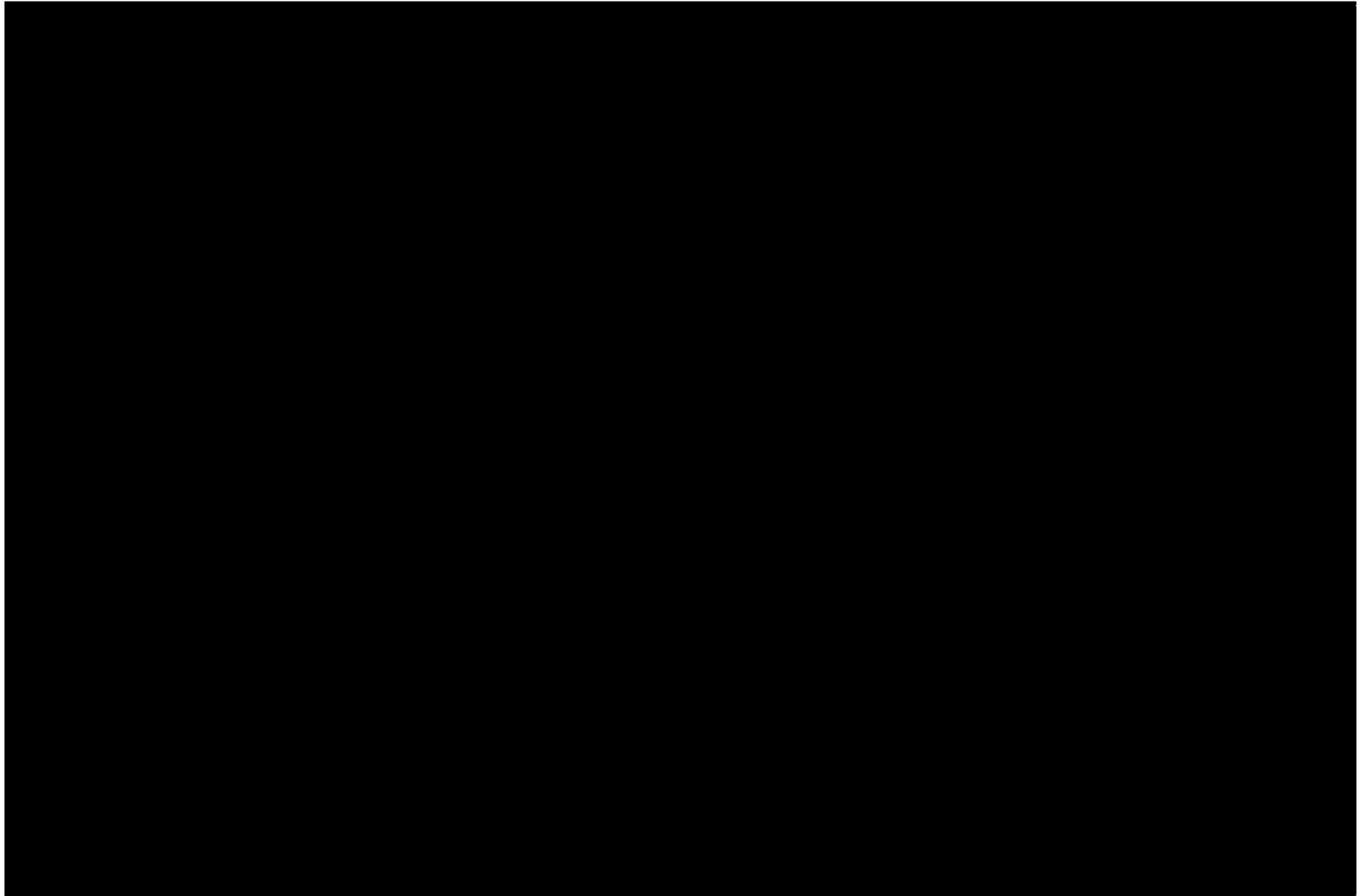
CRITICAL EQUIPMENT LIST

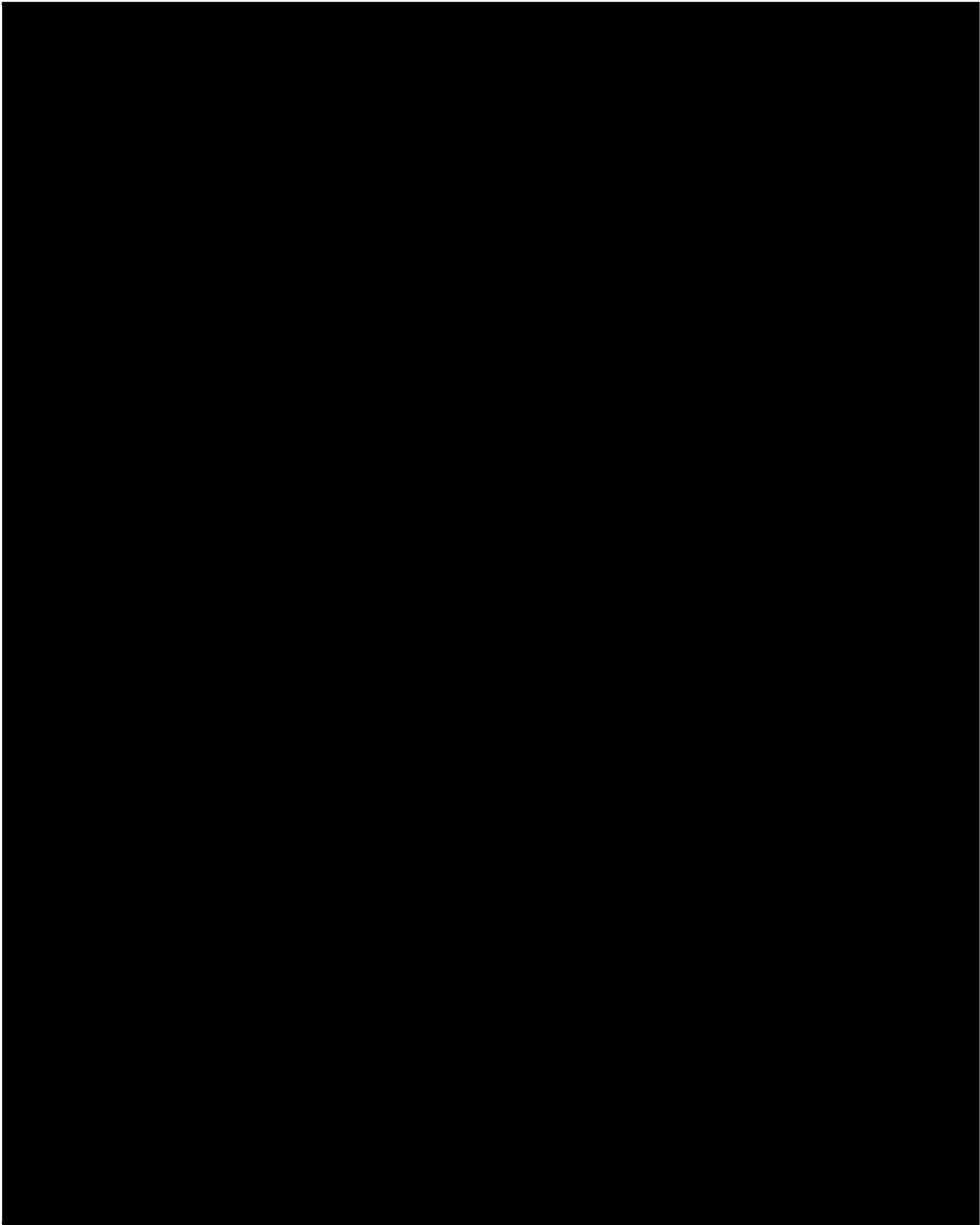
All critical equipment systems are reviewed by plant staff. They are documented in the system review and mitigation form.

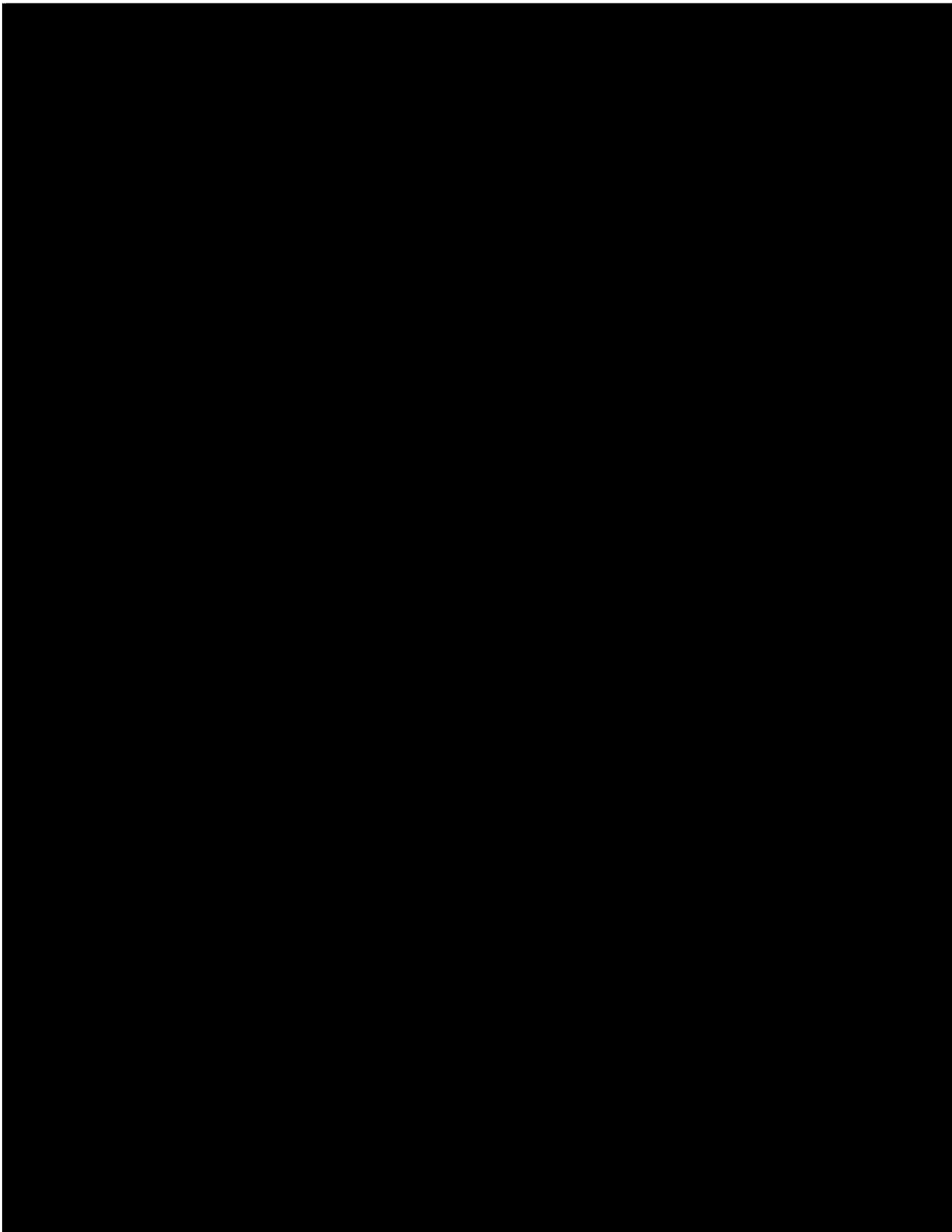


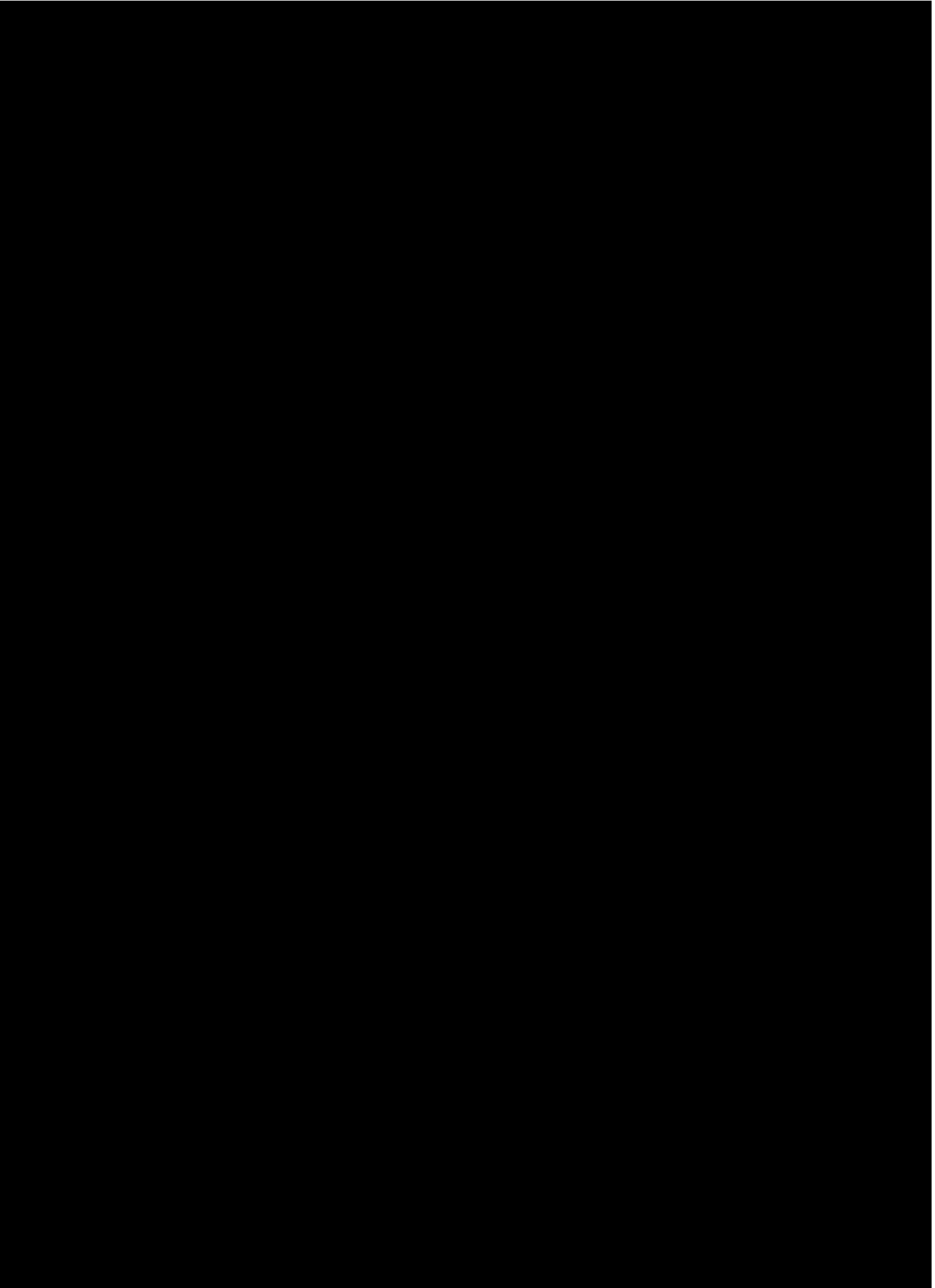
Attachment 9: Critical Equipment List

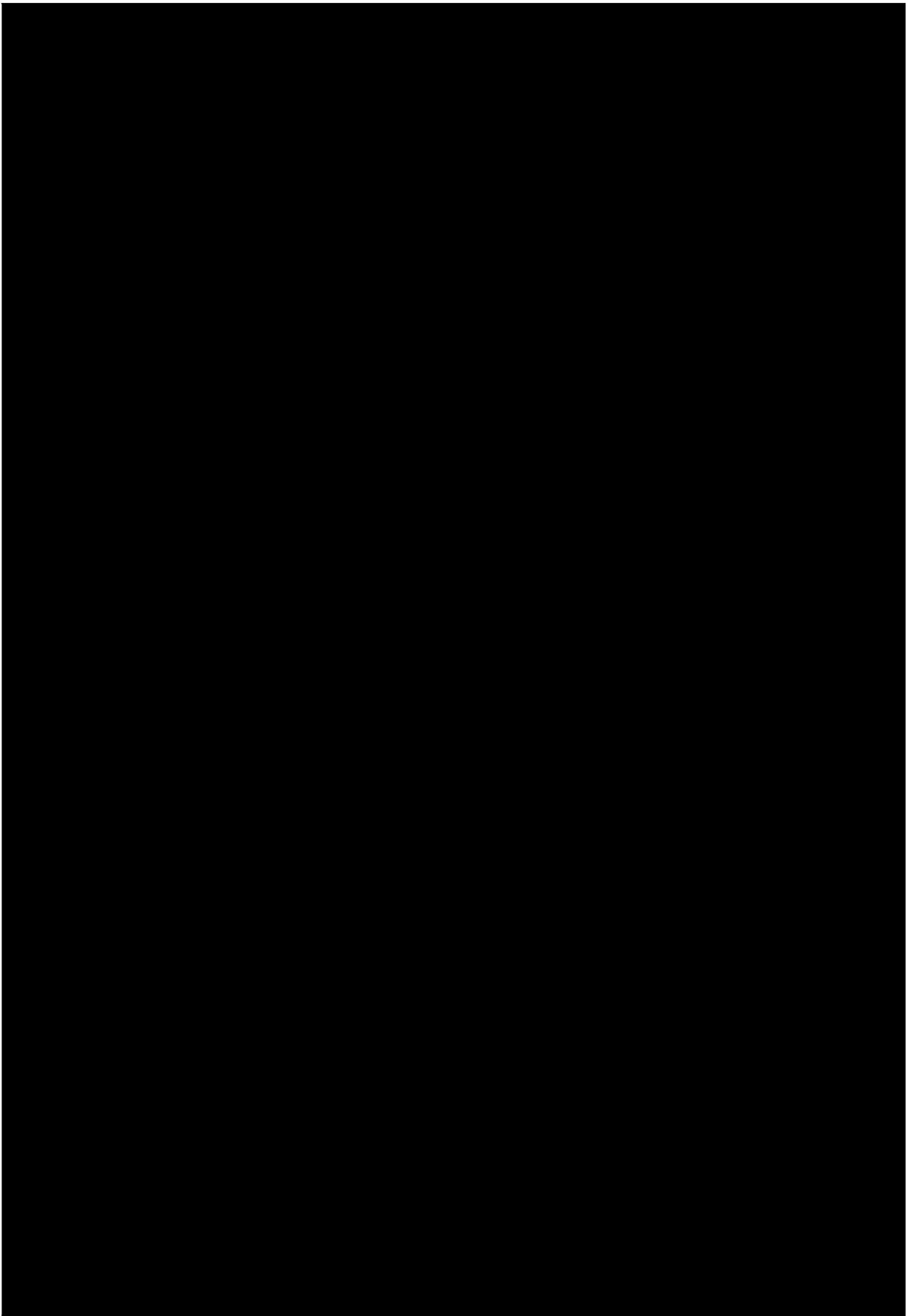


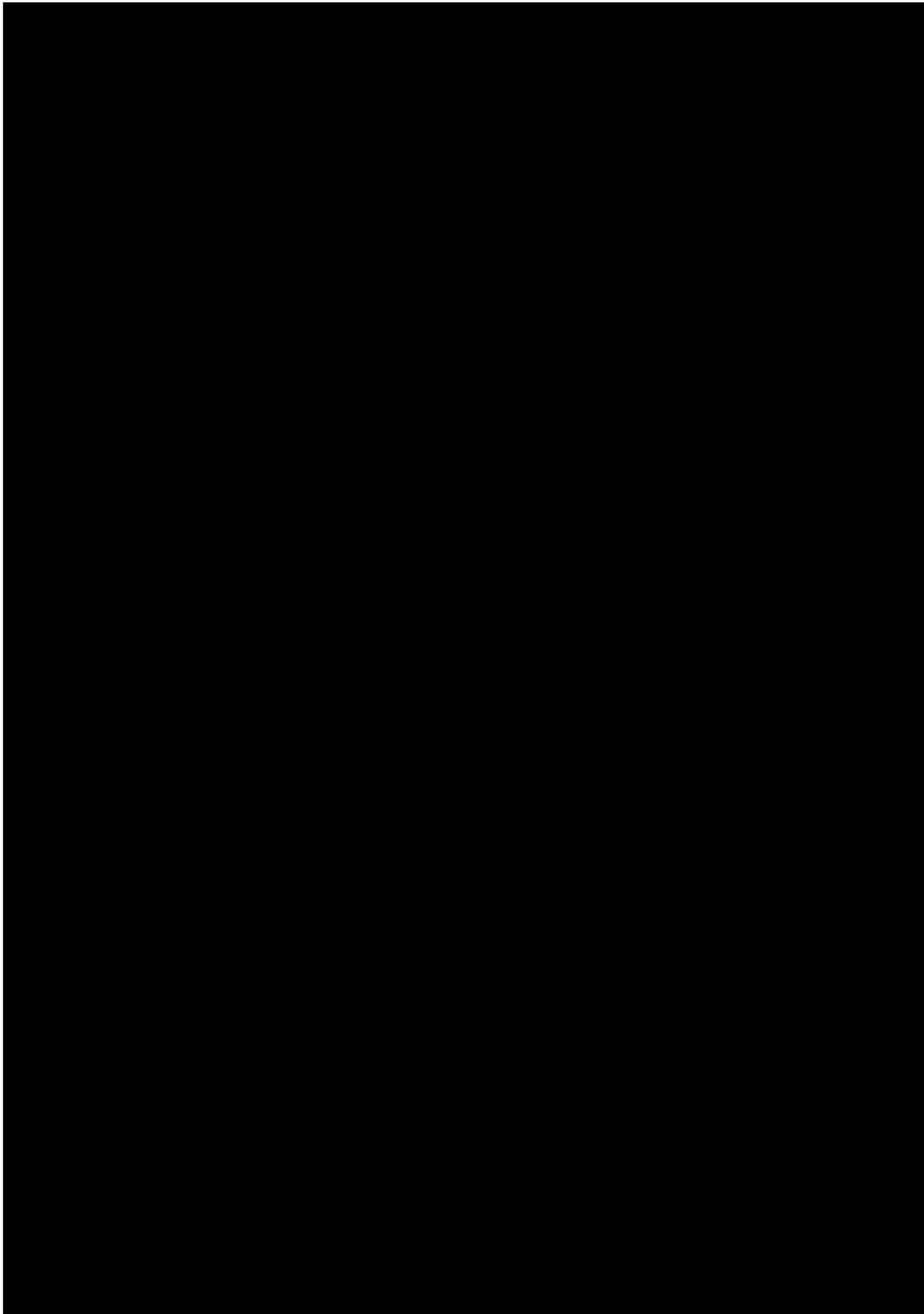


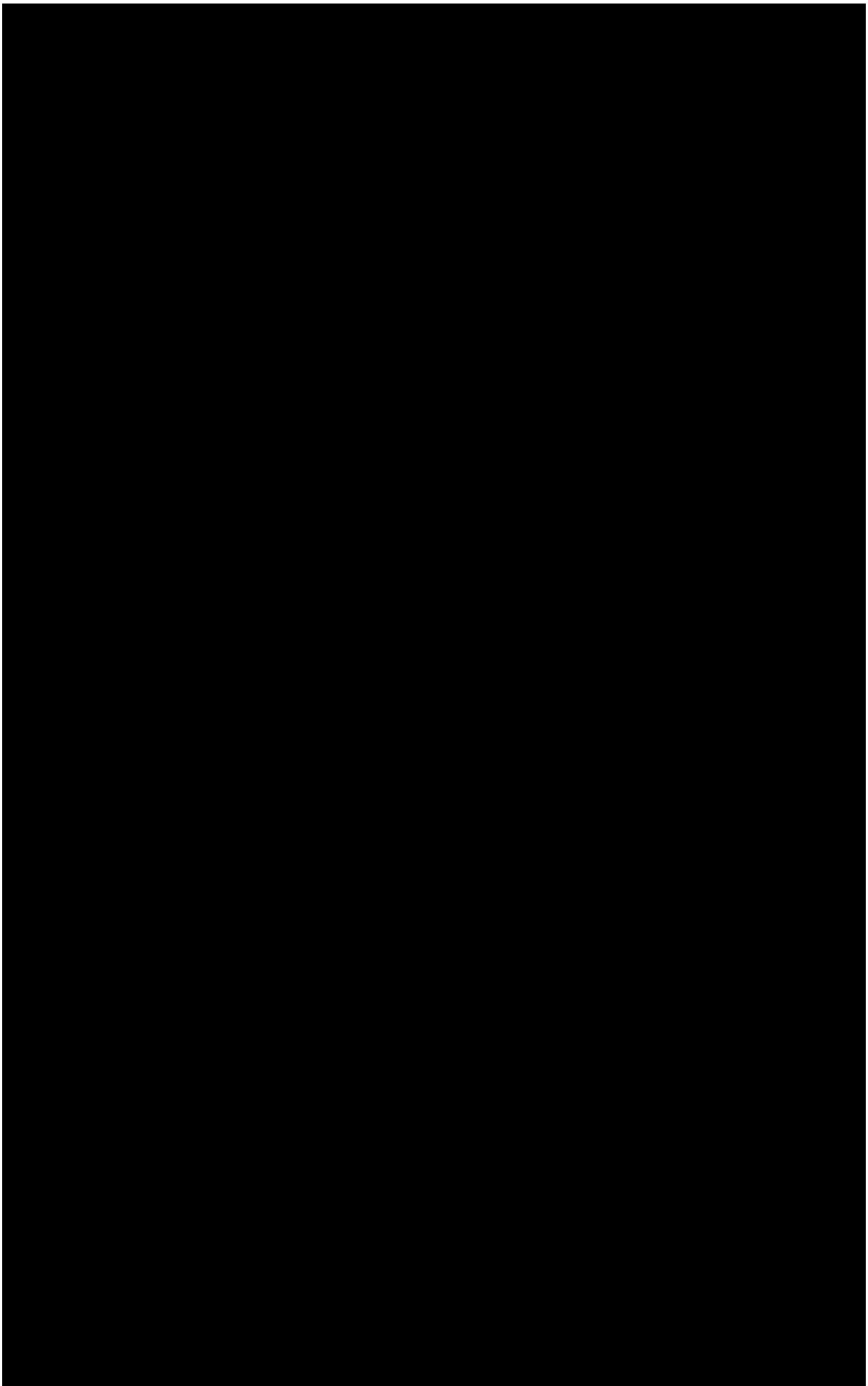


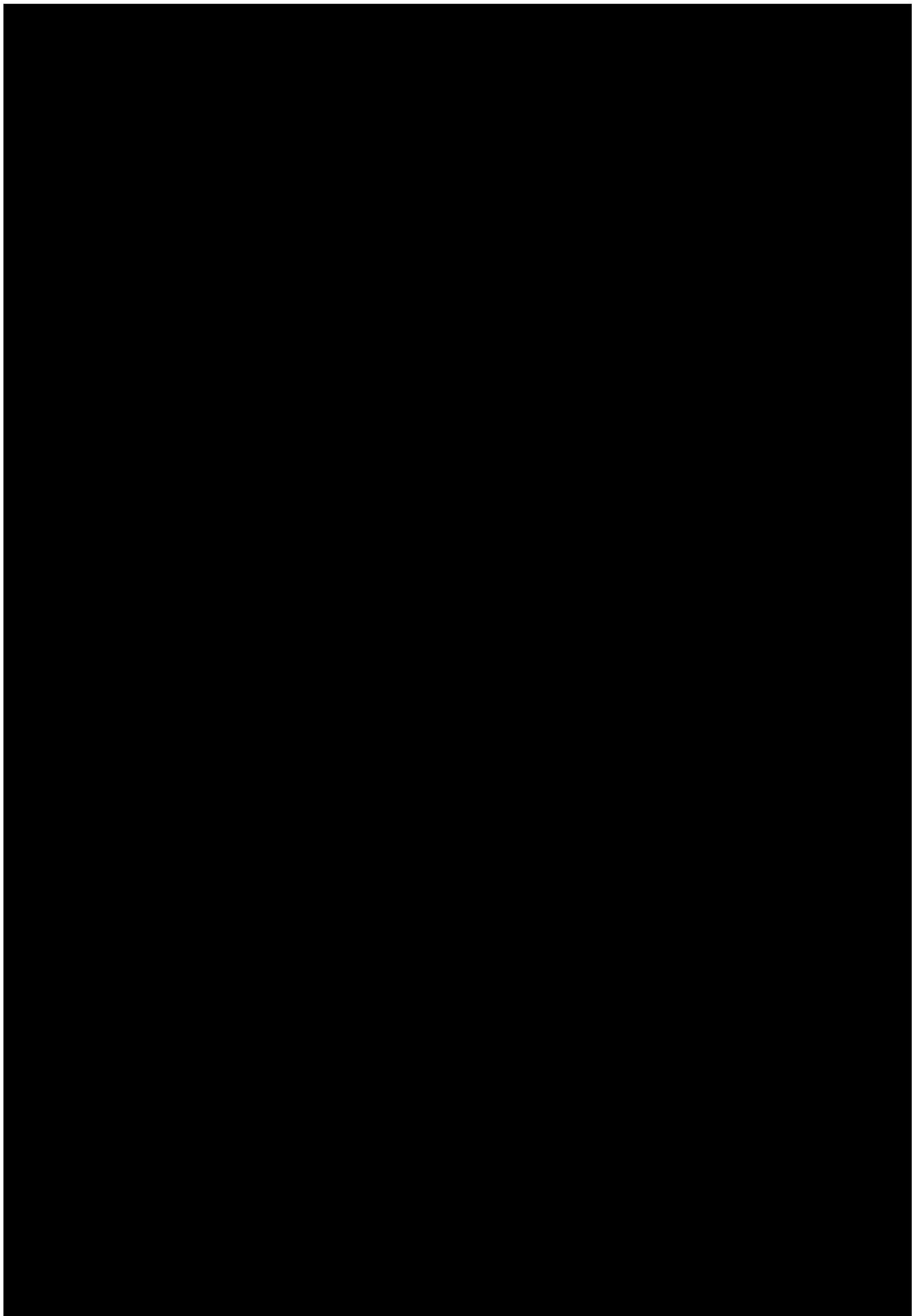


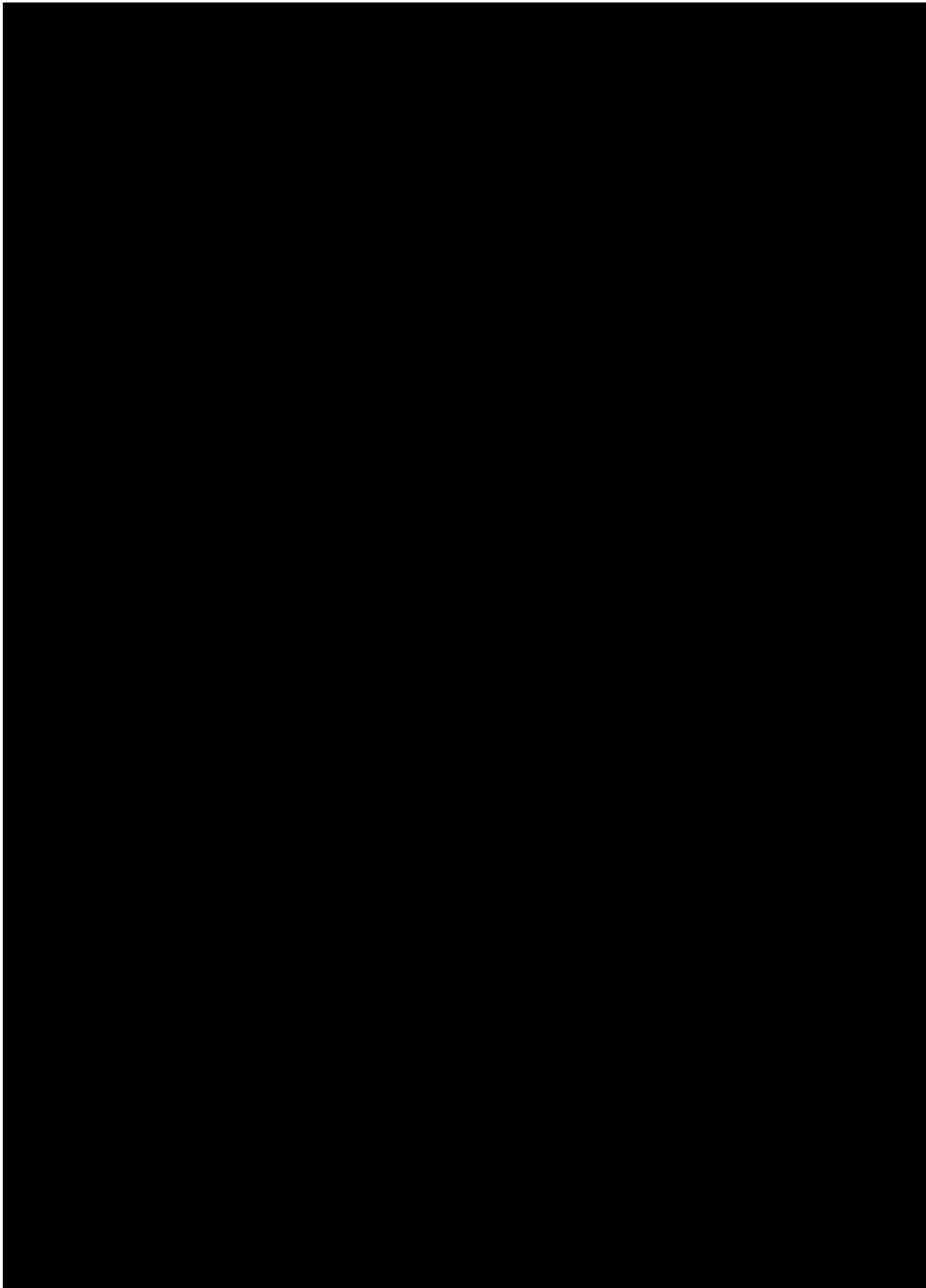














Freestone Energy Center Procedure Manual

DOCUMENT: PLANT SPECIFIC WINTER READINESS PLAN

DS
MA

NUMBER: FREC-ZA-0003

REVISION: 2

DocuSigned by:

Ty Pate

463938880845460
PLANT MANAGER

11-22-2021

DATE

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• Attachment 7 Personnel Training	
• Attachment 8 Winter Readiness Action Timeline	
• Attachment 9 Freestone Winter Readiness Certification	

1.0 PURPOSE

The purpose of this document is to describe the process to be used for preparing the Plant for reliable operations during the Winter Period by ensuring compliance with the Plant Specific Winter Readiness Plan (the "Plan"). The Plan is to be used in conjunction with the Winter Readiness Standard (the "Standard"), Plant Specific Winter Operations Procedure (the "Procedure"), the Winter Readiness Actions Timeline, checklists, worksheets, and Maximo PMs.

2.0 SCOPE

For the purpose of this procedure, the Winter Period is from November 1 through March 15. This Plan directs the management of the scope of work activities for staff to complete before cold weather arrives. This Winter Readiness Plan is not the same as the Procedure. The Plan is to provide guidance for *preparing* the plant to endure winter temperatures without unplanned or forced outages or derates. The Plant staff will implement the Procedure only when the ambient temperature is low enough to cause potential problems. The intent of the Plan is to identify reliability issues that are directly related to cold weather, not reliability issues in general.

3.0 DEFINITIONS

Critical Equipment: Plant equipment that, during cold weather events, has the potential to: initiate a unit trip, impact unit startup, initiate an automatic runback, adversely affect environmental controls that may cause an outage or derate, adversely affect the delivery of fuel or water supply to the unit, or create a safety hazard.

Winter Period: The period from November 1 through March 15.

4.0 RESPONSIBILITIES

Plant Manager

The Plant Manager is responsible for:

- Developing and revising (based on lessons learned) the Plant's Plan and the Procedure. The Plan and Procedure must address all recommendations in the Standard that are applicable to the Plant.
- Performing or delegating Winter Readiness Coordinator responsibilities.
- Approving Plant Specific Plans and Procedures and ensuring all identified winter readiness work is completed prior to its required winter completion date.
- Ensure all Plant specific planned winter readiness activities and identified preventive maintenance ("PM") and corrective maintenance are entered into Maximo. All winter planned and repair work is to be documented in Maximo using the program category

"Seasonal" and the task category "Winter".

- Routinely updating the RVP on the Plant's winter readiness status.
- Verifying the Plant's winter readiness and formally certifying that readiness to the RVP prior to winter.
- During cold weather operation, ensuring the Plant Procedure is implemented, and any issues identified are corrected in a timely manner to assure continued reliable winter operation.

Maintenance Manager

The Maintenance Manager is responsible for:

- Implementing the Plant Plan and revising the Plan as required based on lessons learned.
- Ensuring the Winter Readiness PMs and other activities are in Maximo and implemented in accordance with the timeline included in the Plant's Plan and documented in Maximo (using the category "Seasonal" and the task category "Winter").
- During Winter Period, timely identifying and addressing any equipment deficiencies that could impact reliable operation during cold weather and properly documenting all repairs in Maximo.

Operations Manager

The Operations Manager is responsible for:

- Implementing the Plant Procedure and revising the Procedure as advisable based on lessons learned.
- Reviewing the Plant Operations Procedure before each Winter Period (October) to ensure the operating procedures, checklists, and instructions are current and include any new equipment added to the plant configuration since the previous Winter Period. Include in the review, Calpine fleet lesson learned, NERC lessons learned, and general industrial best practices that may have become known since last Winter Period.
- Reviewing the ongoing winter operation activities implemented during cold weather events, including activities identified in the rounds sheets and other checklists, in the Plant Procedure.
- Verifying that the Plant communications system is operational and that backup communications are in place.

- During Winter Period, timely identifying and addressing any equipment deficiencies that could impact reliable operation during cold weather and properly documenting all repairs in Maximo.

Winter Readiness Coordinator

A Winter Readiness Coordinator shall be appointed by the Plant Manager. The Winter Readiness Coordinators are responsible for communicating and tracking activities needed to achieve sustained reliability and availability during extreme weather events and for routinely reporting to the Plant Manager the status of the Plant's winter readiness preparations. The Plant Winter Readiness Coordinator supports the Operations and Maintenance Managers as required in performing their responsibilities as outlined above.

Specific responsibilities include:

- Chairing scheduled winter readiness meetings at intervals appropriate to the Plant.
- Tracking and reporting status of the Plant's winter readiness preparations.

Ensuring initial adequate stock of any consumables and supplies required to be on hand prior to any significant cold weather event (list included in the Plan) and re-ordering such stock of consumables and supplies when appropriate.

5.0 THE PLAN

In accordance with the Standard, the Plant has developed a Plan which includes its performance and documentation of the following activities, whenever applicable:

1. Minimum Plant Design Operating Temperature. As of the date of this Plan, the minimum design temperature for Plant operations is [REDACTED] at 50% relative humidity.

The Plant reviews any Plant modifications made in the previous year to verify that the modifications have not impacted the minimum plant design operating temperature.

This annual review is scheduled on PM #117506 and the results are documented in the Plant's local server or Maximo.

2. Review of Lessons Learned. The Plant reviews equipment freezing issues experienced over the previous year to determine lessons learned and incorporates lessons learned into the Plant Plan to avoid any reoccurrence.

This review is scheduled in PM #117507 and any identified action items are placed in Maximo work orders and identified with program category "Season" and task category "Winter" and reviewed during annual training with Plant staff. Any lessons learned may

also be documented in the Plant's local server.

3. Review Critical Equipment List. A list of Plant Critical Equipment that may be impacted by cold weather is attached as Attachment 1 (Critical Instrument and Heat Trace List) to this Plan.
4. Inspection and Testing of Heat Trace Panels and Heat Tracing for Critical Equipment Equipment. Heat tracing is used to protect instruments and other vulnerable equipment from freezing. PM #12352 is in Maximo for the annual testing. PM #117520 is in Maximo for monthly testing from November 1 to March 31. Any issues found during these PM checks are documented as follow up work orders in Maximo and identified with program category "Season" and task category "Winter." Attached to the Plan is Attachment 1 (Critical Instrument and Heat Trace List), identifying the circuits, testing method, ambient temperature when tested and testing results.
5. Perform Instrument Air System Maintenance. The Instrument Air System is critical to the operation of the Plant. Instrument Air System components are given high priority when malfunctions occur. To maintain the system integrity, moisture is removed from the system by automatic drain valves.

The designed dewpoint is -40° F at an outlet pressure of 125 psig and the dewpoint is monitored by Plant personnel and a monthly walk down of the system is performed as part of the Procedure. Additionally, any preventive or corrective maintenance is documented in general Maximo work orders which can be queried using "IAS" system code PM #11088-11091 for Instrument Air Dryers and PM #11182, 11185, 11186 for the Air Compressors.

6. Review Corrective Maintenance Work Orders. As part of the Winter Period preparation, a review of open Corrective Maintenance Work Orders having program category "Seasonal", and task category "Winter" is conducted to determine their potential impact on winter readiness and shall be integrated into the Plant's work week.

The review is documented as part of the Plan on PM #117521.

7. Perform Plant Insulation Walkdown. Perform a Plant walk down of the Critical Equipment's insulation and lagging and identify areas of insulation that should be considered for repair prior to winter operation. PM #110113 is in place to generate a work order for this review. Any corrective work is documented in Maximo by corrective work orders created during the Winter Readiness walkdown under PM #110113.
8. Winter Readiness Consumables and Supplies. A list of consumables and supplies kept in store for freeze protection is contained in Attachment 2 (Winter Readiness Consumables and Supplies). An inventory check is performed by Plant personnel (PM #106385).

9. Test Portable Heaters. Portable space heaters used for freeze protection are kept in a designated storage area for winter supplies. An operational test is performed on these portable heaters annually by Plant personnel (PM #101609) as part of the Plan prior to the Winter Period.
10. Test Permanent Building Space Heaters. An annual operational/functional check of all space heaters permanently installed in Plant buildings is conducted annually to ensure proper operations under PM #106384. A copy of the list of permanent building space heaters and their location is attached in Attachment 3 (Permanent Building Space Heaters).
11. Check Glycol Concentration. Not applicable. The Plant does not have a closed loop cooling system. 12. Space Heaters on Critical Instrument Breakers. Not applicable.
13. Operation Check of Instruments with Instrument Box Heaters. PM#117522 is performed to check the correct operation of all instruments with box heaters. A list of these instruments and their location is included in this Plan as Attachment 1 Critical Instrument and Heat Trace List).
14. Installation and Disassembly of Temporary Wind Breaks / Enclosures. Windbreaks and temporary heaters are installed annually to protect critical equipment from freezing. PM #111214 is performed each year to erect wind breaks/enclosures. A map of temporary windbreak locations around the Plant is attached in Attachment 4 (Wind Breaks, Portable Heaters and Lamps)
15. Draining Equipment. A list of equipment which requires draining during the Winter Period is contained in Attachment 5 (Draining Equipment) and PMs#106374-106377 (CT-Inlet Fogging System) are completed each year prior to the Winter Period and PM#112286 (Low Point Drains) is completed monthly during the Winter Period.
16. Fuel Oil Handling Equipment. Not applicable. The Plant does not have any fuel oil handling equipment.
17. Icing Prevention Equipment. Not applicable. The Plant does not have any icing prevention equipment.
18. Additional Preparations for Susceptible Plants. If required, the additional considerations contained in Attachment 6 (Additional Winter Readiness Considerations) may be performed by the Plant each year.
19. Annual Plan Review. This Plan will be reviewed annually by Plant management. PM#117523 is in place to ensure the annual reviews are performed.
20. Personnel Training. Winter readiness refresher training is completed annually as part of the Plant's Procedure prior to the Winter Period. The training will include any applicable

Plant modifications and past winter lesson's learned.

Personnel Training is documented as part of the Plan on PM #117524 and attendance by Plant personnel should be documented in writing in Attachment 7 (Personnel Training) and retained.

21. Winter Readiness Action Timeline. Attachment 8 (Winter Readiness Action Timeline) of this Plan contains a timeline for winter readiness actions and milestones.

6.0 The Procedure

In accordance with the Standard, the Plant implements the Procedure when

1. Operational Checklist During Freezing Weather. When outside ambient air temperature at the Plant is predicted to decrease or decreases to [REDACTED] ("Winter Weather Conditions") the Plant Operations Team implements the Procedure which is stored on the Plant local server, including completing the Freezing Weather Actions and Logsheets.

7.0 Pre-Winter Plant Status Reviews and Readiness Certification

Prior to the onset of the Winter Period each Plant Manager verifies winter readiness and formally communicates site status to the RVP (see example Attachment 9 Freestone Winter Readiness Certification). RVPs review regional winter readiness status and certify status to the EVP Operations.

8.0 REFERENCES

- CSN-102A (Winter Readiness Preparation and Operation Standard)
- CPN-714 (Records Management)
- CSN-101 (WORK MANAGEMENT PROGRAM)
- Management of Design Change Procedure

SUPPORT DOCUMENTS

Attachment 1	Critical Instrument and Heat Trace List
Attachment 2	Winter Readiness Consumables and Supplies
Attachment 3	Permanent Building Space Heaters
Attachment 4	Wind Breaks, Portable Heaters and Lamps
Attachment 5	Draining Equipment
Attachment 6	Additional Winter Readiness Considerations
Attachment 7	Personnel Training
Attachment 8	Winter Readiness Action Timeline

Attachment 9

Freestone Winter Readiness Certification

