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March 25, 2025

Melanie A. Bachman, Esq.
Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Re: Petition No. 1654 - Tunnel BESS LLC petition for a declaratory ruling pursuant to Conn. Gen. Stat. §4-176 and §16-50k, for the proposed construction, maintenance and operation of a 16.02 megawatt (MW) AC battery energy storage facility and associated equipment to replace the existing approximately 17-MW kerosene-fueled Tunnel Jet electric generating facility and associated equipment located adjacent to FirstLight Power, Inc.'s Tunnel Hydroelectric Generating Station, 72 Roosevelt Avenue Extension, Preston, Connecticut, and associated electrical interconnection

Dear Attorney Bachman:

On behalf of Tunnel BESS LLC (the "Petitioner"), we hereby submit to the Connecticut Siting Council the original and fifteen (15) copies of Petitioner's Responses to Council's Interrogatories for the above-referenced Petition. Electronic copies of these responses will also be provided as of today's date.

Please contact me if you have any questions regarding this submission.

Very truly yours,

Janie L. McDermott

JLMC/vab
Enclosures

{W3657809}

Petition No. 1654
Tunnel BESS, LLC
16.02 MW Battery Energy Storage Facility
72 Roosevelt Avenue Extension, Preston, Connecticut

Interrogatories
March 5, 2025

Notice

1. Has Tunnel BESS, LLC (TBL) received any comments since the Petition was submitted to the Council? If yes, summarize the comments and how these comments were addressed.

   TBL Response: Other than those comments received by the Connecticut Siting Council (the Council) from the Council on Environmental Quality on January 23, 2025, no further comments have been received by TBL since the Petition was submitted.

2. Referencing Petition p. 31 and Attachment 18, TBL held a meeting with the Town of Preston on March 28, 2024. What issues or concerns were raised at the meeting? How were such issues or concerns addressed?

   TBL Response: The March 28, 2024, meeting included representatives of TBL along with Keith Wucik, the Town of Preston Fire Marshall, and Doug Colter, the Building Official. During the conversation, an introduction to the TBL project (Project) was provided by the development team. The following questions, issues and concerns were raised and addressed:

   - **Decommissioning of, and permitting for, the removal of the Tunnel Jet facility. FirstLight provided information to the town representatives on the required permit reviews and application timelines that would be required and high level timeline.**
   - **Required permits for the Project. Attendees reviewed and discussed the application for building and electrical permits that would be needed for the construction of the Project, including required review processes and assistance to ensure technical experts are available to support the review.**
   - **Existing flood zone and location of the Project. TBL representatives addressed the location of existing flood zones relative to the Project site.**
   - **Potential fire hazards and safety response requirements. Specifics included discussion of a dry hydrant or water source, such as the Tunnel Dam, or a dry stand pipe; and whether existing equipment would be capable of drawing from the Quinebaug River at a 40' height limit for suction.**

   There has been no additional correspondence from the Town of Preston since the March 24, 2024, initial meeting. Future follow-up is anticipated as TBL moves closer to final design review and requests for building and electrical permitting from the Town.

3. Referencing Petition pp. 31-32 and Attachment 18, TBL held a meeting with the City of Norwich Fire Department on April 10, 2024. What issues or concerns were raised at that meeting? How were such issues or concerns addressed?

TBL Response: The April 10, 2024, meeting included representatives of TBL along with the City of Norwich Fire Marshall, Tracy Montoya, and Assistant Chief, Jason Erban. During the conversation, an introduction to the proposed Project was provided by the development team. The following questions, issues and concerns were raised and addressed:

- **Design of the BESF, including location, spacing, and fire suppression systems. During the discussion, it was noted that water was not an effective means of knocking down a BESS fire; however, it could be used to water adjacent units. The development team and Norwich representatives also discussed spacing between the units as an important factor.**
- **TBL compliance with UL 9540A standard. This included discussion regarding cell and module testing to assess outcomes during an adverse event; the automatic fire suppression system and use of aerosol; and differences between current BESF design and prior generations, namely the inclusion of better design parameters resulting in lower fire risk.**
- **Fire response. This included discussion regarding the lack of confined spaces with the Project design.**
- **Specialized training. The development team and TBL representatives also discussed coordinating specialized training for Norwich and local emergency responders in 2026.**

There has been no additional correspondence from the City of Norwich since the initial meeting on April 10, 2024. Future follow-up is anticipated as TBL moves closer to final design review and requests for building and electrical permitting from the City. The development team also anticipates offering specialized training on BESF fire suppression as part of the Project permitting process, prior to commencing construction.

Public Benefit

4. Referencing Petition p. 9, generally describe when and how often Tunnel Jet was dispatched over its useful life.

TBL Response: FirstLight owned and operated the Tunnel Jet from 2016 to 2023, following an asset sale from Engie to FirstLight. While Tunnel Jet began commercial operations in 1969, FirstLight's operational records date back to 2000. In 2021, FirstLight evaluated the asset to determine whether to decommission or continue operations. This analysis relied on data from 2010 through 2022, which determined that the Tunnel Jet was substantially underutilized due to market policy.

From 2010 through 2021, the mean monthly capacity factor of the facility was 0.17%, and the asset provided less than 10 MWh of generation during 52% of the months occurring from 2010 to 2021. Dispatch, while uniformly low, was most often above the mean during summer and winter, as shown in the table below. Revenues for Tunnel Jet primarily resulted from participation in the ISO-New England (ISO-NE)

Forward Capacity Market, averaging $62 per kW-year; or $3,564 per MWh delivered to the grid.

Tunnel Jet Average Monthly Generation and Price, 2010-2021		
Month	**MWH**	**$ per MWh**
January	33	67.75
February	27	64.26
March	14	43.35
April	12	33.06
May	38	29.41
June	12	31.48
July	51	38.04
August	57	35.8
September	47	33.23
October	6	34.1
November	8	40.72
December	19	51.99

Underutilization of oil generators during this period was extensive; despite oil generators receiving 20% of capacity revenues, they only supplied 0.52% of energy on average. Coal's declining capacity is also reflected in generation declines to less than 0.1% of generation in 2020. In contrast, while renewables received up to 16% of capacity revenues, they provided 18.7% of energy on average. By replacing the existing Peaker with a BESS facility, the Development team believes that it would contribute significantly more to the electrical grid's overall sustainability, lowering energy costs.

5. Would TBL bid the project into the state Energy Storage Solutions Program or other energy procurement?

TBL Response: TBL's Project participated in CT Department of Energy and Environmental Protection's (DEEP) recent RFP under 21-53 for Energy Storage, and is anticipated to participate in any forthcoming procurements under the current CT Public Utility Regulatory Authority (PURA) Docket 25-01-15. In addition, with support from a CT incentive program, the TBL development team anticipates the Project will participate in all eligible markets via ISO-NE and will seek the Federal Investment Tax Credit.

6. How is the proposed facility consistent with the objectives of the state Conservation & Load Management Plan?

TBL Response: TBL's proposed facility is anticipated to directly support the objectives of the 2025-2027 Connecticut Conservation & Load Management (C&LM)

Plan by reducing energy prices, lowering regional carbon dioxide (CO2) and greenhouse gas (GHG) emissions, and promoting workforce development and training for local Connecticut communities.

One of the C&LM Plan's primary goals is to implement strategies that reduce peak electric demand to improve energy affordability. The Project would support this objective by utilizing charge and discharge schedules to shift energy supply from off-peak periods to peak periods, which improves grid efficiency and helps reduce and stabilize wholesale power prices. By charging during low-cost periods and discharging during peak periods, the Project is anticipated to lower the realized peak period local marginal price of energy.

The C&LM Plan prioritizes reducing CO2 and other GHG emissions as part of Connecticut's climate action goals, targeting a 2.8 million metric ton CO2-equivalent ("CO2e") reduction over its lifetime. Additionally, the Governor's Council on Climate Change aims to cut emissions 80% below 2001 levels by 2050. The Project would directly support these objectives by replacing a fossil-fuel peaker with a BESF that charges during non-peak periods or periods of high renewable energy generation, commonly referred to as the "duck curve"; and discharges during peak demand, avoiding the need for GHG-intensive peaking resources within the ISO-NE network to operate. Based on FirstLight's latest calculations, the Project is expected to reduce local CO2e emissions by an estimated 9,005 metric tons.

The C&LM Plan also emphasizes workforce training to prepare Connecticut communities for clean energy careers. As a clean energy infrastructure project, TBL's Project would support local job creation and skill development in battery storage installation, operation, and maintenance. FirstLight, in partnership with New Leaf Energy, has also committed $60,000 in seed funding to Operation Fuel, Connecticut's only year-round emergency energy assistance program. The funding was used to create a robust training program to build the clean energy workforce and play a critical role in supporting the clean energy transition in Connecticut. This funding provided workforce training in energy efficiency, home auditing, and building science to expand the local clean energy workforce while ensuring equitable access to green job opportunities.

Project Development

7. What is the estimated cost of the Project? Are costs to decommission/remove the Tunnel Jet facility excluded from Project costs? How are Project costs recovered? Is the energy being purchased at market rates?

TBL Response: The estimated cost for the Project is $31,700,000, exclusive of Project financing expenses and decommissioning of the existing Tunnel Jet. Project capital and operating expenses are anticipated to be recaptured through a combination of the Federal Investment Tax Credit for energy storage, contract revenues through energy service agreements, participation in ISO-NE wholesale markets, and incentive programs through the State of Connecticut. Energy service revenues, including both

contracted and wholesale market revenues, are anticipated to transact at pricing competitive with market rates.

8. Does TBL have an agreement to provide energy storage? If so, what is the term of the agreement and with which entity? If the facility operates beyond the terms of such agreement, will TBL decommission the facility or seek other revenue mechanisms?

   TBL Response: Although TBL does not have a current agreement to provide energy storage, FirstLight anticipates contracting TBL under ISO-NE market rules once it receives its Interconnection Agreement and all necessary permits and approvals to move forward to construction. The TBL team has had conversations with a variety of counterparts, including load-serving entities within the ISO-NE service territory. The Project is anticipated to participate in all eligible ISO-NE markets.

9. If TBL transfers the facility to another entity, would TBL provide the Council with a written agreement as to the entity responsible for any outstanding conditions of the Declaratory Ruling and quarterly assessment charges under CGS §16-50v(b)(2) that may be associated with this facility, including contact information for the individual acting on behalf of the transferee?

   TBL Response: Yes. Transfer of the facility is not currently contemplated, but if a transfer were to take place during the life of the project, TBL would provide the Council with a written agreement and contact information for the new entity responsible for any outstanding conditions related to the Declaratory Ruling and associated assessment charges.

Proposed Site

10. Referencing Petition p. 9, on approximately what date did Tunnel Jet cease commercial operation?

    TBL Response: The Tunnel Jet facility last operated on May 31, 2023 at 8:32 AM, at which point it was removed from service with ISO-NE through a planned outage. The Capacity Network Resource Capability (CNRC) associated with Tunnel Jet has transitioned to Tunnel BESS via a repowering application in ISO-NE Forward Capacity Auction 18.

11. Referencing Petition p. 15, approximately how much larger is the footprint for the proposed BESF than the existing area for Tunnel Jet?

    TBL Response: The proposed BESF footprint is approximately one (1) acre larger than the existing Tunnel Jet area.

12. Referencing Petition p. 16 and Exhibit 5, what is the approximate value of the marketable timber harvest?

    TBL Response: For the proposed clearance area of 1.29 acres, there likely would be an insufficient volume of timber to make any harvest commercially viable from a

practical perspective. The harvesting costs of mobilization, site preparation, and removal of the timber would exceed the marketable value of the timber for such a small area. In addition, most of the trees in the area to be cleared are relatively small, which further reduces their marketable value.

Portions of the wood on site would likely be used for erosion control purposes, and FirstLight has previously provided wood chips to the neighboring dairy farm for erosion control and for use as stall bedding. These uses may be possible for this Project as well.

13. Please confirm the following:
    a) Distance from the BESF perimeter fence to nearest property line;

    TBL Response: The distance is approximately two (2) feet from the BESF perimeter fence to the industrial zoned parcel owned by The Connecticut Light and Power Company (CL&P).

    b) Distance from the BESF perimeter fence to the nearest residential property line if the nearest property line referenced is not residential;

    TBL Response: The distance is approximately 677 feet from the BESF perimeter fence to the parcel owned by John Good Living Trust and located at 68 Roosevelt Ave. Extension, which is the nearest residential property line.

    c) Distance from the nearest part/corner of the battery containers to the nearest property line;

    TBL Response: The distance is approximately 33 feet from the nearest part/corner of the battery containers to the industrial zoned parcel owned by CL&P.

    d) Distance from the nearest part/corner of the battery containers to the nearest residential structure; and

    TBL Response: The distance is approximately 1,000 feet from the nearest part/corner of the battery containers to the nearest residential structure, which is located at 685 River Road and owned by Jencks Randall.

    e) Distance from the nearest part/corner of the battery containers to the nearest residential property line.

    TBL Response: The distance is approximately 705 feet from the nearest part/corner of the battery containers to the residential zoned parcel owned by John Good Living Trust, which is located at 68 Roosevelt Ave. Extension.

Proposed Facility and Associated Equipment

14. Referencing Petition Attachment 2, Drawing C-3.0, would the Project have a control house? If so, where would it be located, and what would be the overall dimensions (length, width and height)?

    TBL Response: No, the Project does not require a control house.

15. Referencing Petition Attachment 2, Drawing C-3.0, list the equipment on the six proposed inverter/transformer pads.

    TBL Response: Each of the proposed inverter/transformer pads would include the SMA Sunny Central Storage (Inverter and XFMR combination) 3950 UP-US. Information regarding this equipment is included in Exhibit 3 of the Petition.

16. Provide the number of battery racks per battery storage unit, the number of battery modules per battery rack and the number of battery cells per battery module.

    TBL Response: Each battery container would include 10 battery racks of eight (8) battery modules, for a total of 80 battery modules. Each battery module contains 48 cells.

17. Referencing Petition p. 13, the proposed battery design is lithium ion. Why was this design selected? Provide a summary of the available battery technology types and explain why each technology type could or could not be implemented at the proposed site. For reference, please see the response to Interrogatory No. 5 to the Council's Petition 1637 Set 2 Interrogatories at the following link:

    https://portal.ct.gov/-/media/csc/3_petitions-medialibrary/petitions_medialibrary/mediapetitionnos1601-1700/pe1637/petitionersubmissions/kce-ct-11_-llc-final-responses-to-second-set-interrogatories-for-petition-no-1637.pdf?rev=c0628d35ce7542608952a2d7a88aae03&hash=6968F6F641C0F52420A5F4D22E1F3105

    TBL Response: Lithium-Ion batteries were chosen for the Project for a variety of reasons. Please see below for a summary of the different battery designs.

    <u>Sodium-Sulfur (NaS) Batteries</u>
    These are high-temperature batteries primarily used for large-scale storage applications.

    Pros: High efficiency, long life, large capacity
    Cons: High operating temperature, high initial cost and maintenance costs due to their high operating temperatures, and safety concerns due to risk of leakage and fires associated with the high temperature and sulfur content

Suitability for TBL Project: Safety and maintenance issues disqualified this type of battery from use. Additionally, the high initial cost makes this type of battery commercially infeasible for a project of this size.

Flow Batteries

Flow batteries store energy in liquid form, using different chemical solutions for the charge and discharge processes.

Pros: Long life cycle, safe
Cons: Low energy density (i.e., flow batteries take up more space for the same amount of stored energy compared to lithium-ion or NaS batteries), complexity, high cost

Suitability for TBL Project: Low energy density is a disqualifying attribute for most energy storage systems in New England. This part of the country has a higher population density, a stricter regulatory environment, more developed spaces, and those spaces that are not developed are often fully forested and/or wetland resources. Low energy density means that more space must be developed for a project to obtain a given capacity. The site proposed for the Project is constrained by the size of the parcel, the Quinebaug River, FEMA flood hazard areas, and steep topography in proximity to the River. An expanded footprint would have resulted in additional environmental, stormwater, and tree clearing impacts. This, along with the added complexity and high cost of flow batteries disqualified them from consideration for this Project.

Lead-Acid Batteries

These are the traditional type of rechargeable battery, still used in some applications today, such as backup power and grid support.

Pros: Low initial cost, widely available
Cons: Shorter lifespan, low energy density, required regular maintenance (e.g., checking water levels), especially in flooded lead-acid batteries.

Suitability for TBL Project: In addition to the difficulties with a low energy density solution, lead-acid batteries, while initially are lower cost, would result in higher life cycle costs for the Project after factoring in maintenance and replacement costs. Lithium-ion batteries do degrade over time, necessitating oversizing or augmentation, but lead-acid batteries have an even shorter lifespan, which would require complete replacement multiple times to achieve the Project's target lifespan.

Solid-State Batteries

These are an emerging technology in which the liquid electrolyte is replaced by a solid electrolyte.

Pros: Higher energy density, safe, longer lifespan

Cons: High cost; solid-state batteries are still in development, making them very expensive.

Suitability for TBL Project: These batteries have not been deployed at scale for battery energy storage systems due to their expense. They are not commercially feasible for this Project.

Nickel-Cadmium (NiCd) Batteries

NiCd batteries are an older technology, though still used in some specialized applications.

Pros: Durability, long life cycle, low maintenance
Cons: Low energy density, high toxicity; cadmium is a toxic material, which poses environmental hazards if the battery is not properly recycled

Suitability for TBL Project: NiCd batteries are older technology and are generally disfavored in most applications due to the toxicity of cadmium and the environmental concerns it creates. The low energy density also makes this a poor choice for battery energy storage systems.

Lithium Iron Phosphate (LFP) Batteries

These are a type of lithium-ion battery known for their stability, long cycle life, and enhanced safety features.

Pros:

- **High Safety: LFP batteries are thermally stable and have a lower risk of thermal runaway compared to other lithium-ion chemistries.**
- **Long Cycle Life: They can withstand thousands of charge-discharge cycles, making them highly durable.**
- **Stable Chemistry: Less prone to overheating or combustion.**
- **Moderate Cost: Generally, more affordable than other lithium-ion chemistries like NMC (Nickel Manganese Cobalt).**

Cons:

- **Lower Energy Density: LFP batteries have a lower energy density compared to NMC or other lithium-ion chemistries, meaning they require more space for the same energy storage.**

Suitability for TBL: Lithium-Ion is the best solution for the Project because of its energy density, lifespan, and efficiency. LFP batteries are a viable option due to their safety, longevity, and moderate cost. However, the lower energy density may require a larger system footprint, which could impact feasibility depending on space constraints. Additionally, the deep market saturation that Li-ion technology enjoys means that there are many solutions to mitigate thermal runaway risks; regulatory ordinances such as NFPA855 have been specifically tailored to lithium-ion batteries to provide guidance on siting and installation.

Energy Output

18. Referencing Petition p. 15, how will ISO-NE dispatch the facility to meet its capacity supply obligations and in what markets?

TBL Response: To meet its capacity supply obligations, the facility would offer into the ISO-NE Day-Ahead and Real-Time energy markets and be subject to ISO-NE's security-constrained economic dispatch process, which seeks to reliably serve New England's electric demand with the least-cost portfolio of resources each operating day. In addition to the ISO-NE capacity and energy markets, the facility may participate in the ISO-NE ancillary services markets to provide services such as reserves or regulation.

19. When would the facility be dispatched (actively and passively) and for what duration?

TBL Response: The facility would be subject to ISO-NE dispatch and any limitations imposed in the Interconnection Agreement. As such, the facility's dispatch would vary depending on grid conditions. Generally, the facility is expected to charge during times when regional energy demand and prices are low (e.g., overnight) and discharge when energy demand and prices are high (e.g., evening peak hours). While daily and hourly dispatch would vary according to prevailing grid conditions, generally the facility is expected to be dispatched for four (4) hours per day. If the facility is eligible in the future for any new state incentive programs for ESS, the facility may also be subject to any dispatch requirements that such a program would impose.

20. Is the facility required to reserve any battery storage capability for backup power? Where would the backup power be used and by whom?

TBL Response: The proposed facility is capable of a depth of discharge at 100%, meaning that no backup power or power retention is required for BESF operations. At present, no energy services contract is in place that would require retaining capacity; however, there could be an instance where discharge parameters in an energy service contract are structured to reduce a load-serving entities capacity requirement. In such an instance, a portion of the BESF may be reserved to discharge at specific times, but based on market dynamics this is likely to be coincident with any observed peak demand periods in real time ISO-NE markets.

21. What is the cumulative efficiency of the discharge output (e.g. the BESF can only discharge 90% of its stored capacity)?

TBL Response: The efficiency of the BESF system is approximately 96.25%; indicating RTE efficiency of approximately 92.51% or losses of approximately 7.49%. These values include efficiencies of the State of Health of the unit at installation, the BESS to the Power Conversion System, within the PCS, and conversion to Medium and High Voltage equipment, and delivery to transmission line. The figures are exclusive of auxiliary loads and no-load losses, which will be estimated based on final design configuration for the BESF.

22. When would the facility recharge (ex. off-peak hours)? What factors are considered for the recharge interval? Explain.

TBL Response: The facility would recharge according to ISO-NE's dispatch instructions, which are expected to be during times of low energy demand and pricing such as overnight during off-peak hours or during times of excess renewable energy production. ISO-NE would dispatch the resource each day as part of the least-cost portfolio of resources needed to reliably serve electric demand. This dispatch takes into account the priced supply offers and demand bids that the facility and other generators and loads in ISO-NE submit; any applicable transmission constraints; ISO-NE's reliability requirements; and other criteria as specified in ISO-NE's operating documents.

23. What storage capacity losses are anticipated for ambient temperatures below freezing?

TBL Response: Storage capacity losses are actually less for freezing temperatures than for warmer temperatures. At full charge, for storage temperatures of 77° to 104° F after 2 years, the capacity is anticipated to be 93.14% of the original installed capacity. For the same time period, but with a storage temperature of -22° to 77° F, the rated capacity is expected to be 94.27%. Please see the Hithium System Calendar Aging schedule attached.

24. Referencing Petition p. 13, the facility would have a net operating capacity of 16.02 MW at the point of interconnection, with an expected discharge period of four hours and approximately 68.4 MWh of output. Should the output be approximately 64.08 MWh? Explain.

TBL Response: Yes, the output should be approximately 64.08 MWh. The Project originally applied to the utility to be a 17.1 MW, four (4)-hour battery system, which is where the 68.4 MWh output projection originated. The Project was subsequently derated to 16.02 MW for four (4) hours, but the MWh value was not corrected.

25. Referencing Petition p. 13 and Attachment 3, the facility would have a net operating capacity of 16.02 MW with a four-hour duration. 24 battery containers are proposed at this time at approximately 3.44 MWh each, for a total of approximately 82.6 MWh, which is greater than the proposed energy discharge to the grid. Is the remaining energy storage capability of the batteries (that is not discharged to the grid) a reserve storage, due to electrical losses, to prevent a full depletion of the batteries or other reason(s)?

TBL Response: In order to ensure that the system can provide the designed energy storage capacity throughout the life of the Project, additional capacity must be installed initially. This is because battery storage capacity degrades over time. Oversizing the system compensates for this degradation, ensuring that even 10 years into the future, the system can still deliver the amount of energy it was designed to provide. It should be noted that this is in addition to future augmentation, which would require the installation of additional battery containers. Initial oversize and future augmentation are required for the same reason, battery degradation. See

Exhibit 2, Civil Plan Set, for the number of initially proposed containers and those proposed for future augmentation.

26. Would the BESF utilize power for cooling and heating of the battery packs? If yes, would this power source be from stored energy or from the local electric distribution system?

TBL Response: The Project would utilize power for cooling and heating of the battery packs. This power would be provided via an auxiliary service from the grid, not from the stored energy. This would allow the HVAC system to continue normal operations, even if the batteries are drained.

Electrical Interconnection

27. Referencing Petition Attachment 2, Drawing C-3.0, TBL proposes five utility interconnection equipment pads in the northeastern portion of the facility. Identify the equipment to be installed on each interconnection equipment pad. Would the electrical connections between these equipment pads be underground? If poles are required for overhead connections between the equipment pads, provide the quantity and heights above grade of the poles.

TBL Response: The equipment located on these proposed utility interconnection equipment pads would include:

1. **Collector switchgear;**
2. **Project-owned recloser;**
3. **Project-owned meter;**
4. **Utility-owned disconnect switch;**
5. **Utility-owned meter; and**
6. **Utility-owned recloser.**

All electrical connections between these equipment pads would be via underground conduit.

28. Referencing Petition Attachment 2, Drawing C-3.0, TBL proposes three inverter/transformer pads and one data acquisition system (DAS) pad. Identify the two additional equipment pads. (One of these pads is directly northeast of the DAS pad.)

TBL Response: The two additional pads depicted in the referenced Drawing would be for the auxiliary transformers.

29. Referencing Petition, p. 13, what are the primary and secondary line voltages of the six proposed 2,850 kVA transformers?

TBL Response: For the proposed 2,850 kVA transformers, the primary line voltages would be 23kV; the secondary line voltages would be 690V.

30. Approximately how tall are the transformers and inverters above grade?

TBL Response: The transformers and inverters (including the concrete pad) would be approximately 9.6 feet above grade.

31. Referencing Petition p. 13, what is the status of the System Impact Study and Interconnection Services Agreement with Eversource? Are any upgrades required to accommodate the proposed facility?

TBL Response: The Distribution portion of the System Impact Study (SIS) was completed on December 22, 2023. The Transmission portion of the SIS was completed on December 17, 2024. No required upgrades have been identified if the Project operates during Eversource's requested charge/discharge schedule (i.e., discharging from 3 p.m. to 8 p.m. with the ability to charge during all other times). The Interconnection Services Agreement (ISA) is expected to be issued in March 2025.

32. What are the line voltages (primary and secondary) of Tunnel Substation? What is the line voltage of the proposed electrical interconnection?

TBL Response: For the Tunnel Substation, the primary line voltage would be 115kV, and the secondary line voltage would be 23kV. The line voltage for the proposed electrical interconnection would be 23kV.

33. Would the facility be able to automatically disconnect from the grid in the event of a fault or other electrical disturbance? Explain.

TBL Response: Yes, in the event of an electrical disturbance, the proposed facility would be able to automatically disconnect from the grid via a disconnect switch, which is included with the equipment specifications on the pad located north of the access road. See Exhibit 2, Civil Site Plans.

Public Health and Safety

34. Referencing Petition p. 13, would the project comply with the National Electrical Code and National Electrical Safety Code? What codes and standards apply to battery storage facilities?

TBL Response: The Project would comply with the latest National Electrical Code with Connecticut Amendments, and all utility work would be performed in accordance with the National Electrical Safety Code. Additional standards that apply to energy storage systems include NFPA 855 Standard for the Installation of Stationary Energy Storage Systems, UL 1741 - Inverters, Converters, Controllers and Interconnection System Equipment for Use With Distributed Energy Resources; UL 1642- Certification of Lithium-ion Battery; UL 1973 -Standard for Batteries for use in Light Electric Rail (LER) Applications and Stationary Applications; and UL 9540 - Standard for Energy Storage System and Equipment.

35. Describe how the proposed facility would comply with the Council's White Paper on the Security of Siting Energy Facilities, available at: https://portal.ct.gov/-/media/CSC/1_Dockets-medialibrary/Docket_346/whitepprFINAL20091009114810pdf.pdf

TBL Response: The TBL Project is anticipated to incorporate security measures and protocols in alignment with the Council's White Paper on the Security of Siting Energy Facilities across the categories of Planning, Preparedness, Response, and Recovery; and would comply with governing regulations from the Federal Energy Regulatory Commission (FERC) and the North American Electric Reliability Corporation (NERC). FirstLight's existing portfolio of operational assets includes facilities that fall under FERC and NERC, and includes projects identified as Critical Energy Infrastructure. FirstLight mandates employee training for both NERC Critical Infrastructure Protection (CIP), and Cyber Security training for all employees, and appropriate safety and security training for identified Operational and Commercial team members.

The Project would be integrated into FirstLight's existing Enterprise Risk Management (ERM) and Energy Trading Risk Management (ETRM) systems, addressing security planning, preparedness, response and recovery. Key elements, specific to the Project, would include:

- **Perimeter fencing and access controls to restrict unauthorized entry, along with on-site surveillance cameras to monitor access, and 24/7 operational staff situated at the Tunnel Hydrogeneration Facility available to address any operational concerns.**
- **Automated fire suppression systems, along with best-in-class design technology intended to reduce the potential for adverse events. The TBL Energy Management System would continuously monitor the facility for adverse events via FirstLight's 24/7 energy tracking and operational monitoring capabilities, including coordination with NERC and ISO-NE.**
- **Close working relationships between FirstLight and local fire departments to ensure planning and response preparation are comprehensive prior to commencing operations.**
- **Employment of FirstLight's notification system to provide prompt messaging to emergency responders and impacted neighbors if an adverse event occurs.**
- **In the unlikely event of a system failure, recovery measures including site-specific remediation plans to restore the land and protect local ecosystems and proper disposal and recycling of damaged battery components.**
- **Participation in post-incident assessments, working with local emergency responders to evaluate response effectiveness and implement improvements as necessary.**

36. Provide the distance and direction to the nearest airport from the proposed facility.

TBL Response: The proposed facility would be located 14.65 miles southeast of Windham Airport, which is the nearest airport.

37. Would a crane be required for construction? If so, would FAA notice for use of the crane be required?

TBL Response: Yes, a mobile crane would be utilized for construction. Other methods of moving the battery and electrical components are available, such as forklifts, but a crane is the most efficient solution. At the location of the Project, FAA notification is only required for cranes over 200 ft. in height, which would not be required for this Project.

38. Referencing Petition Attachment 2, Drawing C-3.0, how many acre-feet of storage would each of the three proposed stormwater basins have? Has TBL consulted with DEEP Dam Safety program regarding permitting requirements, if applicable?

TBL Response: Infiltration Basin #1 would have 0.09 acre-feet of storage. Infiltration Basin #2 would have 0.03 acre-feet of storage. Infiltration Basin #3 would have 0.24 acre-feet of storage.

TBL has not yet consulted with DEEP Dam Safety Program, but will do so prior to commencing construction. It is anticipated that the stormwater basins will be classified as AA dams, which do not require an Emergency Action Plan. Regular inspection and maintenance of these basins is included in the O&M plan (see Exhibit 16).

39. Referencing Petition p. 21, would the proposed facility comply with DEEP air quality standards?

TBL Response: Yes, the proposed facility would comply with DEEP air quality standards. The facility would not generate any air pollutants or emissions.

40. Referencing Petition p. 27, the proposed facility would have a thermally activated aerosol gas fire suppression system. Identify the aerosol to be used.

TBL Response: The aerosol fire suppressant to be used is FirePro, an environmentally friendly fire aerosol that operates by interrupting the chemical chain reactions of the fire.

41. Referencing Petition p. 29, Attachment 4 – Fire Suppression Information, TBL notes that direct water suppression is not encouraged for BESF fires. Thus, would the water sprinkler system inside of the battery cabinets not be connected, and the aerosol gas fire suppression would be the only active on-site fire suppression system? Explain.

TBL Response: Correct, the integrated sprinkler system within the battery enclosure would not be connected to a water source. The aerosol gas fire suppression would be the only active fire suppression system. This is the only active system because, due to the difficulty with extinguishing lithium-ion battery fires, the standard approach to any thermal runaway event is to let the unit burn itself out. Instead of active suppression, fire safety design is focused on prevention and containment. Prevention is achieved through continuous monitoring of the health of individual cells via the

Battery Management System (BMS). If the BMS identifies any parameter (voltage, temperature, resistance, HVAC operation, etc.) outside of expected values, it will disconnect the battery and send an alert to the operations center. Containment is achieved via enclosure design that contains and prevents thermal runaway events from cascading from one cell to another, or one container to another. This testing is performed in accordance with UL9540A, during which a cell is purposely pushed towards thermal runaway and the resulting propagation, or lack thereof, is observed. The proposed battery storage solution is UL9540A-certified (see attachment to Response 45a), referenced below).

42. What are the typical causes of a battery fire? What is the typical duration of a battery fire before it self-extinguishes?

TBL Response: There are two typical sources of battery fires: 1) electrical equipment (inverter) malfunction, and 2) a short circuit within a battery cell.

Unlike some other manufacturers, the proposed Hithium battery container does not integrate the inverter into the same container, removing the possibility of that source of fire, which leaves a battery cell short circuit as the main possible cause. A short circuit generates heat, which causes the battery cells to release flammable gas. If this gas is allowed to increase in concentration, it can combust. The proposed Hithium battery containers combat this chain reaction by including NFPA69-certified exhaust fans. If gas is detected, the fans vent the container with the goal of keeping concentrations below 25%, which is the lower flammability limit per NFPA855. These fans are backed up with an uninterruptible power supply (UPS) that provides standby power for 24 hours, or 2 hours of operational power.

The duration of a battery fire is dependent on many variables. A fire may only consume a small number of cells, or may consume the entire container. External factors such as temperature and wind also contribute to the variability of duration. The UL9540A laboratory test resulted in temperatures spiking for approximately 2 hours, while some BESF incidents result in fires lasting many hours or days.

43. What mechanisms are in place to reduce the possibility of a fire from spreading from one battery unit to an adjacent battery unit?

TBL Response: To prevent a battery fire from spreading, the construction of the battery container has been designed to mitigate propagation from one cell to another. ULA certification specifically tests this by intentionally causing a cell to enter thermal runaway and then observing the resulting propagation or containment. The proposed Hithium containers are UL9540A-certified, and during that testing, there was no module-to-module propagation; only the cells in direct proximity to the test cell were impacted.

Additional mitigation measures to prevent fire from spreading from unit to unit include ensuring adequate space between units. The proposed facility would be located outside rather than within a building, which would also reduce the possibility of a fire spreading.

44. Are any existing structures located within 150 feet of any of the battery cabinets? If so, identify such structures and provide the distances/directions from the nearest battery cabinet.

TBL Response: The proposed facility is adjacent to a substation owned by CL&P, which includes several existing structures located within 150 feet of the battery cabinets. The existing fence is approximately 65 feet away. The existing control room and building are approximately 80 feet away. The transmission lines are approximately 110 feet away.

45. In regard to a thermal runaway event at the BESF:
    a) Would smoke from a battery unit fire be considered hazardous and require notification to state and local authorities?

TBL Response: TBL anticipates that smoke resulting from a potential thermal runaway event at the BESF would be classified as hazardous, but the concentration of any smoke or releases would be variable based on the severity of any potential fire event. TBL anticipates partnering with an independent consultant, such as Energy Safety Response Group, to determine specifics for inclusion in its emergency response plan (ERP). These site specific studies are typically conducted concurrent to the 60% or 90% design stage, prior to commencement of construction, but following certainty on final equipment design and configuration. As part of the study, specific triggers for any necessary notification, instructions to local residents and/or collaboration with local responders is anticipated to be detailed in the Project's ERP. The ERP will include specific instructions based on the nature of any potential incident as to whether any stay in place or evaluation notices would be required, including specific geographies based on the nature of the event encountered, and will include a map of all properties falling under the ERP. Given the location of the facility, with an estimated distance of 1,000 feet from the nearest residence, we do not anticipate that residents would be required to be relocated if an event were to occur. TBL does plan to determine, however, within the final ERP, any required relocation or stay in place requirements for the vicinity based on outcomes. TBL does not anticipate any necessary isolation zone would result from an adverse event.

TBL's Project, in comparison to other recent BESF developments, has important improvements designed to lessen the risk of a BESF fire and improve the performance of the facility overall. With current best practices for both unit design and the configuration of the facility, which will be compliant with UL Codes 9540 and 1973, TBL anticipates that if a thermal failure were to occur within a cell, the likelihood of spread to surrounding cells, modules, and containers (units) would be limited. Attached are the test results for Hithium's equipment conducted by TUVRheinland, demonstrating compliance with the UL 9540A testing method. The proposed equipment is designed with fire safety and suppression as a priority. Hithium utilizes Lithium Iron Phosphate (LFP) chemistry, which does not produce oxygen as a bioproduct, and provides greater

stability than earlier Lithium Nickel Manganese cobalt oxide (NMC) applications. Hithium's unit design specifies an external inverter, housed away from battery modules, removing the component most likely to cause an ignition. Further, the modules are IP 67 compliant; this means that the units are dust, water and air proof, further reducing the necessary resources available to maintain a fire. Venting between cells and modules is also designed to reduce any gas concentration in the instance of a cell failure. These design improvements have been made specifically to reduce the potential for an adverse outcome, regardless of the size of the thermal runaway event.

b) Would smoke from a battery unit fire require area residences to stay in place or evacuate? If yes, who would determine if these actions are necessary and who ensures notifications have been made?

TBL Response: See Response 45a), above. Besides partnering with an independent consultant such as Energy Safety Response Group to determine specifics for inclusion in the ERP, FirstLight and New Leaf would also work with the TBL team to establish a tiered approach specific to the severity of any fire or other adverse event. FirstLight currently contracts with Everbridge to provide mass notifications for adverse events at its hydrogeneration facilities and anticipates implementing a similar approach at the proposed facility.

Analysis of other BESS fires have shown that off-site impacts are minimal. In fact, in the analysis of the 2019 McMicken BESS fire in Surprise, Arizona, it was found that "COC particulate matter deposition through the air was minimal and primarily confined to on-site locations near the BESS structure."; and "Modeled off-site concentrations of COCs were lower than applicable state and federal standards governing environmental, health, and safety protection from hazardous substance release." Therefore, no evacuation or isolation zone is expected for TBL.

c) Would the final Emergency Response Plan contain a map with addresses of all properties requiring evacuation and/or isolation for certain types of emergencies? What methodology was used to determine the size of the evacuation and isolation zones?

TBL Response: Although no evacuation or isolation zone is anticipated, the final ERP would include a map with any necessary evacuation or stay in place notifications included, based on the severity of any adverse event. The appropriate methodology for determining the size of evacuation and isolation zones, if any, will be included in the Final ERP developed by a fire protection engineering firm such as Energy Safety Response Group.

d) What type of emergency would require the evacuation of all persons downwind of the BESF? To what distance from the BESF would evacuation take place in the event of a fire?

TBL Response: As discussed in the response to Interrogatory 45a), above, an ERP would be developed and would include these details.

It should be noted that it is extremely unlikely that evacuations would be required for any incident at the facility, even in the event of a fire. This is due to the significant distance between the proposed Project and any sensitive receptors, the relatively small scale of the Project, and the fact that this is a remote, outside installation, which significantly reduces the chances of a fire propagating between containers.

e) Provide an aerial image showing all properties within the evacuation and isolation zones.

TBL Response: This will be included in the Final ERP developed in conjunction with a fire protection engineer such as Energy Safety Response Group. Please see page 3 of the attachment titled "Canoe Portage and Aerial Maps" for an aerial image with distances to residential areas highlighted. Please note that evacuation or isolation of these areas is not anticipated to be required in the final ERP.

46. Referencing Petition page 13, how much oil will each transformer hold, and will there be alarms (such as low-level oil alarms) that can alert monitors of a leak?

TBL Response: A BESF may employ two kinds of transformers: fluid-fill or dry type. Fluid-filled transformers of the size needed for this Project hold approximately 720 gallons and can be equipped with low-level alarms. However, the Project currently anticipates the use of dry-type transformers, which means they would not contain any fluid and, therefore, would not require spill containment or low-level alarms.

47. Referencing Petition Attachment 14 – Sound Level Modeling Report, will the system generate noise during charging of the facility, discharge of the facility, neutral conditions (i.e. neither charging nor discharging), or all three? Explain.

TBL Response: The system has the potential to generate noise in all three conditions: charging, discharging, and neutral. The primary source of noise is the HVAC system, which is similar to a typical AC unit. During charging and discharging, the batteries generate heat, so the cooling system would be active almost continuously to ensure the battery components stay within an allowable temperature range. During neutral conditions, the system would likely be silent for long periods, but depending on environmental conditions, the fans and compressor may activate. The Sound Level Modeling Report was performed under the conservative assumption that the system would generate the maximum noise level at all times, which in reality is unlikely.

48. Are there municipal fire water sources located in the immediate vicinity of the proposed project for response tie-in in the event of a fire? Explain.

TBL Response: There are no municipal fire water sources located in the immediate vicinity of the Project. If needed, water is available at the upstream side of the Tunnel Dam, within several hundred feet of the TBL Project site. However, as stated previously in these interrogatories, direct application of water is discouraged when responding to lithium-ion battery fires.

49. Would operation of the BESF cause discernible vibrations at off-site locations?

TBL Response: No discernable vibrations would be felt off site. None of the proposed equipment generates significant vibrations. The most significant potential source of vibrations are the HVAC systems, which feature fans and compressors that can generate some vibration, but nothing that would be noted off-site, as they function similar to a typical HVAC unit found in many homes and businesses. Additionally, this proposed Project is well-sited, with the nearest residential structure located approximately 1,000 ft away. See Response to Interrogatory 13d).

50. Is there a standard or recommended minimum distance of a BESF to a publicly accessible area?

TBL Response: NFPA 855 requires a minimum 10-foot separation for outdoor stationary energy storage systems from public ways. Additionally, NFPA 855 defines an outdoor energy storage system as "remote" if it is 100 feet or more from potential exposures.

51. Provide a copy of the emergency response plan.

TBL Response: FirstLight is presently working with New Leaf and the anticipated BESF partner Hithium to develop the detailed Emergency Response Plan for the TBL Project. Attached to this document is the current FirstLight ERP template, which is utilized as a starting point for all of FirstLight's operational facilities. This document will be augmented to include BESF specific operational and emergency response requirements once the design and configuration of the BESF is finalized as part of Project procurement.

52. What type of media and/or specialized equipment would be necessary to extinguish a battery storage/electrical component fire? Specifically, based on any history of fires at installed battery systems, is there specialized firefighting equipment necessary to extinguish a Lithium-ion battery fire? Is there a concern with runoff and cleanup caused by fire extinguishment?

TBL Response: No specialized firefighting equipment or media is necessary to respond to a Lithium-ion battery fire. This is in part because the appropriate response is to let the batteries burn themselves out. Methods of containing or reducing the heat exposed on adjacent units or combustible material can be performed via a fog spray pattern, which can be performed with standard firefighting equipment.

The best way to protect groundwater from potential contamination is to refrain from employing a direct water suppression tactic. If the system is allowed to burn in place without water being applied, the resulting refuse can be more safely and completely removed from the site and disposed of in an appropriate manner. Based on analysis of past Lithium-ion fires, there does not appear to be a significant risk of toxicity in water discharges from firefighting effluent from BESS fires, as compared to other more conventional fires such as structure fires or vehicle fires. In the event a fire potentially introduces pollutants to the ground, testing would be done and any impacted media (aggregate, soil, etc.) would be evaluated and, if deemed necessary, removed from the site. Additionally, the facility site would be constructed so that all runoff from the site enters stormwater basins before discharging off site. In the event of a fire, these basins would act to capture firefighting effluent, preventing direct discharge to the Quinebaug River.

53. Describe the potential battery vent gas release scenarios from a thermal runaway event at the proposed facility site.

TBL Response: Battery venting is typically a result of a short circuit, which causes heat to be generated within a battery cell. When this heat reaches a sufficient temperature, the chemicals within the cell begin to produce gases, which vent out of the cell. These gases require oxygen to burn. A notable distinction between the LFP (Lithium Iron Phosphate) battery chemistry proposed vs NMC (Nickel Manganese Cobalt Oxide) is that LFP batteries do not vent oxygen in an off-gas situation, which is a necessary component for fire. In the event a cell began to off-gas, the NFPA69-certified vent fans would activate, with the goal of keeping gas concentrations below 25%, which is the lower flammability limit per NFPA855. These fans are backed up with an uninterruptible power supply (UPS) that provides standby power for 24 hours, or two (2) hours of operational power. This active venting system is an improvement to the previous generation of passive deflagration systems, which utilized a deflagration panel rather than fans. The gases produced in one of these events resemble a plastic fire in terms of emission of toxic gases including CO, HCI, HF, HCN, and benzene. A full list of the gases can be found in the attachment to Response 45a), referenced above.

Environmental Effects and Mitigation Measures

54. Provide a Spill Prevention Control and Countermeasures Plan.

TBL Response: Attached is FirstLight's existing Spill Prevention, Control and Countermeasure Plan for the Tunnel facility. TBL will augment the existing plan to include BESF-specific measures and requirements following finalized design for the Project, concurrent with finalization of the ERP.

55. Referencing Petition p. 21, the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control are referenced. Would the construction comply with the Connecticut Guidelines for E&S Control, effective March 2024? Explain.

TBL Response: Yes, the Project would comply with the revised Connecticut Guidelines for Soil Erosion and Sediment Control, effective March 30, 2024. No changes to the stormwater system as proposed in the Petition would be needed in order to comply with the updated Guidelines.

During construction, exposed soils would be minimized and temporarily stabilized as needed. The limits of disturbance would be marked in the field to avoid impacts outside the footprint of construction, and trees would be felled inward to minimize strike damage during clearing. Once clearing is completed, wood chips and debris would remain until after archeological investigations are completed, then stumping would occur. Subsoils would be graded level and materials added to achieve final grades and stormwater conveyances. During all phases of ground disturbing activities until the final surface of gravel is installed, erosion and sediment controls would be maintained and inspected after any significant rainfalls.

56. How would the proposed facility impact The Last Green Valley National Heritage Corridor?

TBL Response: The Project site is located next to existing industrial development of a hydroelectric station and a large substation; the smaller Project site is not anticipated to significantly impact the Last Green Valley Corridor. Ultimately, the proposed facility would replace a greenhouse gas-emitting generator with a carbon free BESS, reducing the current impacts of the site.

The proposed facility is anticipated to have minimal impacts to the Last Green Valley National Heritage Corridor. As part of FirstLight's standard operations of the existing facilities at the site, TBL contracted Ferrucci & Walicki, LLC to conduct a Forestry Inventory, which identified the area of clearing to be partially previously developed and partially "edge forest". In addition to this finding, FirstLight actively partners with The Last Green Valley (TLGV), recently hosting a field trip to its Scotland Hydrogeneration Station during fish migration season in 2024 to observe the operation of the fish lift. FirstLight also maintains a canoe portage on the property, providing continuous access to the Quinebaug River for recreation. Lastly, the Project is anticipated to align with TLVG priorities: a) maximizing Dark Sky through minimizing lighting at the Project site and relying on motion sensors as feasible; 2) maintaining shoreline trees for aesthetic views, riparian buffer continuity and habitat preservation; 3) preserving and documenting cultural resources extant at the site, and providing carbon-free generation when combined with the export of the site's existing hydrogeneration station.

57. Referencing Petition pp. 26-27, what is the distance and direction of the limited public access to the site for recreational opportunities from the proposed facility?

TBL Response: An existing canoe portage facility/trail is present at the site, and runs from several hundred feet upstream of the Tunnel hydrofacility dam on a wooden catwalk to the Project site, then down the roadway to a gate which allows the public to hand-carry canoes and kayaks downstream to an area safe for launching of unpowered vessels. This public access area would not be impacted by the Project. See attached Tunnel Canoe Portage Map.

58. Referencing Petition p. 19, what requirements or conditions included in the final remedial action plan approved by DEEP apply to development of the proposed Project? Explain.

TBL Response: The final remedial action plan from DEEP has not yet been finalized, but an Interim Remedial Action Report (IRAR), completed by Tighe and Bond, was submitted to DEEP in March 2024. At present, Tighe and Bond is scheduled to release a remedial action report in April 2025. This report will be followed by a Compliance Ground Water Monitoring Report, anticipated in July 2025. Remedial activities undertaken under the IRAR at the site have included soil remediation analysis and removal, and the installation of groundwater monitoring wells for the ongoing monitoring of the conditions at the site. Following the submission of the IRAR, Tighe and Bond has not received any additional feedback. DEEP's Spill Report lists the event as "close out" and notes that an update (IRAR) was provided on April 9, 2024. It is not anticipated that DEEP will provide any comments on this Project, and the work does not require DEEP approval as it is voluntary clean-up to maintain compliance with the Remediation Standards Regulations. The spill case file can be found at the following link:

https://connecticut.hazconnect.com/ViewPdfData.aspx?t2nq=Ywdqp8MdQ31rbU0XdFqncVXfZeUhYXUPtoLcRur3wKTccJpS2O/MDiKvRdYuteVO+A03UnZbZxpwuZ/Rxdg7ZQ==

Subsequent to the discovery of the fuel leak, the TBL Project was redesigned to accommodate the proposed ground water monitoring wells so that compliance RSRs can be maintained following the construction of the proposed facility. No further impact to the design or operation of the TBL is anticipated.

59. Would the proposed facility consume water during operation? Would an initial water fill be required for the chillers? If so, how many gallons would be required per battery container?

TBL Response: The proposed facility would not consume water during operation. Water may be used as dust control during construction, but during regular operation, there is no water connection or usage.

The battery containers would be delivered pre-filled with all required fluids. The coolant system holds approximately 60 gallons of 50/50 ethylene glycol/water solution.

60. Referencing Petition p. 12, identify the fluid to be chilled via the HVAC chillers (e.g. water and ethylene glycol). Would this fluid have a containment system and low-level detection system?

TBL Response: The coolant is a 50/50 ethylene glycol/water mix. The battery containers feature built-in containment so fluid would not exit the container in the event of a leak. The cooling system is one of many systems that is continually monitored by the battery management system. If an abnormality is identified with the cooling system, an alarm is triggered so that the issue can be resolved.

61. Referencing Petition, p. 12, identify the refrigerant to be used by the chiller (e.g. R-134a), if applicable.

TBL Response: The refrigerant to be used is R-410A.

62. Are there any wells on the site or in the vicinity of the site? If so, how would TBL protect the wells and/or water quality from potential construction and operational impacts?

TBL Response: No drinking wells exist on or in the vicinity of the site.

63. Referencing Petition p. 18 and Attachment 2, Drawing C-3.0, would the majority of the proposed facility, except for portions of Infiltration Basins 2 and 3, be located outside of the 500-year flood zone? If yes, approximately how many feet above the 500-year flood elevation would the battery containers and equipment pads top of concrete (TOC) be? If no, could the TOC be elevated to at least one foot above the 500-year flood elevation and at what incremental cost?

TBL Response: The entire proposed BESF, with the exception of the stormwater basins, would be located outside the 500-year flood zone. No Base Flood Elevation for the 500-year flood has been established by FEMA, but based on site topography and approximating the FEMA mapping, the elevation is estimated to be 45 feet above mean sea level. As designed, the lowest pad, located adjacent to the northeast stormwater basin, has a design elevation of 46.5 feet above mean sea level.

64. Referencing Petition Attachment 2, Drawings C-1.0 and C-2.0, identify the Existing Trails located north of the existing fuel tank. How would the proposed Project affect the use of such trails given that a portion of the proposed tree clearing would be located on the trails? How would public safety be maintained for the trails during construction and operation of the proposed facility?

TBL Response: The existing trails shown on Attachment 2, Drawings C-1.0 and 2.0, are private trails for use in accessing the property. These trails would still be used as necessary to access the property, although the easternmost leg of these trails would be eliminated. The trail would terminate northwest of the BESF. The existing canoe portage, located farther south and detailed under TBL Response 57, above, is the only existing public trail at the property. Public access is limited to areas directly downstream of the hydroelectric plant, due to its proximity to the downstream dam face and potential for water elevations and flow to change rapidly during

hydrogeneration station operations. Signage is maintained to limit the public's access to the areas downstream of the dam. Fishing is restricted by DEEP at locations downstream of any upstream fish passage structures. As the Tunnel hydrogeneration station has operational fish passage each year, this restriction is in place at the Tunnel property.

65. Please submit photographic site documentation with notations linked to the site plans or a detailed aerial image that identify locations of site-specific and representative site features. The submission should include photographs of the site from public road(s) or publicly accessible area(s) as well as Site-specific locations depicting site features including, but not necessarily limited to, the following locations as applicable:

    For each photo, please indicate the photo viewpoint direction and stake or flag the locations of site-specific and representative site features. Site-specific and representative site features include, but are not limited to, **as applicable**:

    1. wetlands, watercourses and vernal pools;
       TBL Response: Please see photos 18 and 19 of the attached photolog.
    2. forest/forest edge areas;
       TBL Response: Please see photos 5, 6, 7, 8, 9, 10, 14, 15, 16 of the attached photo log.
    3. agricultural soil areas;
       TBL Response: No agricultural activity takes place on-site. Portions of the site are mapped as Statewide Important Farmland Soils, see photos 7 & 8.
    4. sloping terrain;
       TBL Response: Please see photos 6, 8, 10, 14, & 15 of the attached photo log .
    5. proposed stormwater control features;
       TBL Response: Please see photos 3, 4, 5, & 10 of the attached photo log.
    6. nearest residences;
       TBL Response: Please see photo 20 of the attached photo log.
    7. Site access and interior access road(s);
       TBL Response: Please see photos 2, 12, and 21 of the attached photo log.
    8. utility pads/electrical interconnection(s);
       TBL Response: Please see photo 1 of the attached photo log.
    9. clearing limits/property lines;
       TBL Response: Please see photos 7, 8, 10, and 16 of the attached photo log.
    10. mitigation areas; and
        TBL Response: No mitigation areas are proposed.
    11. any other noteworthy features relative to the Project.
        TBL Response: Photos 2, 3, 4, 11, 13, and 15 show the existing Tunnel Jet facility that will be replaced. Photo 17 shows the existing canoe portage trail.

    A photolog graphic must accompany the submission, using a site plan or a detailed aerial image, depicting each numbered photograph for reference. For each photo, indicate the photo location number and viewpoint direction, and clearly identify the locations of site-specific and representative site features show (e.g., physical staking/flagging or other means of marking the subject area).

The submission shall be delivered electronically in a legible portable document format (PDF) with a maximum file size of <20MB. If necessary, multiple files may be submitted and clearly marked in terms of sequence.

TBL Response: Please see the attached photolog graphic showing the specific items identified in the interrogatory. A pdf version of the photolog graphic will also be submitted electronically via the Council's e-mail.

Facility Construction

66. Referencing Petition p. 18, since submission of the Petition has TBL met with the DEEP Stormwater Division and/or submitted an application for a General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities from the Department of Energy and Environmental Protection? If yes, please describe any recommendations, comments or concerns about the project provided by the Stormwater Division and when an application was filed.

TBL Response: TBL has not yet coordinated with the DEEP Stormwater Division or submitted an application for a General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities. The Project as presented should satisfy DEEP stormwater standards, and coordination with DEEP is scheduled to begin this summer, well in advance of any construction activities. Once a formal application has been filed, Petitioner will share any recommendations, comments or concerns that are provided by DEEP's Stormwater Division to the Council.

67. Quantify the amounts of cut and fill that would be required to develop the proposed facility. If there is excess cut, will this material be removed from the site or deposited on the site?

TBL Response: Site grading would require approximately 2,500CY of cut/fill. Earthwork will be balanced, so no import or export of material is expected.

Facility Maintenance/Decommissioning

68. Please provide the following information:
    a. What is the anticipated annual degradation of battery storage capacity?

TBL Response: Degradation of the battery varies by year, with the highest degradation anticipated in Year 1 of operations at 4% and falling to 1.1% at Year 20, with an average annual degradation of 1.73%. TBL plans to augment the BESS to maintain a minimum rated capacity of 64.08 MW, approximately at Year 7, increasing the available capacity by approximately 21.6%. This would result in an average annual degradation of 0.64%.

b. At what remaining battery capacity or at what age is replenishment recommended?

TBL Response: At present, TBL anticipates augmenting the BESF at Year 7 to maintain a minimum rated capacity of 64.08 MWhs; the exact timing of this augmentation would be in part resultant from realized BESF degradation and may occur as early as Year 6 or as late as Year 10.

c. What is the estimated cost of replenishment?

TBL Response: Current estimates range from $3.9M to $4.3M for augmentation occurring in years 2034 through 2038.

69. Referencing Petition Attachment 16 – Operations and Maintenance Plan, would snow removal be necessary at the BESF facility? If so, when would snow removal be performed? What minimum snow depth would require removal within the BESF compound? At what height could snow block the airflow to the chiller and/or electronic compartments?

TBL Response: Snow removal would be required for the operations at the BESF facility. At present, snow removal at the Tunnel facilities occurs when snow is forecasted at or greater than 2 inches; FirstLight contacts its snow removal company to mobilize and remove snow. When conditions exist that require snow removal, the sanding of roads and parking areas also occurs. Snow removal for the BESF would also be included to ensure BESF fans and vent remain clear and accessible. These elements of the BESF are approximately three (3) feet (1 meter) from the base of the unit, which can be variable based on final foundation design.

70. At what time intervals would the transformers, inverters and switchgear need replacement?

TBL Response: This proposed equipment is designed to last for the life of the Project and, therefore, no needed replacements are anticipated.

ATTACHMENT TO TBL RESPONSE

23

Hithium System Calendar Aging

System Calendar Aging

1. Introduction

This document describes the calendar aging of system (ESS Container) for proposal. In case of performance guarantee, this shall be used together with Hithium *Performance Guarantee for ESS* document, and shall be agreed by both parties (Hithium and Buyer). Specific calendar aging can be given on Buyer's specific requirements, in that case, please consult with Hithium technical support.

Xiamen Hithium Energy Storage Technology Co., Ltd. ("Hithium") offers this document as the standard limited document. The content of this document is supposed to be checked and updated when necessary. Please contact Hithium or your distributors for the latest version.

This document is intended to be used for information purpose and by specific addressees, which may contain information that is confidential, you may not reproduce or distribute in any form or by any means.

2. Descriptions

5016&4180kWh ESS Container calendar aging is shown below.

Table 2-1 SOH degradation by storage SOC & Temperature before operation

Months after the FAT date	0%≤ Storage SOC <30%			30%≤ Storage SOC <70%			70%≤ Storage SOC ≤100%		
	-30°C ≤T≤ 25°C	25°C <T≤ 40°C	40°C <T≤ 50°C	-30°C ≤T≤ 25°C	25°C <T≤ 40°C	40°C <T≤ 50°C	-30°C ≤T≤ 25°C	25°C <T≤ 40°C	40°C <T≤ 50°C
0	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
1	100.00% (0.00%)	99.67% (0.33%)	99.61% (0.39%)	99.67% (0.33%)	99.60% (0.40%)	99.53% (0.47%)	99.61% (0.39%)	99.53% (0.47%)	99.45% (0.55%)
2	100.00% (0.00%)	99.37% (0.30%)	99.26% (0.35%)	99.36% (0.31%)	99.23% (0.37%)	99.10% (0.43%)	99.25% (0.36%)	99.10% (0.43%)	98.95% (0.50%)
3	100.00% (0.00%)	99.09% (0.28%)	98.93% (0.33%)	99.08% (0.28%)	98.90% (0.33%)	98.71% (0.39%)	98.92% (0.33%)	98.71% (0.39%)	98.49% (0.46%)
4	99.79% (0.21%)	98.83% (0.26%)	98.63% (0.30%)	98.82% (0.26%)	98.58% (0.32%)	98.34% (0.37%)	98.61% (0.31%)	98.34% (0.37%)	98.07% (0.42%)
5	99.59% (0.20%)	98.59% (0.24%)	98.34% (0.29%)	98.58% (0.24%)	98.29% (0.29%)	97.99% (0.35%)	98.32% (0.29%)	97.99% (0.35%)	97.66% (0.41%)
6	99.40% (0.19%)	98.36% (0.23%)	98.06% (0.28%)	98.34% (0.24%)	98.00% (0.29%)	97.66% (0.33%)	98.05% (0.27%)	97.66% (0.33%)	97.28% (0.38%)
7	99.21% (0.19%)	98.14% (0.22%)	97.80% (0.26%)	98.12% (0.22%)	97.73% (0.27%)	97.34% (0.32%)	97.78% (0.27%)	97.35% (0.31%)	96.91% (0.37%)
8	99.04% (0.17%)	97.92% (0.22%)	97.55% (0.25%)	97.90% (0.22%)	97.47% (0.26%)	97.04% (0.30%)	97.53% (0.25%)	97.04% (0.31%)	96.55% (0.36%)
9	98.87% (0.17%)	97.72% (0.20%)	97.31% (0.24%)	97.69% (0.21%)	97.22% (0.25%)	96.75% (0.29%)	97.28% (0.25%)	96.75% (0.29%)	96.21% (0.34%)
10	98.71% (0.16%)	97.52% (0.20%)	97.07% (0.24%)	97.49% (0.20%)	96.98% (0.24%)	96.46% (0.29%)	97.05% (0.23%)	96.47% (0.28%)	95.88% (0.33%)
11	98.55% (0.16%)	97.33% (0.19%)	96.85% (0.22%)	97.30% (0.19%)	96.75% (0.23%)	96.19% (0.27%)	96.82% (0.23%)	96.19% (0.28%)	95.56% (0.32%)
12	98.39% (0.16%)	97.14% (0.19%)	96.63% (0.22%)	97.11% (0.19%)	96.52% (0.23%)	95.92% (0.27%)	96.59% (0.23%)	95.93% (0.26%)	95.25% (0.31%)

13	98.24% (0.15%)	96.96% (0.18%)	96.41% (0.22%)	96.93% (0.18%)	96.30% (0.22%)	95.66% (0.26%)	96.38% (0.21%)	95.67% (0.26%)	94.95% (0.30%)
14	98.10% (0.14%)	96.78% (0.18%)	96.20% (0.21%)	96.75% (0.18%)	96.08% (0.22%)	95.41% (0.25%)	96.16% (0.22%)	95.41% (0.26%)	94.65% (0.30%)
15	97.95% (0.15%)	96.61% (0.17%)	96.00% (0.20%)	96.57% (0.18%)	95.87% (0.21%)	95.16% (0.25%)	95.96% (0.20%)	95.16% (0.25%)	94.37% (0.28%)
16	97.81% (0.14%)	96.44% (0.17%)	95.79% (0.21%)	96.40% (0.17%)	95.66% (0.21%)	94.92% (0.24%)	95.75% (0.21%)	94.92% (0.24%)	94.08% (0.29%)
17	97.68% (0.13%)	96.27% (0.17%)	95.60% (0.19%)	96.23% (0.17%)	95.46% (0.20%)	94.68% (0.24%)	95.56% (0.19%)	94.69% (0.23%)	93.81% (0.27%)
18	97.54% (0.14%)	96.11% (0.16%)	95.41% (0.19%)	96.07% (0.16%)	95.26% (0.20%)	94.45% (0.23%)	95.36% (0.20%)	94.45% (0.24%)	93.54% (0.27%)
19	97.41% (0.13%)	95.95% (0.16%)	95.22% (0.19%)	95.90% (0.17%)	95.07% (0.19%)	94.22% (0.23%)	95.17% (0.19%)	94.23% (0.22%)	93.27% (0.27%)
20	97.28% (0.13%)	95.79% (0.16%)	95.03% (0.19%)	95.74% (0.16%)	94.88% (0.19%)	94.00% (0.22%)	94.98% (0.19%)	94.00% (0.23%)	93.01% (0.26%)
21	97.15% (0.13%)	95.64% (0.15%)	94.85% (0.18%)	95.59% (0.15%)	94.69% (0.19%)	93.78% (0.22%)	94.80% (0.18%)	93.78% (0.22%)	92.75% (0.26%)
22	97.03% (0.12%)	95.48% (0.16%)	94.67% (0.18%)	95.44% (0.15%)	94.51% (0.18%)	93.56% (0.22%)	94.62% (0.18%)	93.57% (0.21%)	92.50% (0.25%)
23	96.90% (0.13%)	95.33% (0.15%)	94.49% (0.18%)	95.28% (0.16%)	94.32% (0.19%)	93.35% (0.21%)	94.44% (0.18%)	93.35% (0.22%)	92.25% (0.25%)
24	96.78% (0.12%)	95.19% (0.14%)	94.32% (0.17%)	95.14% (0.14%)	94.15% (0.17%)	93.14% (0.21%)	94.27% (0.17%)	93.14% (0.21%)	92.01% (0.24%)

Remarks:

1) Factory Acceptance Test (FAT)

2) Considering temperature variations during storage, SOH degradation value should be calculated as follows:

$$SOH_g(N) = 100\% - \sum(\Delta)$$

Where:

SOHg means the final guaranteed SOH considering the impact of storage temperature in different months.

Δ means the degradation increment for a specific month at different temperature range, as shown in the table above and the increment are listed below the SOH degradation value.

For example, the product with 27% SOC is stored at -30°C~25°C for four months and then at 25°C~40°C for two months, then the total degradation increment is $\sum(\Delta)$ = 0.00% + 0.00% + 0.00% + 0.21% + 0.24% + 0.23% = 0.68%, the SOH degradation due to the calendar aging should be 100% - $\sum(\Delta)$ = 99.32%

3) The storage temperature should be considered as the average ambient temperature of the month.

4) The measuring point for this SOH is at the DC output terminal of the products.

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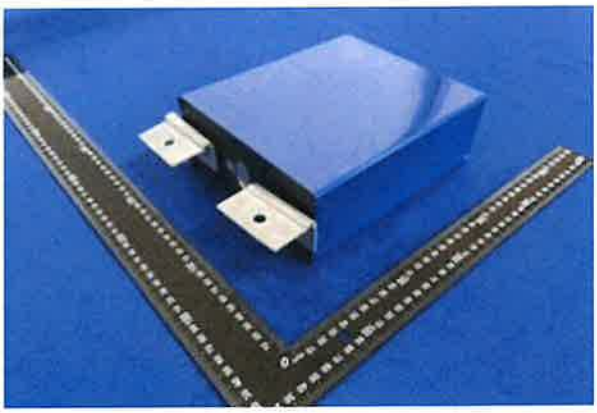
ATTACHMENT TO TBL RESPONSE

45a)

Hithium Equipment Test Results

Prüfbericht-Nr.: *Test report no.:*	CN23F118 001	**Auftrags-Nr.:** *Order no.:*	168441619	Seite 1 von 36 *Page 1 of 36*
Kunden-Referenz-Nr.: *Client reference no.:*	2347845	**Auftragsdatum:** *Order date:*	2023-08-29	
Auftraggeber: *Client:*	Xiamen Hithium Energy Storage Technology Co., Ltd. 201-1, Comprehensive Building 5, No.11, Butang Middle Road, Industrial Base Of Xiamen Torch High Tech Zone (Tongxiang), Xiamen, Fujian, P.R. China			
Prüfgegenstand: *Test item:*	Iron Phosphate-Lithium Cell			
Bezeichnung / Typ-Nr.: *Identification / Type no.:*	LFP71173207/314Ah			
Auftrags-Inhalt: *Order content:*	Test report			
Prüfgrundlage: *Test specification:*	UL 9540A:2019 (Forth Edition)			

Wareneingangsdatum: *Date of sample receipt:*	2023-08-30
Prüfmuster-Nr.: *Test sample no:*	Engineering sample
Prüfzeitraum: *Testing period:*	2023-09-04 - 2023-11-21
Ort der Prüfung: *Place of testing:*	See to clause 1.1 of main report
Prüflaboratorium: *Testing laboratory:*	TÜV Rheinland (Shenzhen) Co., Ltd.
Prüfergebnis*: *Test result*:*	See main report



erstellt von: *created by:*		**genehmigt von:** *authorized by:*	
Datum: *Date:* 2023-12-06	Jason Zhu	**Ausstellungsdatum:** *Issue date:* 2023-12-06	Xun Yu
Stellung / Position:	Project Engineer	**Stellung** / Position:	Reviewer

Sonstiges / *Other:*

This report does not evidence compliance of the provided sample with the relevant standards but only with the referred tests. This test report documents the findings of examination conducted on the delivered product mentioned above only. This report does not entitle the applicant to carry any safety mark on this or similar products. Further for sales or other application purposes of the tested product, any reference to TÜV Rheinland or a test through TÜV Rheinland is only permissible with prior written consent of TÜV Rheinland.

Zustand des Prüfgegenstandes bei Anlieferung: Prüfmuster vollständig und unbeschädigt
Condition of the test item at delivery: *Test item complete and undamaged*

* Legende:	P(ass) = entspricht o.g. Prüfgrundlage(n)	F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	N/A = nicht anwendbar	N/T = nicht getestet
* *Legend:*	*P(ass) = passed a.m. test specification(s)*	*F(ail) = failed a.m. test specification(s)*	*N/A = not applicable*	*N/T = not tested*

Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens.
This test report only relates to the above mentioned test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.

Anmerkungen
Remarks

1	Alle eingesetzten Prüfmittel waren zum angegebenen Prüfzeitraum gemäß eines festgelegten Kalibrierungsprogramms unseres Prüfhauses kalibriert. Sie entsprechen den in den Prüfprogrammen hinterlegten Anforderungen. Die Rückverfolgbarkeit der eingesetzten Prüfmittel ist durch die Einhaltung der Regelungen unseres Managementsystems gegeben. Detaillierte Informationen bezüglich Prüfkonditionen, Prüfequipment und Messunsicherheiten sind im Prüflabor vorhanden und können auf Wunsch bereitgestellt werden. *The equipment used during the specified testing period was calibrated according to our test laboratory calibration program. The equipment fulfils the requirements included in the relevant standards. The traceability of the test equipment used is ensured by compliance with the regulations of our management system.* *Detailed information regarding test conditions, equipment and measurement uncertainty is available in the test laboratory and could be provided on request.*
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3	Prüfklausel mit der Note * wurden an qualifizierte Unterauftragnehmer vergeben und sind unter der jeweiligen Prüfklausel des Berichts beschrieben. Abweichungen von Prüfspezifikation(en) oder Kundenanforderungen sind in der jeweiligen Prüfklausel im Bericht aufgeführt. *Test clauses with remark of * are subcontracted to qualified subcontractors and descripted under the respective test clause in the report.* *Deviations of testing specification(s) or customer requirements are listed in specific test clause in the report.*
4	Die Entscheidungsregel für Konformitätserklärungen basierend auf numerischen Messergebnisen in diesem Prüfbericht basiert auf der "Null-Grenzwert-Regel" und der "Einfachen Akzeptanz" gemäß ILAC G8:2019 und IEC Guide 115:2021, es sei denn, in der auf Seite 1 dieses Berichts genannten angewandten Norm ist etwas anderes festgelegt oder vom Kunden gewünscht. Dies bedeutet, dass die Messunsicherheit nicht berücksichtigt wird und daher auch nicht im Prüfbericht angegeben wird. Zu weiteren Informationen bezueglich des Risikos durch diese Entscheidungsregel siehe ILAC G8:2019. *The decision rule for statements of conformity, based on numerical measurement results, in this test report is based on the "Zero Guard Band Rule" and "Simple Acceptance" in accordance with ILAC G8:2019 and IEC Guide 115:2021, unless otherwise specified in the applied standard mentioned on Page 1 of this report or requested by the customer. This means that measurement uncertainty is not taken in account and hence also not declared in the test report. For additional information to the resulting risk based of this decision rule please refer to ILAC G8:2019.*

Introduction

Model fire codes and energy storage system standards require energy storage systems to comply with UL 9540, which in turn requires battery cells and modules to comply with UL 1973. Compliance with these standards reduces the risk of batteries and battery energy storage systems (BESS) creating fire, shock or personal injury hazards. However, they don't evaluate the ability of the BESS installed as intended and with fire suppression mechanisms in place if necessary, from contributing to a fire or explosion in the end use installations.

To address these fire and explosion hazards associated with the installation of a BESS, the fire and other codes require energy storage systems to meet certain location, separation, fire suppression and other criteria. Those codes also provide a means to provide an equivalent level of safety based on large scale fire testing of anticipated BESS installations.

UL 9540A is intended to provide a test method that can be used as a basis for validating the safety of a BESS installation in lieu of meeting the specific criteria provided in those codes. The data generated can be used to determine the fire and explosion protection required for installation of a BESS.

The test method is initiated through the establishment of a thermal runaway condition that leads to combustion within the BESS. The test method outlined in UL 9540A consists of several steps – cell level testing, module level testing, unit level testing and installation level testing. The cell and module level testing steps are information gathering steps to inform the unit and installation level testing.

The following outlines the information that may gathered as part of the testing:

a) Cell level – An individual cell fails in a manner that leads to thermal runaway and fire through a suitable method such as external heating. Data such as off-gassing contents, temperatures at venting and temperatures at thermal runaway are recorded.

b) Module level – One or more cells within a BESS module fail in the manner determined during the cell level testing. Data such as fire propagation in the module, temperatures on the failed cells and surrounding cells, off-gassing contents and heat release data are gathered.

c) Unit level – A complete BESS is installed surrounded by target (e.g. dummy) BESS and walls separated at a distance as intended in its installation. The module level test is repeated on a module located in the BESS in the most unfavorable location. Data such as temperature within the BESS, on surrounding walls and target BESS; incident heat flux on walls and target BESS; observation of fire propagation from BESS to target units and walls as well as observance of explosions or evidence of re-ignition within the BESS; and heat release and off-gassing contents are gathered.

d) Installation level – This test is a repeat of the unit level test with the test conducted within a test room and with the intended fire suppression system installed as well as any overhead cables (that can lead to fire propagation) installed. This test is intended to validate the fire suppression system for the BESS installation. Data such as temperature within the BESS, on surrounding walls and target BESS; incident heat flux on walls and target BESS; fire propagation from the BESS to target units, walls or overhead cables and any observable explosion incidents or re-ignition within the BESS; and off-gassing contents (if needed) and heat release are gathered.

Contents

1 General information

1.1 Test specification

Standard: ANSI/CAN/UL 9540A:2019 (Fourth Edition)

Test Method for Evaluating Thermal Runaway Fire Propagation in Battery Energy Storage Systems

This report presents the result of cell level tests of UL 9540A: 2019.

All tests were conducted at TUV Rheinland (Shenzhen) Co., Ltd. and TUV Rheinland's partner labs that were under supervision of TÜV Rheinland's engineer.

Testing period: 2023-09-04 to 2023-11-17

Refer to Clause 4 for test and measurement instruments.

1.2 General remarks

This report is descriptive and provide the test data only.

The test results presented in this report relate only to the object tested.

This report shall not be reproduced, except in full, without the written approval of the testing laboratory.

Throughout this report a ☐ comma / ☒ point is used as the decimal separator.

1.3 List of attachments

The following attachments resulting from the tests, provided with separate page number, are included in this report.

Appendix A: Cell vent gas lower flammability limit (LFL) test

Appendix B: Cell vent gas burning velocity (S_u) test

Appendix C: Cell vent gas maximum pressure (P_{max}) test

1.4 Revision information

New report, not applicable

1.5 Definitions

CELL – The basic functional electrochemical unit containing an assembly of electrodes, electrolyte, separators, container, and terminals. It is a source of electrical energy by direct conversion of chemical energy.

MODULE – A subassembly that is a component of a BESS that consists of a group of cells or electrochemical capacitors connected together either in a series and/or parallel configuration (sometimes referred to as a block) with or without protective devices and monitoring circuitry.

UNIT – A frame, rack or enclosure that consists of a functional BESS which includes components and subassemblies such a cells, modules, battery management systems, ventilation devices and other ancillary equipment.

BATTERY SYSTEM (BS) – Is a component of a BESS and consists of one or more modules typically in a rack configuration, controls such as the BMS and components that make up the system such as cooling systems, disconnects and protection devices.

BATTERY ENERGY STORAGE SYSTEM (BESS) – Stationary equipment that receives electrical energy and then utilizes batteries to store that energy to supply electrical energy at some future time. The BESS, at a minimum consists of one or more modules, a power conditioning system (PCS), battery management system (BMS) and balance of plant components.

a) INITIATING BATTERY ENERGY STORAGE SYSTEM UNIT (INITIATING BESS) – A BESS unit which has been equipped with resistance heaters in order to create the internal fire condition necessary for the installation level test (Section 9).

b) TARGET BATTERY ENERGY STORAGE SYSTEM UNIT (TARGET BESS) – The enclosure and/or rack hardware that physically supports and/or contains the components that comprise a BESS. The target BESS unit does not contain energy storage components, but serves to enable instrumentation to measure the thermal exposure from the initiating BESS.

Note: Depending upon the configuration and design of the BESS (e.g. the BESS is composed of multiple separate parts within separate enclosures), the unit level test can be done at battery system level. In such case, the BESS is be read as BS throughout this report.

NON-RESIDENTIAL USE – Intended for use in commercial, industrial or utility owned locations.

RESIDENTIAL USE – In accordance with this standard, intended for use in one or two family homes and town homes and individual dwelling units of multi-family dwellings.

THERMAL RUNAWAY- The incident when an electrochemical cell increases its temperature through self-heating in an uncontrollable fashion. The thermal runaway progresses when the cell's generation of heat is at a higher rate than the heat it can dissipate. This may lead to fire, explosion and gas evolution.

STATE OF CHARGE (SOC) – The available capacity in a BESS, pack, module or cell expressed as a percentage of rated capacity.

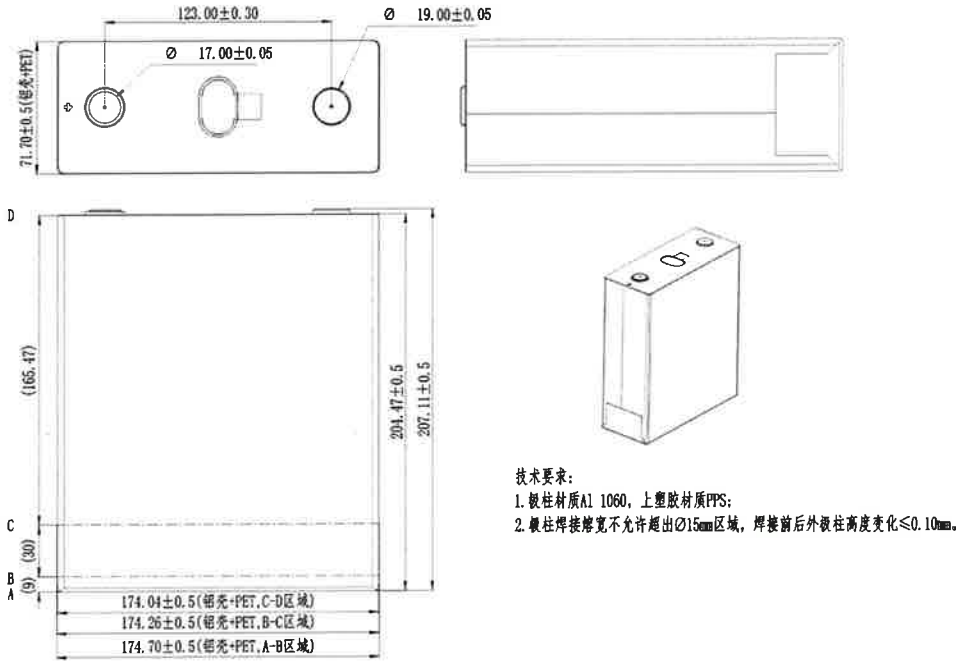
2 General Product Information

2.1 Product information and parameters

The product information and parameters are provided by the client as below.

Manufacturer ..... :	Xiamen Hithium Energy Storage Technology Co., Ltd. 201-1, Comprehensive Building 5, No.11, Butang Middle Road, Industrial Base Of Xiamen Torch High Tech Zone (Tongxiang), Xiamen, Fujian, P.R. China	
Model number..... :	LFP71173207/314Ah	
Chemistry ..... :	☒ $LiFePO_4$ ☐ NMC ☐ NCA ☐ LTO ☐ Other:	
Physical configuration..... :	☒ Prismatic ☐ Cylindrical ☐ Pouch	
	Weight(kg):	5.6±0.2
Electrical rating ..... :	Rated capacity(Ah):	314 (25°C±2°C)
	Nominal voltage(V):	3.2
Standard charge method ..... :	Charge current(A):	157 (25°C±2°C)
	Standard Charge Voltage(V):	3.65
	Cut off current(A):	/
Standard discharge method..... :	Discharge current(A):	157 (25°C±2°C)
	End of discharge voltage(V):	2.5V (T>0°C) 2.0V (T≤0°C)
Maximum continuous charge current :	314A	
Maximum continuous discharge current ..... :	314A	
Compliance with UL 1973..... :	☒ Yes, TUV Report No.: CN23RGEH 001 ☐ No	
Note:		

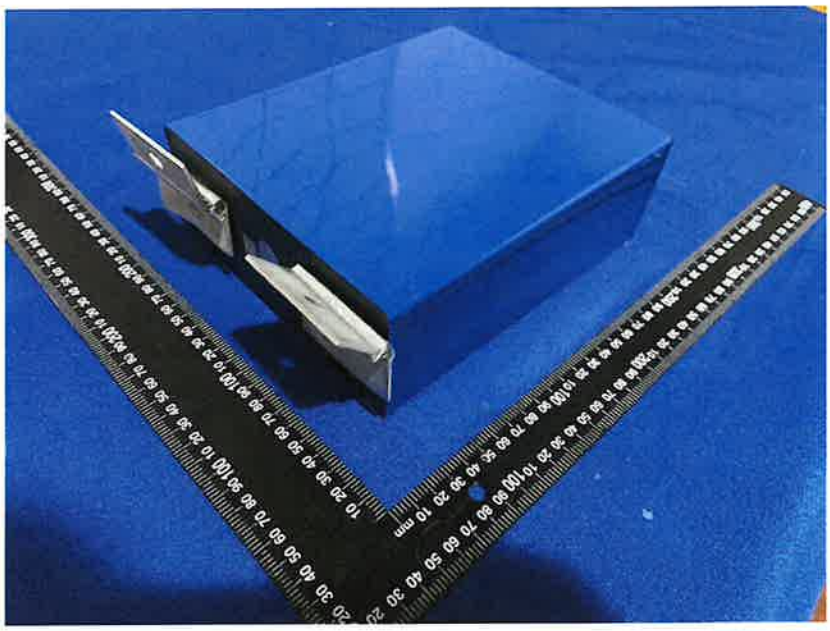
2.2 Diagram with overall dimension

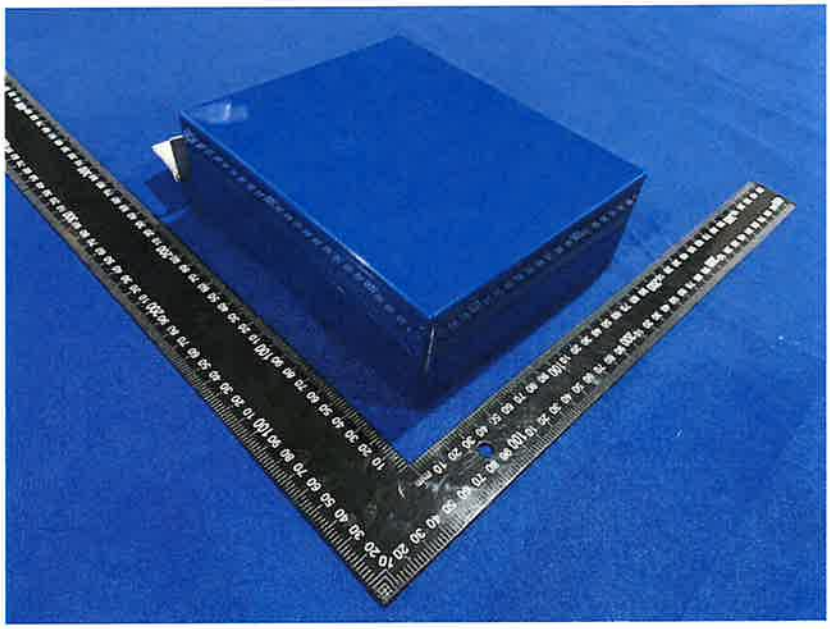


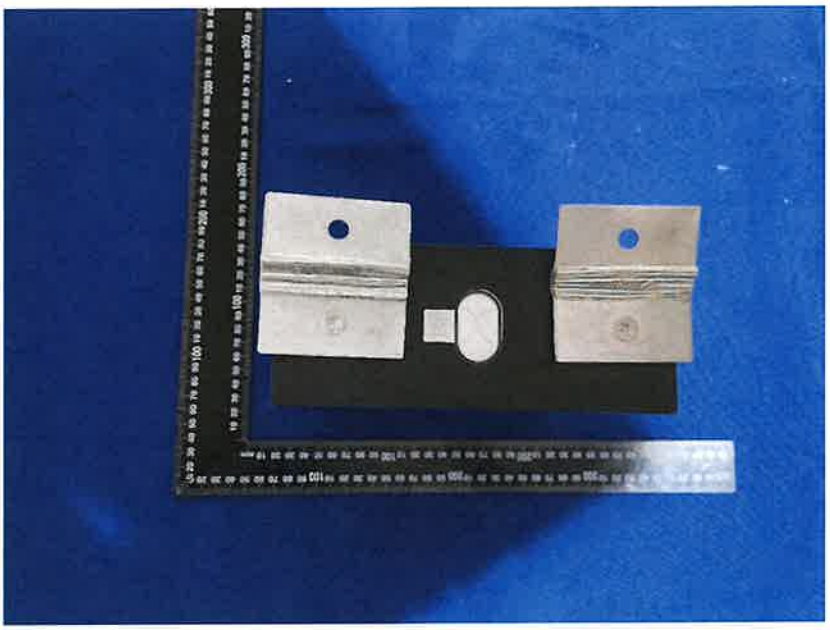
技术要求：
1. 极柱材质A1 1060，上塑胶材质PPS；
2. 极柱焊接熔宽不允许超出Ø15mm区域，焊接前后外极柱高度变化≤0.10mm。

Unit: mm

Photos







3 Cell level test (section 7 of UL 9540A)

3.1 General

This testing is conducted on individual cells and uses various stress conditions such as external heating to force the cells into thermal runaway.

Once the stress mechanism is induced, the test measures the temperature at which the cell vents and then the temperature at which thermal runaway occurs.

The test also measures the volume and pressure of the vent gases that are released from the cells, and the composition of the vent gases.

Cell vent gas with flammable components in its composition should have the following parameters characterized in order to enable deflagration venting design:

a) Measurement of fundamental burning velocity by the vertical tube method described in the Method of Test for Burning Velocity Measurement of Flammable Gases Annex in ISO 817; and

b) Maximum pressure developed in a contained deflagration of an optimum mixture per EN 15967.

Cell level testing performed on the cells used within a BESS module establishes a base line fire test performance that can be evaluated against the fire performance of other battery cells the BESS manufacturer may choose to use within the unit's modules.

If none of the cell samples can be forced into thermal runaway and none of the cell samples vent flammable gases as determined by the ASTM E918 test, during any of the cell level tests, it is not necessary to conduct additional module or unit level testing on BESS that utilize these cells.

3.2 Sample preparation

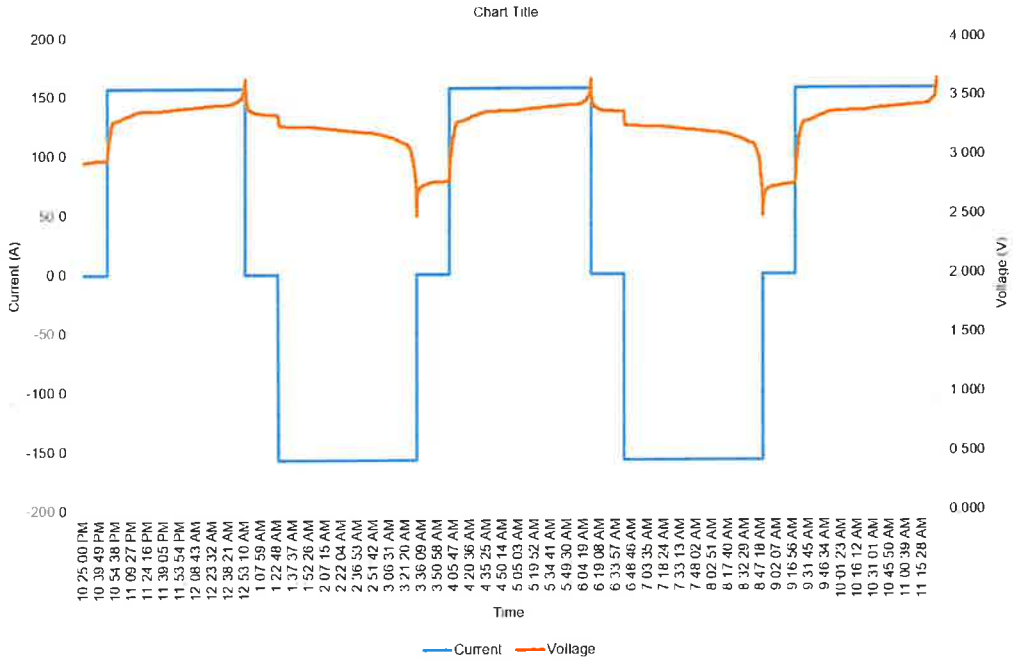
3.2.1 Test method and description

The cells were conditioned, prior to testing, through charge and discharge cycles for 2 cycles using a manufacturer specified methodology (refer to 2.1.1).

During the cycling, ambient condition is maintained within 25°C±2°C and R.H. 50±25 %.

3.2.2 Cell cycling curves

#1



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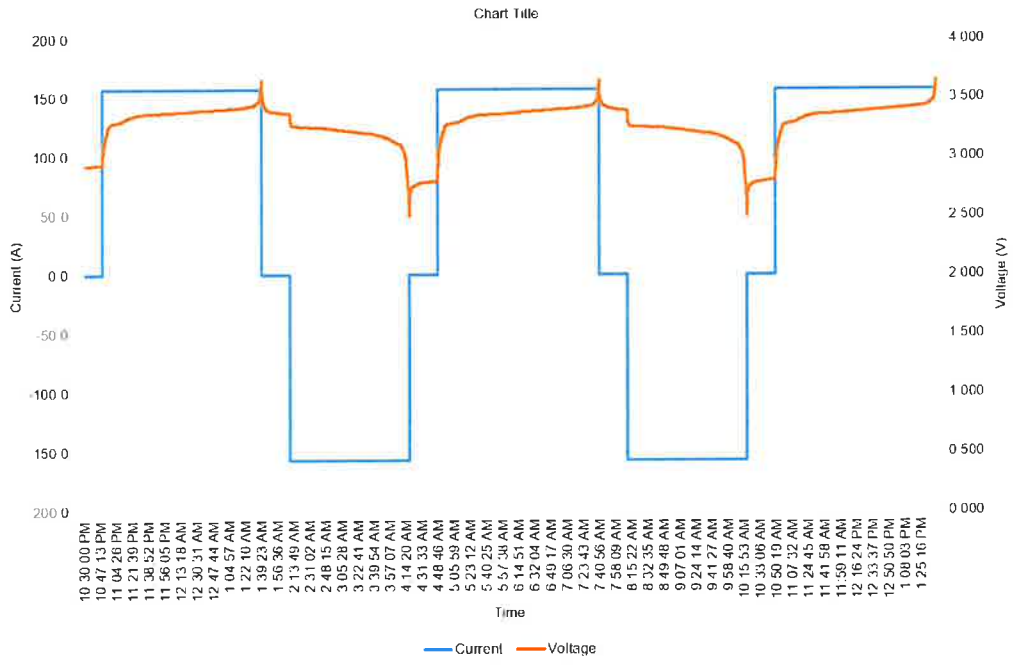


#3

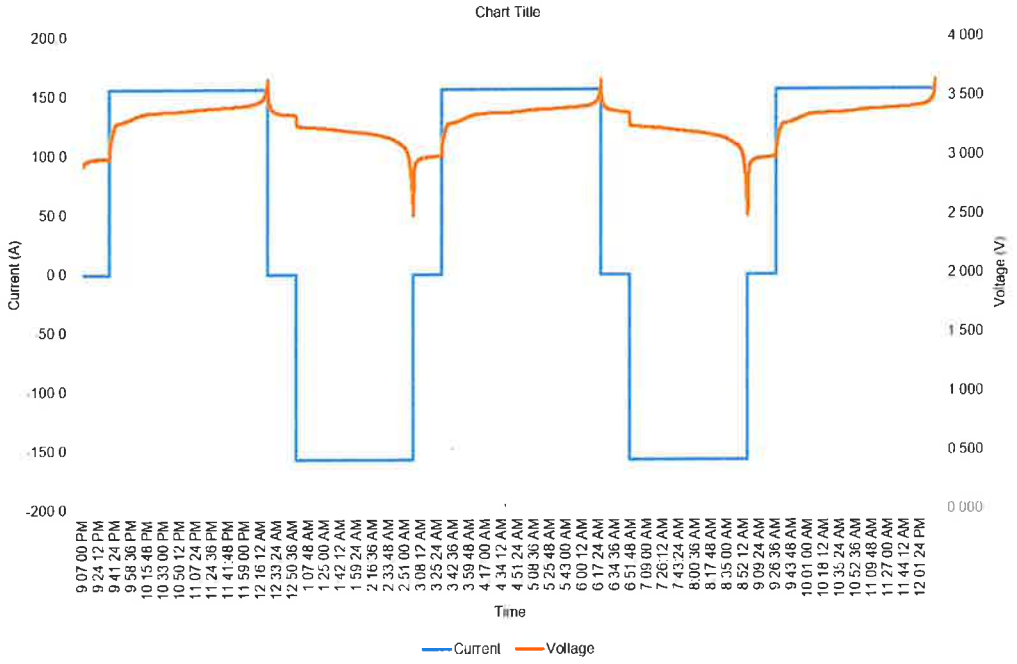


Chart Title
Current (A)
Voltage (V)
Time
Current
Voltage

#4

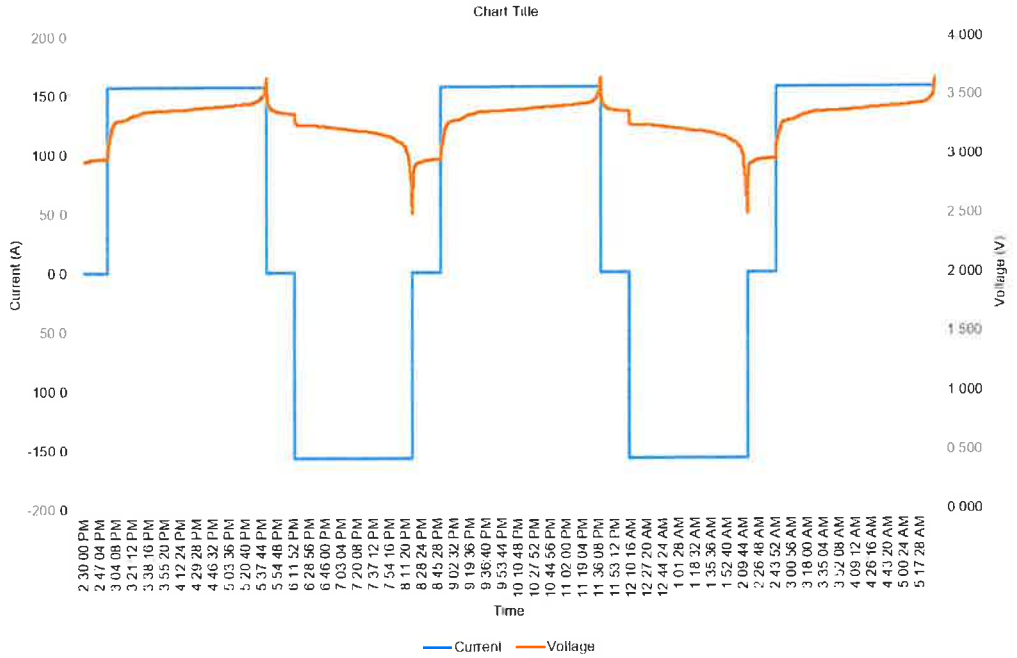
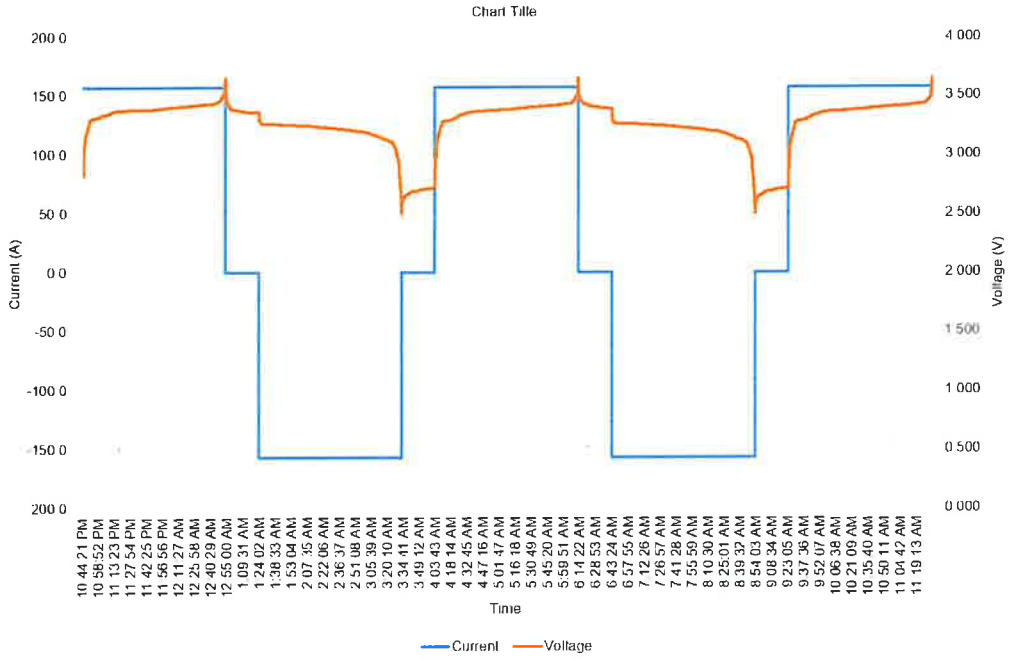


Chart Title
Current (A)
Voltage (V)
Time
Current
Voltage

#5



3.3 Determination of cell thermal runaway methodology

3.3.1 Test method and description

The cells to be tested were charged to 100% SOC and allowed to stabilize for a minimum of 1 h and a maximum of 8 h before the start of the test.

External film heater rated 220Vac/429W was put below the cell to induce the cell thermal runaway.

The cell sample and heater were clamped by two steel plate together using four bolts during test to simulate the constraint in the BESS module to prevent excessive swelling during the test.

The thermocouple (type K, 24AWG) was located below the heater that used to measure vent and thermal runaway onset temperature.

An AC power supply controller was used to control the voltage supply to the heater and maintain a 4°C/min to 7°C/min heating rate. Once thermal runaway was observed, the heaters were immediately de-energized.

The cell exhibits thermal runaway after establishing the heating rate. 3 additional samples were repeated to demonstrate repeatability.

The vent temperature and thermal runaway onset temperatures were averaged over the tested samples.

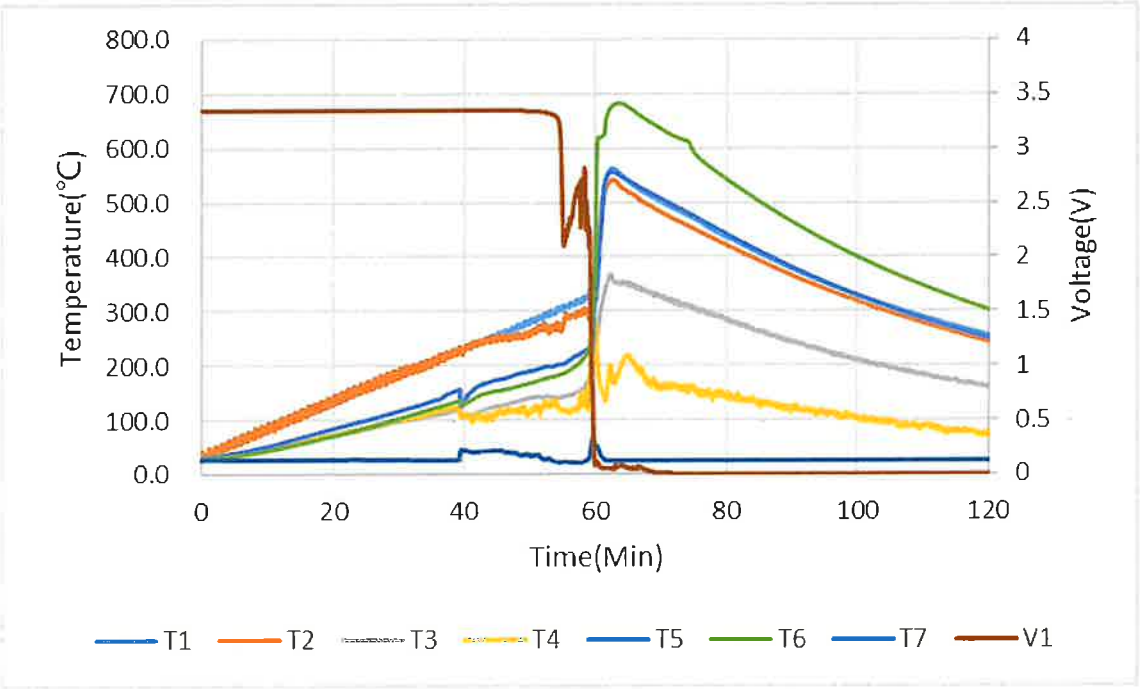
3.3.2 Test result

Ambient conditions at the initiation of the test ..... :	26.1°C, 51%R.H.	27.9°C, 51%R.H.	26.1°C, 52%R.H.	27.9°C, 50%R.H.	26.1°C, 51%R.H.
Sample number ..... :	#1[1)]	#2	#3	#4	#5
Open circuit voltage before test (V) :	3.35	3.37	3.36	3.35	3.35
Cell vent temperature (°C) ..... :	231.4	201.8	200.7	208.5	203.6
Thermal runaway onset temperature (°C) ..... :	328.8	306.3	283.5	291.4	301.6
Average cell vent temperature (°C)[2)] ..... :	--	203.7			
Average thermal runaway onset temperature (°C) [2)] ..... :	--	295.7			

Note:
1) The sample (#1) is for gas vent capture.
2) The temperatures were averaged over the tested samples (#1, #2, #3, #4, #5) excluding the gas vent capture sample (#1).

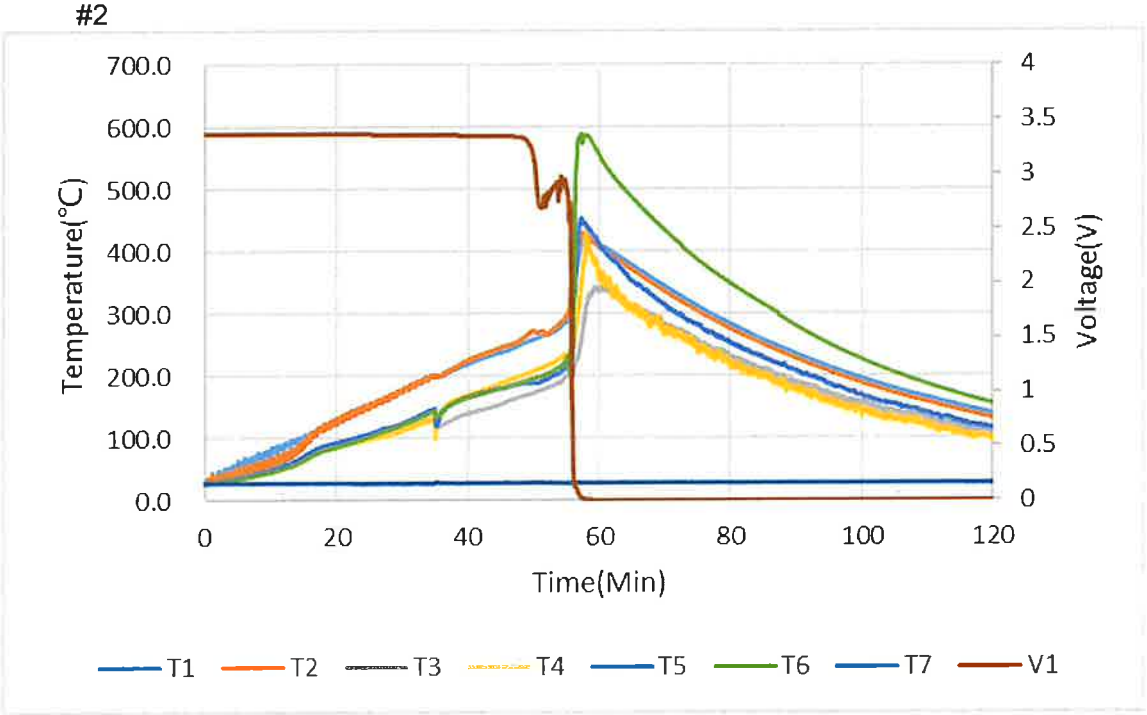
3.3.3 Temperature/voltage vs time curve

#1



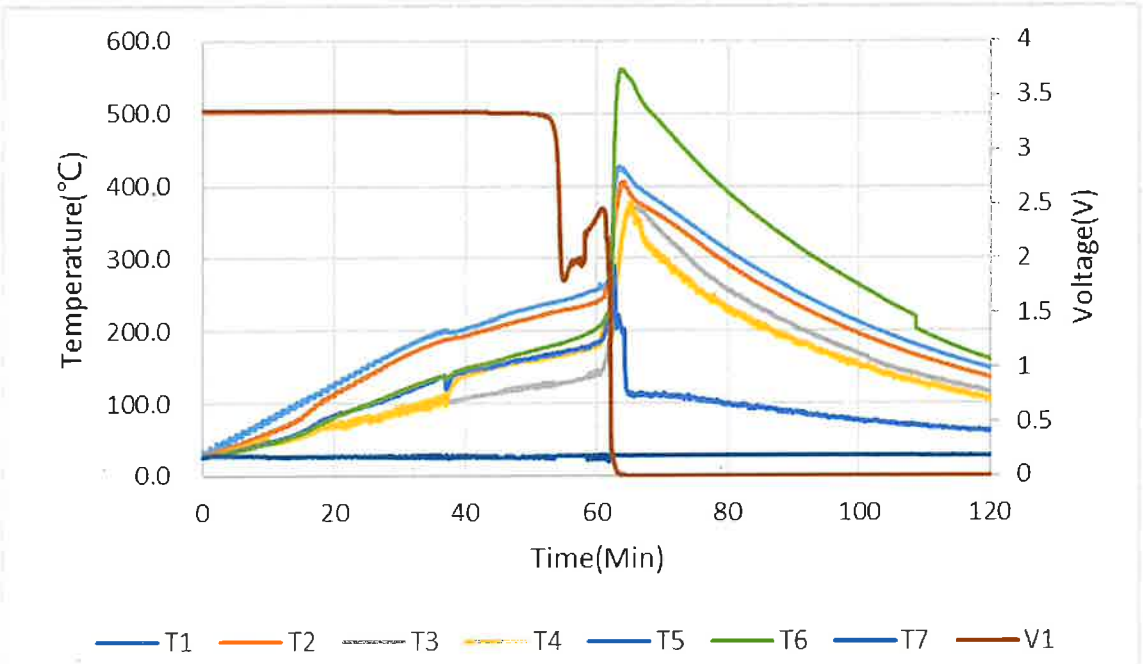
Thermalcouple No.	Location
T1	Cell center below the heater(A side)
T2	Cell center below the heater(B side)
T3	Positive eletrode tap
T4	Near pressure relief valve
T5	Cell narrow side
T6	Cell bottom
T7	Ambient temperature (Inside of pressure vessel)
V1	Cell Voltage

#2



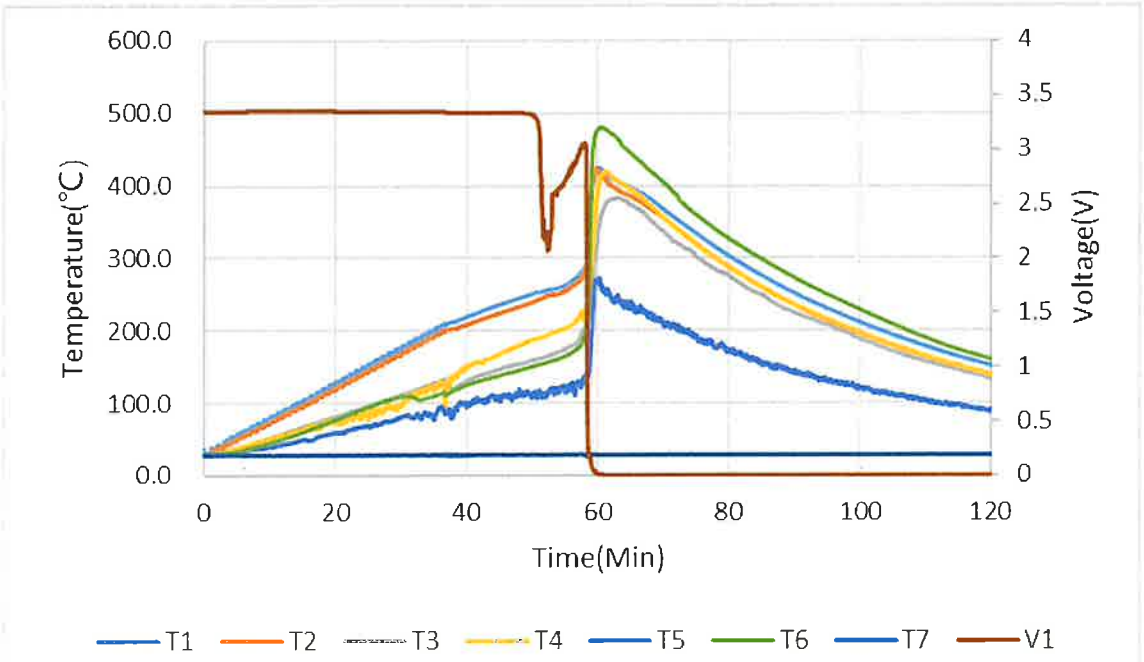
Thermalcouple No.	Location
T1	Cell center below the heater(A side)
T2	Cell center below the heater(B side)
T3	Positive eletrode tap
T4	Near pressure relief valve
T5	Cell narrow side
T6	Cell bottom
T7	Ambient temperature
V1	Cell Voltage

#3



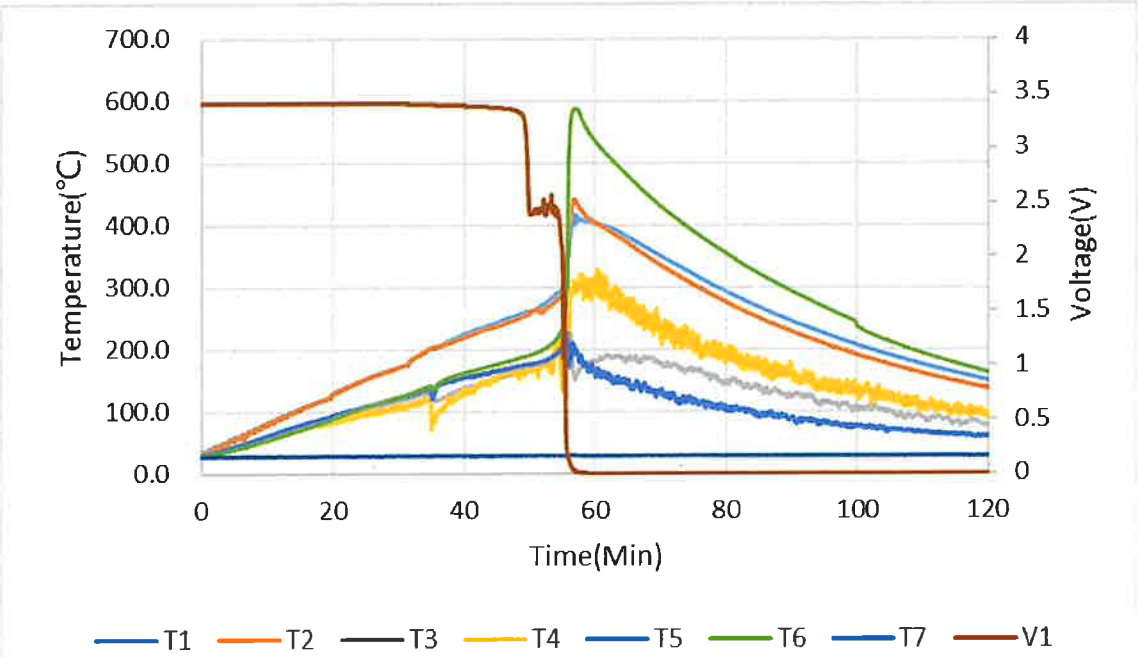
Thermalcouple No.	Location
T1	Cell center below the heater(A side)
T2	Cell center below the heater(B side)
T3	Positive eletrode tap
T4	Near pressure relief valve
T5	Cell narrow side
T6	Cell bottom
T7	Ambient temperature
V1	Cell Voltage

#4



Thermalcouple No.	Location
T1	Cell center below the heater(A side)
T2	Cell center below the heater(B side)
T3	Positive eletrode tap
T4	Near pressure relief valve
T5	Cell narrow side
T6	Cell bottom
T7	Ambient temperature
V1	Cell Voltage

#5



Thermalcouple No.	Location
T1	Cell center below the heater(A side)
T2	Cell center below the heater(B side)
T3	Positive eletrode tap
T4	Near pressure relief valve
T5	Cell narrow side
T6	Cell bottom
T7	Ambient temperature
V1	Cell Voltage

3.4 Cell vent gas generation and capturing

3.4.1 Test method and description

The cells to be tested were charged to 100% SOC and allowed to stabilize for a minimum of 1 h and a maximum of 8 h before the start of the test.

A cell was forced into thermal runaway by the external heating as determined in cell thermal runaway methodology test inside an 280L pressure vessel.

Before testing, the vessel was purged with N_2 to reduce the oxygen content below 1% by volume.

Gas mixtures were collected before and after thermal runaway testing. 0.3L gas collection bag with two valve were used for the gas collection.

Two bags after thermal runaway were used to determine the vent gas composition.

Cell weight was measured before and after test for reference.

Pressure was measured before and after thermal runaway to calculate the total gas produced for reference.

3.4.2 Test result

Ambient conditions ..... :	26.1 °C, 51 % R.H
Sample number ..... :	#1
Open circuit voltage before test (V) .... :	3.35
Pressure vessel size..... :	280L
Initial oxygen content by volume (%) .. :	< 0.1%
Cell weight before test (g)..... :	5626.0
Cell weight after test (g)..... :	4474.1
Total vent gas produced (L).....	130

3.5 Determination of cell vent gas composition

3.5.1 Test method

Cell vent gas composition was determined using Gas Chromatography (GC) with detection techniques for quantifying component gases.

The gases make up in table 1 is the gas composition after cell thermal runaway.

Table 2 contains normalized volumetric gas compositions by removing the N_2 contributions. This information was used to synthetically replicated gas mixture for further flammability character parameter tests.

3.5.2 Test result

Table 1: Vent gas components

Gas component	Concentration (v, %)
CH_4	1.1092
C_2H_6	0.1655
C_2H_4	0.4196
C_3H_8	0.0545
C_3H_6	0.2250
n-C_4H_{10}	0.0207
n-C_4H_8	0.0666
n-C_5H_{12}	0.0230
iso- C_5H_{12}	0.0339
n-C_5H_{10}	0.0160
CO	4.8960
CO_2	8.1173
H_2	15.0719
N_2	69.7808

Table 2: Vent gas components (normalized)
The gas components N_2 was removed.

Gas component	Concentration (v, %)
CH_4	3.671
C_2H_6	0.548
C_2H_4	1.389
C_3H_8	0.18
C_3H_6	0.745
n-C_4H_{10}	0.068
n-C_4H_8	0.22
n-C_5H_{12}	0.076
iso-C_5H_{12}	0.112
n-C_5H_{10}	0.053
CO	16.202
CO_2	26.861
H_2	49.875

3.6 Flammability character parameters of the cell vent gas

3.6.1 Test method

Upon determination of the cell vent gas composition, the flammability character parameters were determined on sample of the synthetically replicated gas mixture with maximum uncertainty 2%.

Lower flammability limit (LFL) of the cell vent gas was determined in accordance with ASTM E918, testing at both ambient and cell vent temperatures.

The gas burning velocity was determined in accordance with the Method of Test for Burning Velocity Measurement of Flammable Gases Annex in ISO 817.

The maximum explosion pressure P_{lax} was determined on samples of the synthetically replicated gas mixture in accordance with EN 15967.

Below table show the test result only. Detailed test report refer to Appendix A, Appendix B and Appendix C.

References:

ASTM E 918-19 – Standard Practice for Determining Limits of Flammability of Chemicals at Elevated Temperature and Pressure

ISO 817: 2014/Amd 1: 2017 – Refrigerants- Designation and safety classification

EN 15967: 2011 – Determination of maximum explosion pressure and the maximum rate of pressure rise of gases and vapours

3.6.2 Test result

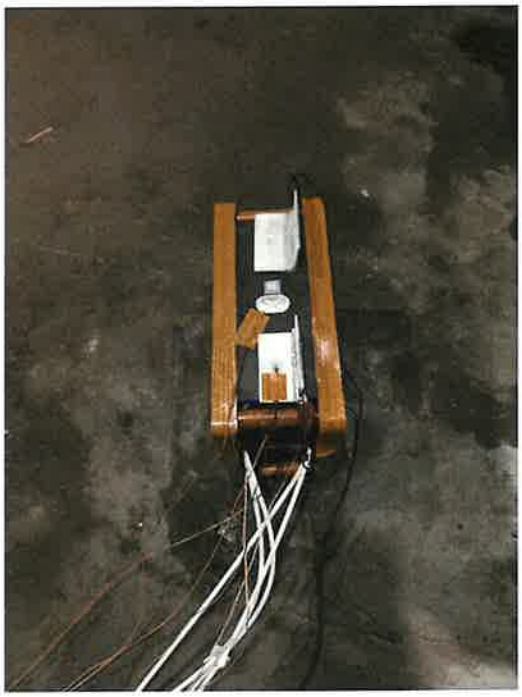
LFL at 25°C±5°C and 101±5kPa .....:	8.1%	(see Appendix A for details)
LFL at 205°C±5°C and 101±5kPa .....:	6.5%	(see Appendix A for details)
Burning Velocity S_u(m/s) at room temperature .....:	0.779	(see Appendix B for details)
P_{max} (MPa) at room temperature .....:	0.78	(see Appendix C for details)

3.7 Photos

Sample #1: Gas generation and capturing setup

Sample #1: After thermal runaway test

Sample #2: Thermal runaway test setup



Sample #2: After thermal runaway test

4 List of Test and Measurement Instruments

No.	Equipment	Model	Rating	Last Cal. date
1	Gas Chromatography	8890	--	2023.09.06
2	Hybrid Recorder	TWC-2A	-50~700°C	2023.03.17
3	Data Acquisition	34970A	10mA-1000mA 0.1-300V	2023.07.06
4	Battery Testing System	CT-4004-5V200A-ATL	5V/200A	2023.07.10
5.	Digital multi-meter	15B+	400mVdc~100Vdc	2023.07.10
6.	Electronic Weight	CHS-D	0-10kg	2023.03.17
7.	Gas acquisition system	WRNK-191 HM90-H3-2-BD-801KZ DTM	0-1200°C -0.1~1.5 MPa 0-1000°C	2023.09.07 2023.09.07 2023.09.07
8.	Oxygen analyzer	HG-BX-O2	0-30%	2023.09.07
9.	Gas lower flammability limit test system			
	Temperature measurement	TJ120-CAXL-116U-10-SPW-M	0-300°C	2023.09.07
	Pressure transducer	PTX50G2-TC-A3-CA-H0-PB	-100~150KPa	2023.09.07
10.	Gas explosion test system			
	Temperature measurement	TJ120-CAXL-116U-10-SPW-M	0-300°C	2023.09.07
	Pressure transducer	Kistler 603CAA	0~100MPa	2023.09.07
	Pressure sensor	HM90-H3-2-V2-F1-W2	-0.1~2.0 MPa -0.1~0.15 MPa	2023.09.07
11.	High speed camera	MV-XG1205GC/M-T MV-XG280GC-T	90fps 409fps	--
12.	Combustible gas combustion rate device			
	Temperature measurement	TJ120-CAXL-116U-10-SPW-M	0-300°C	2023.09.07
	straight steel ruler	dawn 1m	1000mm	2023.09.07

Appendix A: Cell vent gas lower flammability limit (LFL) test

Test Method	ASTM E918-19 Standard Practice for Determining Limits of Flammability of Chemicals at Elevated Temperature and Pressure
Test Item	The lower flammability of gas mixture
Test Apparatus	Test Vessel: 5L closed sphere Ignition system: Fusing Wire
Preparation of Test Mixture	Partial pressure method used inside the vessel; Accuracy: within 0.2% absolute
Symbol and definition	The symbols used in this report are defined as below except otherwise defined: c_s —— Concentration of sample; T_i —— Initial temperature in each trial; p_i —— Initial pressure in each trial; p_{ex} —— Overpressure in each trial; It is considered flame occurred, if pex / pi ≥ 1.07. L_1 —— The minimum sample concentration that gives flame propagation; L_2 —— The maximum sample concentration that does not give flame propagation; LFL —— Lower flammable limit; LFL is expressed as: LFL = (L1+ L2)/2 Concentration defined in this report means volume percentage.
Remark	This report is effective under the specific condition; please seek for the advice of expert for risk assessment in producing, processing, transportation and storage.

LFL test data at room temperature (part)						
Test Condition	Initial Temperature: 25(±5)°C Initial Pressure: 101(±5)kPa					
No.	cs [%]	Ti [°C]	p_i [kPa]	p_{ex} [kPa]	p_{ex} / p_i	Ignition?
1	7.8	22	101.98	108.35	1.062	N
2	8.0	22	101.73	107.67	1.058	N
3	8.0	23	101.88	108.50	1.065	N
4	8.0	23	101.92	108.31	1.063	N
5	8.2	23	102.04	109.65	1.075	Y
6	8.2	23	101.88	109.98	1.080	Y
7	8.2	23	101.54	109.06	1.074	Y
Test result	L1=8.2 %, L2=8.0%, LFL=8.1 % at 25(±5)°C and 101(±5)kPa					

LFL test data at cell vent temperature (part)						
Test Condition	Initial Temperature: 205(±5)°C Initial Pressure: 101(±5)kPa					
No.	cs [%]	Ti [°C]	p_i [kPa]	p_{ex} [kPa]	p_{ex} / p_i	Ignition?
1	6.2	205	101.00	105.12	1.041	N
2	6.4	206	101.46	107.17	1.056	N
3	6.4	207	100.83	107.69	1.068	N
4	6.4	206	101.60	106.46	1.048	N
5	6.6	206	101.21	108.56	1.073	Y
6	6.6	207	101.33	110.73	1.093	Y
7	6.6	203	100.98	109.44	1.084	Y
Test result	L1=6.6%, L2=6.4%, LFL=6.5% at 205(±5)°C and 101(±5)kPa					

Appendix B: Cell vent gas burning velocity (S_u) test

Same synthetically replicated gas mixture as LFL test was used for the test.

Test Method	ISO 817: 2014 / Amd 1: 2017 Refrigerants - Designation and safety classification
Test Item	Burning velocity of flammable gases
Test Apparatus	Test vessel: Glass tube; length 1500 mm; inner diameter 40 mm Ignition system: Electric spark Recorder: High speed camera
Preparation of Test Mixture	Partial pressure method used inside the vessel; Accuracy: within 0.2% absolute
Symbol and definition	The symbols used in this report are defined as below except otherwise defined: c_s —— Concentration of sample; S_S —— Flame propagation speed; a_f —— Cross-sectional area of flame bottom; A_f —— Flame surface area; S_u is calculated as: $$S_u = S_S \times \frac{a_f}{A_f}$$
Remark	This report is effective under the specific condition; please seek for the advice of expert for risk assessment in producing, processing, transportation and storage.

Burning velocity test data (part)				
Test Condition	Initial temperature: room temperature Initial pressure: atmospheric pressure The oxidant used: synthetic air Smallest flammable substance content increment: 1.0% volume			
No	c_s [%]	S_S [m/s]	a_f/ A_f [m^2]	S_u [m/s]
1	21%	1.032	0.492	0.508
2	22%	1.267	0.510	0.646
3	23%	1.366	0.511	0.698
4	24%	1.426	0.506	0.722
5	25%	1.483	0.509	0.755
6	26%	1.524	0.511	0.779
7	27%	1.467	0.506	0.742
8	28%	1.432	0.504	0.722
9	29%	1.393	0.501	0.698
Test result	Su= 0.779m/s at room temperature and atmosphere pressure.			

Appendix C: Cell vent gas maximum pressure (P_{max}) test

Same synthetically replicated gas mixture as LFL test was used for the test.

Test Method	EN 15967:2011 Determination of maximum explosion pressure and the maximum rate of pressure rise of gases and vapours
Test Item	Maximum explosion pressure of the gas mixture
Test Apparatus	Test Vessel: 5L closed sphere Ignition system: Fusing Wire
Preparation of Test Mixture	Partial pressure method used inside the vessel; Accuracy: within 0.2% absolute
Symbol and definition	The symbols used in this report are defined as below except otherwise defined: c_s—— Content of flammable substance by volume; p_{exn} —— Explosive overpressure in the n^{th} ignition test at a certain concentration; p_{ex} —— Highest pressure occurring in a closed vessel during the explosion of a specific mixture of flammable substances with air or air and inert gases determined under specified test conditions; P_{Mean}——The average value of the explosion overpressure at a certain concentration; P_{max} —— Maximum explosion pressure; $p_{max}$is expressed as the maximum value of p_{ex}.
Remark	This report is effective under the specific condition; please seek for the advice of expert for risk assessment in producing, processing, transportation and storage.

P_{max} test data (part)						
Test Condition	Initial Temperature: 25(±2)°C Initial Pressure: 101(±5)kPa					
Part of Test Data						
No.	c_s [%]	p_{ex1} [MPa]	p_{ex2} [MPa]	p_{ex3} [MPa]	p_{ex4} [MPa]	p_{ex5} [MPa]
1	19	0.6106	0.6213	0.6119	--	--
2	21	0.6593	0.6599	0.6587	--	--
3	23	0.7070	0.6801	0.6942	--	--
4	25	0.7319	0.7286	0.7308	--	--
5	27	0.7571	0.7565	0.7562	--	--
6	29	0.7550	0.7691	0.7644	--	--
7	29.8	0.7667	0.7693	0.7713	0.7702	0.7688
8	31	0.7796	0.7805	0.7784	0.7815	0.7820
9	31.2	0.7764	0.7782	0.7758	0.7773	0.7672
10	31.4	0.7745	0.7675	0.7583	0.7726	0.7747
11	33	0.7562	0.7517	0.7537	--	--
12	35	0.7350	0.7351	0.7355	--	--

Determination of the explosion pressure			
No.	c_s [%]	P_{Mean} [MPa]	P_{max} [MPa]
1	19	0.6146	0.6213
2	21	0.6593	0.6599
3	23	0.6938	0.7070
4	25	0.7304	0.7319
5	27	0.7566	0.7571
6	29	0.7628	0.7691
7	29.8	0.7693	0.7713
8	31	0.7804	0.7820
9	31.2	0.7750	0.7782
10	31.4	0.7695	0.7747
11	33	0.7539	0.7562
12	35	0.7352	0.7355

Test result	
Content of flammable substance	31 % volume
Smallest flammable substance content increment	0.2% absolute
Maximum explosion pressure (P_{max})	0.78 MPa

End of Test Report

ATTACHMENT TO TBL RESPONSE

51

FirstLight Emergency Response Plan

Document Control Details

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		Name	**Title**	**Date**
Author		PIC Group Inc.		
Reviewer				
Approver		Patty Goclowski	HS&E Manager	07/19/2021
Rev#	**Revision Date**	**Revision Detail**		**Approver**
0	06/01/2015	Initial Release		Tom Alvarado
1	07/19/2021	Format and Name Change		Patty Goclowski

TABLE OF CONTENTS

SECTION 1- PURPOSE, SCOPE, AND GENERAL REQUIREMENTS

1.1 PURPOSE

This procedure provides the guidelines to assist GSENA Plant Managers / Business Area Managers in the development of facility or site specific Emergency Response Plans.

NOTE: This procedure is based on United States Regulatory Agency (i.e. OSHA, MSHA, etc) requirements and may require some modifications to comply with other applicable local and/or in country regulatory agency requirements. However, such modifications shall only be made if applicable local and/or in country requirements are more stringent than the requirements of the existing company procedure.

1.2 SCOPE

1.2.1 This procedure applies to all GSENA Facilities and Field locations.

1.3 GENERAL REQUIREMENTS

1.3.1 This procedure will be used to ensure that effective Emergency Response Plans, where required are developed, implemented and maintained at each GSENA Facility and Field location.

SECTION 2 - DEFINITIONS

2.1 DEFINITIONS

Some terms are noted for clarity only and are not necessarily used as part of the text of this procedure.

Blizzard Warning – Issued when sustained winds or frequent gusts to thirty-five (35) miles per hour (57 km/h) or greater and considerable amounts of falling or blowing snow (reducing visibility to less than a quarter mile) are expected to prevail for a period of three (3) hours or longer.

Clean-Up Operation – An operation where hazardous substances are removed, contained, incinerated, neutralized, stabilized, cleared-up, or in any other manner processed or handled with the goal of making the site safer for people or the environment.

Controlled Release – Releases that are contained by in-place facilities or safeguards, does not go off property, can be stopped by closing valves, or absorbed/neutralized promptly at the time of release.

Decay – Usually the longest stage of a fire, the *decay stage* is characterized as a significant decrease in oxygen or fuel, putting an end to the fire. Two common dangers during this stage are first – the existence of non-flaming combustibles, which can potentially start a new fire if not fully extinguished. Second, there is the danger of a back draft when oxygen is reintroduced to a volatile, confined space.

Emergency Response – A response effort by employees from outside the immediate release area or by other designated responders (i.e., local fire departments, mutual aid groups, designated HAZMAT teams, etc.) to an incident that results in or is likely to result in an uncontrolled release of a hazardous substance.

Emergency Response Plan – A plan developed and implemented to handle anticipated emergencies prior to the commencement of emergency response operations. It is also intended to minimize hazards to employees, the public or the environment from fires, explosions, or any unplanned sudden or non-sudden release of hazardous materials, hazardous waste or hazardous constituents to air, soil, surface water or ground water. The plan is designed to set procedures for reporting all releases or threatened releases of hazardous materials.

Field Location – Job-sites with work currently in progress.

Freezing Rain – Rain that freezes when it hits the ground, creating a coating of ice on roads, walkways, trees, and power lines.

Frost / Freeze Warning – Issued when below freezing temperatures are expected.

Fully Developed – When the growth stage has reached its max and all combustible materials have been ignited, a fire is considered fully developed. This is the hottest phase of a fire and the most dangerous for anybody trapped within.

Growth – The growth stage is where the structures fire load and oxygen are used as fuel for the fire. There are numerous factors affecting the growth stage including where the fire started, what combustibles are near it, ceiling height and the potential for "thermal layering". It is during this shortest of the 4 stages when a deadly "flashover" can occur; potentially trapping, injuring or causing death.

SECTION 2 - DEFINITIONS

2.1 DEFINITIONS, Continued

Hazardous Materials (HAZMAT) Response Team – An organized group of employees, with HAZWOPER training, designated by the employer who are expected to perform work to handle and control actual or potential leaks or spills of hazardous substances requiring possible close approach to the substances; the response is for the purpose of control or stabilization of the incident.

Hazardous Substance – Any substance designated in any of the categories listed below and exposure to which results or may result in adverse affects on the health or safety of employees:

- Any substance defined under designated sections of CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act, commonly known as Superfund).
- Any biological agent and other disease causing agent which after release into the environment and upon exposure, ingestion, inhalation, or assimilation into any person, either directly from the environment or indirectly, will or may reasonably be anticipated to cause death, disease, behavioral abnormalities, etc.
- Any substance listed by the U.S. Department of Transportation (DOT) as hazardous material (under 49 CFR 172 and appendices).
- Any hazardous waste as defined in 40 CFR 261.3 or 49 CFR 171.8.

Ice Storm Warning – Issued for ice accumulations of a quarter-inch or more.

Incident Command System (ICS) – System implemented as part of the Emergency response indicating the channels of communication and identification of individuals responsible for certain tasks and activities.

Incipient – This first stage begins when heat, oxygen and a fuel source combine and have a chemical reaction resulting in fire. This is also known as "ignition" and is usually represented by a very small fire which often (and hopefully) goes out on its own, before the following stages are reached. Recognizing a fire in this stage provides your best chance at suppression or escape.

LEPC – Local Emergency Planning Committee / Commission.

Office Building – Stand-alone facilities, which are primarily dedicated to administration, sales, operational technical and management, support.

Person in Charge (PIC) – The PIC is assigned various responsibilities by the Plant Manager or Business Area Manager for oversight and approval of work activities performed by GSENA personnel and contractors working under the direction of GSENA. Specific responsibilities of the PIC are defined in the GSENA Health and Safety Procedures, where his/her oversight and approval of work activities are applicable. In the case of emergency this can be the construction site supervisor, or the control room operator.

Plot Plan – A diagram which shows the buildings, utility runs, and equipment layout, the position of roads, and other constructions of an existing or proposed project site at a defined scale.

Power Plant Facility – Fixed industrial locations operated and maintained on an ongoing basis by GSENA.

Sleet – Rain that turns to ice pellets before reaching the ground.

SECTION 2 - DEFINITIONS

2.1 DEFINITIONS, Continued

Uncontrolled Release – A release of a hazardous substance which cannot be controlled by shutting off valves, cannot be controlled by in-place facilities such as dikes, catch basins, sump tanks, etc., or cannot be absorbed or neutralized promptly.

Winter Storm Watch – Indicates that severe winter weather may affect your area within 12-48 hours.

Winter Storm Warning – Indicates severe winter weather is in the area or expected immediately and can be life threatening.

SECTION 3 - RESPONSIBILITIES

3.1 PLANT MANAGER / BUSINESS AREA MANAGER

3.1.1 The Plant Manager (PM) / Business Area Manager is responsible for communicating the requirements of this procedure to their respective management team, employees and contractors.

3.1.2 The development of written site specific plans.

3.1.3 Training employees, applicable contractors and visitors.

3.1.4 Reviewing plans periodically and as necessary, amending plans to keep current with new or changing conditions or information.

3.1.5 Conducting annual practice drills.

3.2 PERSON IN CHARGE (PIC)

3.2.1 The Person in Charge (PIC) has responsibility to ensure H&S expectations are both communicated and met within the scope of plant boundaries. Responsibilities include:

a Initiate the Emergency Response Plan

b Initiate the Incident Command System (if required)

c Notification of Emergency services

d Notification of Plant Manger / Business Area Manager

SECTION 4 - PROCEDURE

4.1 GENERAL

4.1.1 Emergency procedures depend on the severity of the emergency. Concern, in the order of importance, is:

a. The safety of personnel working in the emergency area.

b. The safety of all persons on site.

c. Protection of equipment.

d. Minimum loss in production.

4.1.2 Each GSENA Facility or Site must be evaluated to determine if they are subject to Hazardous Waste regulations as outlined by the Resource Conservation and Recovery Act (RCRA). Depending on applicability to RCRA standard levels, there may be additional requirements other than the general HAZWOPER requirements included in this procedure. Consult with the GSENA H&S Manager for applicability status and additional requirements.

4.1.3 Emergency Response Plans must be developed if there is a potential for having a chemical spill or leak on the premises and there are GSENA employees that have been designated as emergency responders.

4.1.4 Each GSENA Facility or Site shall develop a Site Specific Emergency Response Plan (ERP) in writing to inform employees and contractors of the actions to be taken in case of an emergency. Plans should be completed and in effect on the same day operations commence.

4.1.5 The Emergency Response Plan should address emergencies that may reasonably be expected in the workplace. The following elements, at a minimum, shall be included in the Emergency Response Plan:

a. The preferred means of reporting fires and other emergencies.

b. Emergency escape procedures and emergency escape route assignments, such as floor plans, workplace maps, and safe or refuge areas (mustering locations).

c. Procedures to be followed by employees who remain to operate critical plant operations before they evacuate.

d. A procedure to account for all employees and visitors after emergency evacuation has been completed.

e. Rescue and medical duties for those employees who are to perform them.

f. Pre-emergency planning and coordination with outside parties.

g. Personnel roles, lines of authority, and communication.

h. Emergency recognition and prevention.

i. Safe distances and places of refuge.

j. Site security and control.

k. Evacuation routes and procedures.

l. Decontamination procedures.

SECTION 4 - PROCEDURE

4.1 GENERAL, Continued

m. Emergency medical treatment and first aid.

n. Emergency alerting and response procedures.

o. Critique of response and follow-up.

p. PPE and emergency equipment.

q. Site topography, layout, and prevailing weather conditions.

r. Procedures for reporting incidents to local, state, and federal governmental agencies.

4.1.6 The personal safety and property of residents around the emergency area must be preserved as much as possible.

4.1.7 The extent of the emergency area should be defined and restricted.

4.1.8 All necessary equipment and specialists should be brought in for assistance, as required.

4.1.9 Damage to GSENA property should be rectified as soon as the situation allows the equipment and personnel to enter the area.

4.1.10 Legal aspects such as claims shall be promptly reported by the Plant Manager / Business Area Manager to GSENA Corporate Headquarters for handling.

4.1.11 Consider the facility and determine the effect each type of emergency can have on the normal operations and on the standard emergency procedures established. Changes and revisions to such operations or procedures may result.

4.1.12 Ensure that the appropriate pre-planned evacuation procedure is suited to each circumstance.

4.1.13 Ensure that in the event of an emergency alert the following instructions are adhered to:

a. Maintain transportation assets in ready status for as long as possible.

b. Any construction or non-essential operations are to be stopped and work begun to secure all facilities.

c. Personnel are not to be assigned duties which will necessitate their being at remote parts of field or isolated parts of an installation for a prolonged period unless they have radio communications readily available.

d. Weather forecasting service is to be monitored to provide timely warning of impending bad weather.

4.1.14 Annual Fire / Evacuation Drills will be conducted to ensure personnel are familiar with Alarm Signals, Emergency Procedures, Evacuation Routes, and Assembly Areas.

4.1.15 Emergency Response Plans shall be reviewed annually by the Plant Manager / Business Area Manager and, as necessary, be amended to keep them current with new or changing conditions or information.

SECTION 4 - PROCEDURE

4.2 EMPLOYEE ALARM SYSTEMS

4.2.1 Each facility or site shall have an employee alarm system to notify employees of an emergency situation; to stop work activities if necessary; and to begin emergency procedures. Elements of the alarm system include:

a. Alarms of sufficient volume to be perceived above ambient noise and / or light levels by all employees in the affected areas.

b. A clearly recognizable signal to evacuate the work area, if necessary, or to perform actions under Emergency Response; and

c. Plant Manager / Business Area Manager must ensure:

i. That all devices, components, or combinations of devices or systems constructed and installed to comply with CFR1910.165 Employee Alarm Systems, are approved. Steam whistles, air horns, strobe lights or similar lighting devices, or other tactile devices meeting the requirements of the standard are considered to meet OSHA requirements for approval.

ii. That each alarm system is restored to normal operating condition as promptly as possible following any use or test. Spare alarm devices and components subject to wear or destruction shall be available in sufficient quantities and locations for prompt restoration of the system.

iii. That all alarm systems are maintained in operating condition except when undergoing repair or maintenance. In such a case, alternative alarm systems must be used; Back-up means of alarm, shall be provided when systems are out of service.

iv. That all supervised employee alarm systems are tested at least annually for reliability and adequacy.

v. That the servicing, maintenance and testing of employee alarms are done by persons trained in the designed operation and functions necessary for reliable and safe operation of the system.

vi. That manually operated actuation devices for use in conjunction with employee alarms are unobstructed, conspicuous and readily accessible.

SECTION 4 - PROCEDURE

4.3 EMERGENCY EVENTS

The Plan should provide instructions and information applicable to the specific emergency conditions.

4.3.1 Fire or Explosion

a. In the event of a fire, GSENA personnel should immediately:
   i. Trip the fire alarm and report the fire to the Fire Department.
   ii. Emergency telephone numbers and contact information shall be prominently posted.
   iii. Incipient fires which can be extinguished safely by personnel who are trained in the use of fire extinguishers.
   iv. If the incipient fire develops into the growth stage, personnel shall cease efforts to extinguish the fire and evacuate.

b. Personnel will immediately prepare to evacuate upon hearing an emergency alarm signal. Time and situation permitting, all equipment and materials currently in use should be properly disconnected, shut off, or otherwise secured to preclude additional hazardous conditions. Once clear of the area, DO NOT GO BACK FOR ANY REASON.

c. Follow the site specific Fire Emergency Plan for further information.

d. Once the fire department has arrived they should be directed to the scene. GSENA personnel should go to the designated assembly point via the evacuation route immediately.

e. All external communication pertaining to the emergency will be conducted by GSENA Management.

f. All personnel are to remain at the designated assembly area until the All Clear Signal is given or specific instructions are provided for other action.

4.3.2 Bomb Threats

a. All bomb threats must be taken seriously. If the caller is familiar with the building and specific about the location of the bomb, the call should be regarded with a very high degree of urgency.

b. The recipient of a bomb threat should follow these guidelines in the event of receiving a telephone call:
   i. Keep the caller on the line for as long as possible. Ask the caller to repeat the message and record every word spoken by the person making the threat. At the same time, signal for help. If feasible, notify police/ GSENA Management.
   ii. Evacuate all personnel to the designated assembly area for the head count and further instructions. DO NOT LEAVE THE SITE without checking with Site Management.
   iii. DO NOT hang up, place the caller on hold or be abrupt. Speak in a normal tone and converse with the caller in an attempt to have the person disclose the location of the object.

SECTION 4 - PROCEDURE

4.3 EMERGENCY EVENTS, Continued

iv. Interrupt the caller as often as possible by asking questions and asking the caller to repeat. This may prevent the caller from completing the message and hanging up. Be polite and act very concerned.

v. Inform the caller that the building is occupied and the detonation of a bomb could result in death or serious injury to innocent people.

vi. Pay attention to any background noise that might give a clue as to the place from which the call is being made.

vii. Note the gender of the caller, age, accent (if any), unusual expressions or slang, or any hint as to the seriousness of the call.

viii. When the connection is broken, the operator shall immediately:

(a). NOTIFY Police, FBI, and Plant Manager / Business Area Manager.

NOTE: **CAUTION: MINIMIZE USE OF RADIOS: THEIR EMISSSIONS COULD POSSIBLY CAUSE PREMATURE DETONATION OF SOME BOMBS. EVACUATE ALL PERSONNEL from the threatened facility a minimum distance of 300 feet if the threat is extremely serious.**

4.3.3 Medical Emergencies

a. All on-the-job injuries / illnesses must be reported and investigated in accordance with the instructions provided in GSENA H&S-001, *Incident Investigation and Reporting*.

b. Information pertaining to medical facilities and services are to be posted at each GSENA site.

c. Axiom shall be called immediately for direction regarding each medical emergency.

d. All injuries / illnesses beyond first aid cases must be transported as soon as possible for medical care and/or treatment.

e. Transport non-emergency injuries / illnesses to the medical facility identified earlier.

SECTION 4 - PROCEDURE

4.3 EMERGENCY EVENTS, Continued

f. In the event of a life threatening or serious injury / illness, the injured person(s) should not be moved unless absolutely necessary due to hazardous conditions. The following actions shall be taken:

i. Notify PIC

ii. Remain with the victim; Send someone to call 911 and report:

(a). Victim's location.

(b). Victim is conscious? Breathing? Bleeding?

(c). Victim's injuries.

(d). Chemicals or foreign materials involved?

iii. Administer CPR and / or first aid if trained to do so.

iv. Notify Axiom Medical for medical advice.

v. Stay with victim until advanced life support arrives.

vi. Notify GSENA emergency contacts.

vii. If hazardous substances are involved in the medical emergency, send a copy of the SDS along with the victim to the emergency room.

g. In the event of Non-Life Threatening or Non-Serious, the following actions shall be taken:

i. Notify PIC.

ii. Call Axiom and If deemed necessary, call 911 and report:

(a). Victim's location.

(b). Victim is conscious? Breathing? Bleeding?

(c). Victim's injuries.

(d). Hazardous substances or foreign materials involved?

iii. Administer first aid if trained to do so.

iv. Notify GSENA emergency contacts.

v. If hazardous substances are involved in the medical emergency, send a copy of the SDS along with the victim to the emergency room.

4.3.4 Severe Weather Related

a. Hurricanes, Tornados, and / or High Winds.

i. Hurricanes, Tornados, and / or High Winds can create hazards to personnel on GSENA sites such as instability in elevated work areas, limited visibility, and displacement of materials (flying debris); therefore, it is the responsibility of GSENA Management to assess the hazards, stop and / or reassign work activities.

SECTION 4 - PROCEDURE

4.3 EMERGENCY EVENTS, Continued

ii. Assure that all loose materials that could cause injury or damage are properly stored and secured.

iii. When a storm is forecasted, steps should be taken immediately to safeguard personnel and facilities in the more exposed areas.

iv. Consider post-storm hazards that may exist such as unstable structures or other hazards. In some cases a safety and property damage assessment should be conducted before restarting work activities.

v. In an office environment, seek shelter in the most structurally sound area of the building:

(a). Designated area

(b). Under a desk or table

(c). Stay clear of windows, bookcases and mirrors

b. Heavy Rainfall and / or Floods

i. An analysis of road and field conditions should be made of the surrounding area in the event of flooding.

ii. Determine whether emergency procedures can be carried out in the event of flooded roads, bridges, etc.

iii. Tanks, pipelines and other equipment should be firmly secured against floating.

iv. Tanks should be kept full if practical.

v. Facilities in low lying areas should take necessary precautions to mitigate flooding issues.

c. Severe Lightning

i. Regularly monitor weather conditions and local weather forecasts prior to scheduled activities.

(a). Suspension and resumption of work activities should be planned in advance.

(b). Understanding of SAFE shelters is essential. SAFE evacuation sites include:

(i) Fully enclosed metal vehicles with windows up

(ii) Substantial buildings

(iii) Low ground

(c). UNSAFE SHELTER AREAS include all outdoor metal objects, such as:

(i) Power poles

(ii) Fences

(iii) Gates

(iv) Electrical equipment

(v) Solitary trees or tall structures

SECTION 4 - PROCEDURE

4.3 EMERGENCY EVENTS, Continued

(vi) Water

(vii) Open fields

(viii) High ground

(d). If you feel your hair standing on end, and/or hear "crackling noises," you are in lightning's electric field. If caught outside during close lightning activity, immediately remove metal objects (including baseball cap, jewelry, belts, car keys etc), place your feet together, duck your head, and crouch down low with hands on knees.

(e). People who have been struck by lightning do not carry an electrical charge and are safe to handle. Apply first aid immediately if you are qualified to do so. Get emergency help promptly.

(f). When a severe lightening storm is approaching the jobsite, a notice shall be given for all personnel to shut down outside work activities and equipment, and then proceed to designated shelter.

(g). Suspend outside work activities, allowing sufficient time to get to shelter if you see or hear lightening or thunder. Different distances to safety will determine different times to suspend activities. Refer to www.noaa.gov for more information.

(h). Be aware of your surroundings and the nearest safe area.

(i). Wait a minimum of 30 minutes from the last observed lightning or thunder before resuming activities. Be extra cautious during this phase as the storm may not be over.

4.3.5 Earthquakes

a. Earthquakes are unpredictable. As a result, it is extremely difficult to implement protective and preventative measures other than making those architectural modifications that minimize structural damages in critical areas. The following actions are recommended to be taken during and immediately after an earthquake:

i. Shut-off sources of release of process fluids.

ii. Investigate what gases can be expected in the exposed areas.

iii. Check for toxic vapor or liquids.

iv. Check possibility of damaged equipment, structural collapse.

v. Restrict personnel access to area.

vi. Keep fire-extinguishing equipment ready for use.

vii. Any further actions needed to put the installations in a safe condition.

viii. Consider effect of possible subsequent tidal wave.

SECTION 4 - PROCEDURE

4.3 EMERGENCY EVENTS, Continued

b. During an earthquake

i. In an office environment, seek shelter in the most structurally sound area of the building:

(a). Designated area

(b). Under a desk or table

(c). In a doorway or inside corner

(d). Stay clear of windows, bookcases and mirrors

ii. When Outside, stay in an open area away from trees, buildings, walls, and power lines. Move to ground level and avoid all suspended walking surfaces.

iii. Avoid exposure to large pieces of equipment or deck grating suspended overhead or any objects that could fall.

iv. Driving, pull over and stop. Avoid power lines. Stay inside the vehicle until shaking stops. If the earthquake is severe, do not attempt to cross damaged bridges, overpasses, or damaged sections of road.

c. After an earthquake

I. Perform a site risk assessment to evaluate all hazards resulting from an earthquake.

II. Be prepared for aftershocks.

4.3.6 Winter Weather

a. Individual sites shall assess the risk of severe winter weather impacts and develop a site specific L3 procedure which will prepare for expected winter weather issues which may arise.

b. In areas where the possibility of severe winter weather exists, pre-planned instructions and necessary equipment should be available for safeguarding personnel and facilities.

c. Vital equipment should be protected against collision damage due to poor visibility, snowing-in or icing by using signs, crash barriers or other aids.

d. Preparations for a stay of multiple days should include, but not be limited to:

i. Food

ii. Water

iii. Blankets

iv. Emergency power

e. Listen to radio, television, for weather reports and emergency information.

f. If outside wear several layers of loose fitting, lightweight warm clothing rather than one layer of heavy clothing. The outer garments should be tightly woven and water repellent. Wear mittens, which are warmer than gloves. Wear a hat. Cover your mouth with a scarf to protect your lungs. Protect your lungs from extremely cold air by covering your mouth when outdoors. Try not to speak unless absolutely necessary.

SECTION 4 - PROCEDURE

4.3 EMERGENCY EVENTS, Continued

g. Keep dry. Change wet clothing frequently to prevent a loss of body heat. Wet clothing loses all of its insulating value and transmits heat rapidly.

h. Watch for signs of frostbite. These include loss of feeling and white or pale appearance in extremities such as fingers, toes, ear lobes, and the tip of the nose. If symptoms are detected, get medical help immediately.

i. Watch for signs of hypothermia. These include uncontrollable shivering, memory loss, disorientation, incoherence, slurred speech, drowsiness, and apparent exhaustion.

j. Avoid overexertion when shoveling snow. Overexertion can bring on a heart attack—a major cause of death in the winter. If you must shovel snow, stretch before going outside and take frequent breaks.

k. Reference GSENA H&S- 24, Heat and Cold Stress Procedure for further information.

4.3.7 Hazardous Material Spill or Leak

a. Each site shall develop a site specific plan (L3) to address hazardous substances at the facility.

b. Accidental spills of hazardous materials must be reported at once to the Plant Manager / Business Area Manager per Reporting Procedures. If safe to do so, get information on the spilled material, control entry to the spill site and watch over the area until help arrives.

c. Do not attempt to clean-up spills without direction and/or training.

d. Check the Safety Data Sheets (SDS) for personal protection equipment requirements and for disposal instructions and precautions.

e. Reference the site specific Hazardous Waste Operations and Emergency Response Program (HAZWOPER) for additional guidance for events of this nature.

4.3.8 Evacuation Routes and Assembly Areas

a. Floor plans of each Office Facility with clear routes of egress established and prominently marked shall be developed. Once the floor plans have been prepared, the floor plan for each floor showing the evacuation route will be prominently posted for ready reference by building occupants.

b. Specifically designated assembly areas will be established for each facility and such areas will be noted on the posted floor plan, which contains the marked evacuation routes.

c. Evacuation routes for Power Plant Facilities will be established by the Plant Manager / Business Area Manager and will be posted prominently for quick reference by assigned employees.

d. Evacuation routes for Field Locations will be as specified for each site.

SECTION 4 - PROCEDURE

4.3 EMERGENCY EVENTS, Continued

4.3.9 Plot Plans

a. Plans should be developed for each GSENA site which shows the orientation of the structure on the property, the location of hazardous substance storage, points of entry and egress, and the location of first aid stations, safety showers, eye wash stations, fire hydrants and fire extinguishers.

b. The Plot Plans will be kept readily available, for use by emergency services in the event of fire or explosion.

c. Plant Manager / Business Area Manager is responsible for the custody and control of Plot Plans.

4.3.10 Alarms, Signals and Alerts

a. Each facility will establish and maintain a method of communicating the occurrence of an emergency, which requires action by (or the evacuation of) assigned personnel.

b. The notification system must be tested monthly to ensure proper operation and a written record of the test is to be maintained on site.

c. Alarms, Signals and Alerts may be any audible and visual signal or alarm that is sufficient to provide adequate warning to all locations within each facility. In some cases, radio communication may be used or communication by voice may be sufficient, depending on the size of the facility and its ambient noise level.

d. The following information (if applicable) shall be obtained and posted at each Field Location work site:

i. Fire Alarm (describe).

ii. Evacuation Alarm Signal (describe).

iii. All Clear Signal (describe).

iv. Alarm Boxes (note locations).

v. Fire Extinguishers (note locations).

vi. Windsocks (note locations).

vii. Evacuation Routes.

viii. Assembly Areas.

SECTION 4 - PROCEDURE

4.3 EMERGENCY EVENTS, Continued

4.3.11 General Response

a. Upon initiating an emergency alarm, all permitted work and equipment will be secured. All permits will be cancelled (excluding LOTO).

b. All personnel not assigned specific duties requiring their presence during the emergency will immediately evacuate the facility, utilizing routes specified and posted for their work site.

c. All personnel will proceed directly to the designated assembly points as soon as they have cleared the danger area. DO NOT GO BACK FOR ANY REASON.

d. Radio communications shall be limited to emergency information only.

e. Plant Manager / Business Area Manager, or designee, shall gather all assigned personnel to obtain a head count to ensure all personnel present at the work site prior to the emergency are accounted for.

f. The PIC shall provide a report of missing personnel to the Plant Manager / Business Area Manager present at the assembly area, or to the Emergency Response Unit Officials present at the site.

g. All personnel will remain in the assembly area until permission is specifically given to leave the assembly area or the emergency is declared secure by announcements made by the Emergency Response Officials, or through the sounding of an "All Clear" signal.

SECTION 5 - TRAINING

5.1 PURPOSE

Training shall be provided so that employees acquire the knowledge and understanding of the Site Specific Emergency Response Plan, including the emergencies that may reasonably be expected in the workplace, the type of evacuation necessary and their role in assisting in a safe and orderly evacuation.

5.2 PLANT MANAGER / BUSINESS AREA MANAGER

5.2.1 The Plant Manager / Business Area Manager, with support from the regional H&S representatives, shall receive training on the requirements and guidelines of this procedure upon hire.

5.3 PIC

5.3.1 Shall be trained on the requirements and guidelines of this procedure and on their Facility or Site Specific Emergency Response Action Plan annually or as necessary due to procedure revision.

5.4 EMPLOYEES

5.4.1 All GSENA employees shall be trained on the requirements and guidelines of this procedure and on their Facility or Site Specific Emergency Response / Action Plan annually or as necessary due to procedure revision.

5.4.2 GSENA employees shall also be trained annually in the proper use, care and inspection of Emergency Response equipment which they may be called upon to use.

5.5 VISITORS AND CONTRACTORS

5.5.1 Visitors and Contractors will be provided instruction on the Emergency notification system, Alarm Signals, Emergency Procedures, Evacuation Routes, and Assembly Areas during the first day of work at a facility or job site.

5.6 REFRESHER TRAINING

5.6.1 Retraining is required in at least the following situations:

a. Refresher training is required annually;

b. As necessary due to procedure revision;

c. When regulatory changes have occurred; or

d. When there is reason to believe that an employee lacks the knowledge and understanding needed for participating in a safe and orderly evacuation.

SECTION 6 – RECORD RETENTION

6.1 RECORD RETENTION

6.1.1 Records of incidents, accidents, responses, and subsequent investigations impacting the environment, safety, health, or security, including responses to emergencies, near-misses, and injury logs require ten year retention.

SECTION 7 - REFERENCES

7.1 REFERENCES

7.1.1 29 CFR 1910.120, Hazardous Waste Operations and Emergency Response

7.1.2 29 CFR 1910.119, Process Safety Management

7.1.3 29 CFR 1910.38, Emergency Action Plans

7.1.4 29 CFR 1926.35, Employee Emergency Action Plans

7.1.5 OSHA 3088 Publication Planning for Workplace Emergencies and Evacuations

7.1.6 GSENA H&S – 002, Job Safety Analysis

7.1.7 GDF Suez Health & Safety Management System Section 9, Documentation: Control of Documents and Records.

7.1.8 GSENA business area, Records Retention Policy.

ATTACHMENT TO TBL RESPONSE

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FirstLight Spill Prevention, Control and Countermeasure Plan

FirstLight

Spill Prevention, Control, and Countermeasure Plan

Tunnel Station
72 Roosevelt Avenue Extension
Preston, CT

November 2024

Tighe&Bond

100% Recyclable

FirstLight CT Hydro LLC, Tunnel Station Management Commitment

I have the authority to commit the necessary resources to implement this Spill Prevention, Control, and Countermeasure (SPCC) Plan.

SPCC Revision Date: 12/3/2024

Name: Daniel Timlake Title: Senior Operations Manager

Signature: Daniel Timlake Date: 12/3/2024

Professional Engineer (PE) Certification

I hereby certify that this SPCC Plan has been prepared under my direct supervision by Tighe & Bond staff who have inspected this facility, and being familiar with the provisions of Environmental Protection Agency (EPA) Regulations 40 CFR §112 attest that the Plan has been prepared in accordance with good engineering practice, including consideration of applicable industry standards, and with the requirements of this part; that procedures for required inspections and testing have been established; and that the Plan is adequate for the facility. This certification remains in effect only if the recommendations throughout this report are implemented within the recommended timeframe.

Name: David P. Horowitz, PE, CSP Firm: Tighe & Bond, Inc.

Registration Number: 33748 Date: 11·25·2024

State: CT

Stamp/Signature:

Revisions

Changes To Facility Design, Construction, Operation, Or Maintenance

This SPCC must be revised when there is a change in the facility design, construction, operation, or maintenance that materially affects its potential for a discharge (see Section 1.4). A revision made under this situation must be prepared within six months, and implemented as soon as possible, but not later than six months following preparation of the amendment.

Technical amendments (as described in Section 1.4) shall be certified by a Professional Engineer and documented as described below.

Routine SPCC Plan Review and Evaluation

A review of this SPCC Plan shall be performed at intervals no less than every five (5) years. The review must include an evaluation to determine if more effective prevention and control technology is possible, if the technology has been field-proven at the time of the review and will significantly reduce the likelihood of a discharge. Should amendments be necessary, all amendments shall be made within six months of the evaluation.

Documentation of Routine Reviews and Evaluations

Person Performing Evaluation:

Name: _____ Title: _____

Signature: _____ Evaluation Date: _____

Amendment Date: _____

Attestation

I have completed a review and evaluation of the SPCC Plan for the FirstLight CT Hydro LLC, Tunnel Station as of the date indicated below and:

- ☐ will amend the Plan as a result.
- ☐ will not amend the Plan as a result

Name: _____ Title: _____

Signature: _____ Date: _____

SPCC Plan Revision Documentation

Revision history shall be summarized in the table below. Technical amendments shall be certified by the Professional Engineer using the Management Approval form on the previous page.

Date	Technical Amendment?	Description	Pages
11/24	No	5-Year SPCC Plan Update	All

Tighe&Bond

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Section 1 Purpose and Applicability

Section 2 112.7 - General Requirements for SPCC Plans

Section 3 112.8 - SPCC Plan Requirements For Onshore Facilities

List of Appendices

Tighe&Bond

SECTION 1

Section 1
Purpose and Applicability

1.1 Applicability

In accordance with 40 CFR §112, an owner of an AST and/or UST facility must prepare and implement a Spill Prevention, Control, and Countermeasure (SPCC) Plan which must be a written document establishing release prevention and response procedures for releases from the tank or tank systems. The SPCC Plan must be prepared in accordance with 40 CFR §112.

SPCC Plans are required for any facility engaged in drilling, producing, gathering, storing, processing, refining, transferring or consuming oil and oil products, providing that all three of the following conditions are met:

- The facility is non-transportation-related
- The aggregate aboveground storage capacity is greater than 1,320 gallons (includes containers 55 gallons or greater) or the total underground storage capacity is greater than 42,000 gallons
- Due to its location, oil spilled at the facility could reasonably be expected to reach navigable waters of the United States or adjoining shorelines

Since the aboveground aggregate storage capacity exceeds the regulatory threshold, the FirstLight CT Hydro LLC, Tunnel Station (the Station) is subject to the regulatory requirements related to the development and implementation of an SPCC Plan. As such, this Plan is required to be reviewed and approved by a Professional Engineer.

Appendix A contains figures that identify the facility's aboveground storage tanks (ASTs) and site features pertinent to the implementation of this SPCC Plan.

1.2 Plan Purpose

The purpose of this Plan is to outline procedures adopted by the facility to prevent the discharge of oil to surface waters, groundwater table, or adjacent water bodies. This document also summarizes procedures to be implemented by facility personnel in the event of an oil release and documents management's commitment to provide the necessary resources to implement the Plan. These procedures are intended to minimize the threat to public health and safety, and/or the environment and meet the applicable requirements of 40 CFR Parts 109 and 112, United States Environmental Protection Agency (EPA) Regulations, "Oil Pollution Prevention" and Steel Tank Institute's (STI) SP001 Inspection Standard.

The procedures, methods, and equipment described in this document meet the applicable requirements of the EPA, 40 CFR Parts 109 and 112.

1.3 Plan Administration and Contacts

The Health, Safety and Environmental (HS&E) Department is responsible for the implementation and management of this SPCC Plan and has been identified as the facility's

SPCC Coordinator. The responsibilities include confirming that the appropriate facility personnel are properly trained to implement this SPCC Plan and that personnel are familiar with and follow the procedures presented in this Plan. A copy of the SPCC Plan is kept at the facility. The plan will be available to the Regional Administrator of EPA for on-site review during normal working hours. The HS&E ensures that the necessary cleanup equipment and supplies are maintained at the designated areas as described in this SPCC Plan.

1.4 Plan Amendments and Review

1.4.1 Amendments

Federal SPCC regulations (40 CFR §112.5) require that the SPCC Plan be amended or reviewed under specific conditions, as described in this paragraph. Owners or operators must amend the SPCC Plan in accordance with 40 CFR §112.7 whenever there is a change in facility design, operation, construction, or maintenance, which affects the facility's potential for the discharge of oil into or upon the navigable waters of the United States or adjoining shorelines. Facility personnel have identified the tanks and containers of oil referenced in Section 2 of this Plan. The addition of any containers of oil (at or above the de-minimis level of 55-gallons) subsequent to the writing of this Plan should be added to this Plan accordingly with all appropriate controls and countermeasures. The amendments must be fully implemented as soon as possible but no later than six months after the facility changes have occurred.

1.4.2 Review

In addition to any amendments required above, owners or operators must complete a review and evaluation of the SPCC Plan at least once every five years. The SPCC Plan must then be amended within six months of the review to include more effective prevention and control technology if that technology is a proven technology and will significantly reduce the likelihood of a spill event from the facility. The next scheduled review and evaluation is November 2029. The review must be documented and a statement must be signed attesting to whether the plan was or was not amended (refer to certification front of document).

This plan was developed to comply with the most recent EPA requirements.

The facility will review and amend this SPCC Plan in accordance with the above requirements. All technical amendments will be certified by a Professional Engineer in accordance with 40 CFR §112.3(d) and 40 CFR §112.5(c).

1.4.3 Reportable Spills

If the facility has a reportable spill, the facility will submit a copy of this SPCC Plan to the Regional Administrator of the EPA for review. The Regional Administrator may require that the facility revise the SPCC Plan to address the requirements under the regulation and to prevent further reoccurrence of oil spills.

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SECTION 2

Section 2
112.7 - General Requirements for SPCC Plans

112.7(a)(1) - Compliance with General Requirements

This SPCC Plan has been prepared for the FirstLight CT Hydro LLC, Tunnel Station to facilitate compliance with applicable requirements of EPA regulations under 40 CFR Parts 109, 110, and 112.

112.7(a)(2) - Deviation from Specific Requirements

This SPCC Plan is in conformance with all applicable requirements. Allowable deviations from the rule requirements are identified in their appropriate sections within this Plan.

112.7(a)(3) - Physical Layout Description

The station is located at 607 Norwich Avenue, Taftville Connecticut (See Appendix A for a figure of the facility). Tunnel station is a conventional hydro electric power generating facility with two 1-MW capacity turbine generators and a 22-MW gas turbine generator located on the banks of the Quinebaug River. Attachment 1 of this Plan shows the layout and location of the pertinent equipment and generating units under the responsibility of FirstLight.

The hydro generators were first put into service in 1919 and the gas turbine began operation in 1968. The hydro units are operated automatically, based on pond level, and therefore normal hydro operation does not require that personnel be present. The gas turbine is normally operated remotely from the Rocky River station control room and therefore is not normally staffed during operation. The station has employees on-site on a regular schedule, though not full time. Tunnel station's generating equipment is remotely monitored by Firstlight Hydro's Rocky River station control room, which is staffed 24 hours a day, 7 days a week. If Tunnel station is unattended when a critical alarm is sounded at the Rocky River station control room, an employee is dispatched to Tunnel station to investigate.

(i) - Type of Oil, Container and Storage Capacity

TABLE 112.7(a)(3)(i)
Tank Storage
Tunnel Station

General Area: Jet Fuel Yard

Equipment	Location	Containment Method	Individual Capacity	Number of Units	Total Volume (gallons)
Jet Fuel Tank	Jet Fuel yard	Bermed	50,000 gallons	1	50,000 gallons
				Total:	**50,000 gallons**

General Area: Turbine Shed

Equipment	Location	Containment Method	Individual Capacity	Number of Units	Total Volume (gallons)
Blowdown Tank	Outside Shed	Double-walled	75 gallons	1	75 gallons
Scavenge Tank	Below Shed	Double-walled	75 gallons	1	73 gallons
Generator Tank	Rear of Shed	Bermed	100 gallons	1	100 gallons
Transformer: 12S-10X	Trans. Yard	Bermed	1,481 gallons	1	1,481 gallons
				Total:	**1,729 gallons**

General Area: Generator Hall

Equipment	Location	Containment Method	Individual Capacity	Number of Units	Total Volume (gallons)
Used Oil	Generator Hall	Pallet	55 gallons	8	440 gallons
Governor System Unit 1	Generator Hall	Bermed	48 gallons	1	48 gallons
Governor System Unit 2	Generator Hall	Bermed	48 gallons	1	48 gallons
Unit 1 Bearings	Generator Hall	Bermed	55 gallons	1	55 gallons
Unit 2 Bearings	Generator Hall	Bermed	55 gallons	1	55 gallons
				Total:	**646 gallons**

General Area: Transformer Yard

Equipment	Location	Containment Method	Individual Capacity	Number of Units	Total Volume (gallons)
12S-20X	Trans. Yard	Underground Basin	2,630 gallons	1	2,630 gallons
12S-20S	Trans. Yard	Underground Basin	54 gallons	1	54 gallons
				Total:	**2,684 gallons**

Oil Filled Equipment Below Threshold

Equipment	Location	Containment Method	Individual Capacity	Number of Units	Total Volume (gallons)
Lube Oil	Jet Engine	NA	16 gallons	1	16 gallons
Lube Oil	Free Turbine	NA	8 gallons	1	8 gallons
Lube Oil	Air Compressor	NA	1.25 gallons	1	1.25 gallons
Gear Oil	10-ton hoist	NA	2 gallons	1	2 gallons
Gear Oil	1.5-ton hoist	NA	1 gallon	1	1 gallon
Gear Oil	Crowder Drive	NA	3.2 gallons	1	3.2 gallons
Gear Oil	Gate Actuator	NA	1.7 gallons	1	1.7 gallons
					33.15 gallons

(ii) - Discharge Prevention Measures

Refer to section 112.7(c) of this plan for a complete list of discharge prevention measures.

(iii) - Discharge or Drainage Controls

Refer to section 112.7(c) of this plan for a complete list of discharge and drainage controls.

(iv) - Countermeasures for Discharge Discovery, Response, and Cleanup

If a discharge occurs, refer to Appendix D for the Oil Incident Report Form and Appendix F for the Oil Spill Response Procedure, which includes the following details:

- Spill Response Flow Chart;
- What to do when finding a spill;
- Steps to address small and large spills; and
- Spill response contractor contact information.

(v) - Disposal of Recovered Materials

Material generated during a cleanup effort is disposed of in accordance with applicable State and Federal Laws and regulations and waste minimization would be practiced to the extent practical.

(vi) Emergency Contact List

An emergency contact list, including phone numbers for cleanup contractors and all appropriate Federal, State, and local agencies who must be contacted in case of a discharge as described in 40 CFR §112.1(b) is provided in Appendix F (Oil Spill Response Procedure Flow Chart). This emergency contact list includes the contact number for the National Response Center.

Facility/company personnel to be contacted in the event of an emergency, including but not limited to the SPCC Coordinator, is provided in Appendix F.

112.7(a)(4) & (5) - Discharge Reporting and Emergency Response Procedures

Procedures for discharge reporting and emergency response to discharges are presented in the Oil Spill Response Procedures in Appendix F.

112.7(b) - Prediction of Release Source, Direction, Rate of Flow, and Discharge Quantity

General experience in industry indicates a reasonable potential for equipment failures from loading and unloading, tank overflow, and piping leaks. At the Station, such failures could result in a discharge from or at bulk storage containers listed in the Tables found in 112.7(a)(3).

Failures or releases from containers for maintenance supplies, electrical transformers, oil filled process equipment, and mobile equipment presented in the tables found in 112.7(a)(3) are relatively rare. In addition, due to the locations and volumes involved, a release to navigable waters from these sources is unlikely. Thus, predictions of rate

and direction of releases from such equipment are not presented. Mobile equipment, by its nature is moved from one location to another. Thus, a meaningful prediction of rate and direction of releases is not possible.

112.7(c) - Containment and/or Diversionary Structures or Equipment

Containment and/or diversionary structures or equipment is in place to prevent a discharge from qualified oil-filled operational equipment. For bulk storage containers, containment, diversionary structures, container storage practices, and/or procedures are utilized to minimize the potential for releases.

Transformers – The station has several transformers which are completely enclosed in the transformer yard. The yard includes specially constructed underground retention basins to provide for spilled oil retention in the case of an oil spill.

Oil Storage Drums – When oil storage drums are used within the Station for dispensing lubricants and cleaners in the drum storage area, drip pans are used to contain spillage during transfer operations.

Sorbent Materials – Sorbent materials and drip pans are generally used throughout the facility where oil filled equipment is located and spill kits are strategically placed in the power house and outlying support buildings.

112.7(c)(1) - Discharge Prevention Systems

A list of tanks is summarized in the tables found in 112.7(a)(3). In addition, measures to prevent a discharge of oil from reaching a navigable watercourse include:

- secondary containment structures and/or located within a building (112.8(c)(2));
- loading/unloading pads (112.7(h);
- liquid-level gauges (112.8(c)(8);
- high-level alarms (112.8(c)(8);
- spill boxes and direct-fill into top of tanks (112.7(h);
- written tank truck unloading procedures (112.7(h);
- completely sealed oil-filled equipment (112.7(a)(3);
- inspection and general secondary containment procedures (112.8(c)(2) and Appendix E);
- readily available sorbent material and spill containment supplies (Appendix C); and
- training for oil-handling personnel (112.7(f)).

(i) - Sufficiently Impervious Containment

Where used, the secondary spill containment structures are sufficiently impervious to oil and fuel.

(ii) – Curbing

Curbing is used as a general spill containment procedure.

(iii) - Sumps and Collection Systems

The station does not have a sump. Previously existing floor drains have been plugged. Water leakage from the hydroelectric turbines discharges to the tailrace.

(iv) - Culverts and Gutters

None.

(v) - Weirs, Booms or other Barriers

The facility is equipped to install oil slick barriers/booms, oil absorbent material to contain spillage, and pumping capabilities to handle a release should one occur.

(vi) - Spill Diversion Ponds

None.

(vii) - Retention Ponds

None.

(vii) - Sorbent Materials, Spill Response Supplies and Equipment

Sorbent materials and drip pans are generally used throughout the facility where oil filled equipment is located and spill kits are strategically placed in the power house and outlying support buildings. Appendix C includes details associated with the monthly inspection of spill response materials at the facility.

112.7(d) - Impracticable Installation of Structures Listed in 40 CFR §112.8

Not applicable.

112.7(e) - Inspections, Tests, and Records

Routine Inspections – Inspections required by the regulations are made weekly; inspection log sheets are completed and signed by the person doing the inspection. These inspections are submitted to EH&S and reviewed for malfunctions or leaks. If a malfunction is identified, a work order is placed to address the issue. See Appendix E for a copy of the weekly SPCC inspection form.

Integrity Testing Inspections – The Jet Fuel tank and the Generator Tank are subject to the integrity testing requirements of 40 CFR 112.8 (c)(6). Refer to Appendix H of this Plan for the specifics of what is required under the applicable industry standard for these types of tanks (Steel Tank Institute's STI SP001 standard).

Visual Inspection – All storage tanks are monitored and observed by visual inspection on a monthly basis (see Appendix E for a copy of the inspection form).

Records for all facility inspections are maintained on-site for at least three years.

112.7(f) - Personnel, Training, and Discharge Prevention Procedures

Firstlight management instructs oil-handling facility personnel in the:

- Operation and maintenance of equipment to prevent discharges;
- Discharge procedure protocols;
- Applicable pollution control laws, rules, and regulations;
- General facility operations; and
- The contents of the facility SPCC plan.

The facility schedules and conducts discharge prevention briefings for oil-handling personnel at least once a year to assure adequate understanding of the SPCC Plan for that facility.

(f)(1) - Employee Training

Annual classroom training for oil-handling facility personnel is typically led by the Station EH&S, and focuses on environmental rules, regulations, and laws, general facility operations, a general overview of this SPCC Plan, spill reporting requirements, and each person's responsibility in regards to the above.

(f)(2) - Designated Discharge Prevention Person

The primary designated person accountable for oil spill prevention and the primary SPCC Coordinator at the site is the EH&S.

In the event of their absence, the Maintenance Manager shall serve as back-up SPCC Coordinator.

(f)(3) - Discharge Prevention Briefings

Annual training at the facility serve as briefings and are held by the designated/responsible person, for all facility personnel involved in oil operations. This training is aimed at ensuring continued understanding and adherence to the discharge prevention procedures presented in the SPCC Plan. The briefings will focus on the maintenance and operation of equipment, locations of spill cleanup material and spill booms, and the location of the SPCC Plan. The briefings will also highlight and describe known discharge events or failures, malfunctioning components, and recently implemented precautionary measures and best practices. Facility personnel will have the opportunity during the briefings to share recommendations concerning health, safety, and environmental issues encountered during facility operations.

112.7(g) - Security

All entrances to the Station are fully fenced and locked, and remotely controlled from the Rocky River Station that is manned 24 hours a day, seven days a week. Lighting levels are appropriate for operational and security purposes.

112.7(h) - Facility Tank Car and Tank Truck Loading/Unloading Rack

The piping systems associated with jet fuel transfer and forwarding are installed both above and below ground. All piping, valves, and appurtenances are protected from

deterioration; buried piping is cathodically protected and double walled with leak detection monitoring. Above ground piping is routinely maintained and inspected for integrity and any leakage. Pipe supports have been properly designed to minimize abrasion and corrosion and allow for expansion and contraction.

Jet Fuel Tank Operations

- The transfer operations consist of unloading tank trucks discharging directly to the bulk storage tank, using hoses supplied by the trucker. Hoses are inspected before any oil is transferred. During truck to tank oil transfer operations, two individuals, the truck driver and a company employee, are normally on site and communications are direct. This transfer operation is kept under constant surveillance.
- Direct vision level indication is provided at the tank and is tested at each transfer operation.
- The unloading transfer system is in a locked area and is secured when not in actual transfer operation.
- The unloading area is equipped with a containment sump to prevent any discharges that may occur during unloading activities to reach waters of the United States. The unloading area sump contains Petro Plugs for adequate drainage of precipitation. Petro Plugs are designed to allow water to drain while preventing oil from passing through the outlet.
- Any minor oil leaks from the system components are corrected as soon as detected.

Jet Fuel Transfer Operations

- Jet fuel oil is pumped directly from the bulk storage tank through filters and associated equipment directly to the turbine generator.
- The jet fuel forwarding systems associated with turbine operations are normally left in a standby/ready-to-use status.
- Anytime the station is not available for service, the forwarding systems associated with operations are secured.
- Part of the aboveground piping from the bulk tank to the turbine is located next to the private access road to the hydroelectric facility; but it is behind a fence and tree line. Guardrail is installed along the part of this pipe adjacent to a curve in the road.

Other transfer operations occur during equipment maintenance and delivery of equipment and lubrication oils. Transfer is done by qualified attendants. When done, the following general guidelines are used:

- Transfer of oil between components of operating systems is generally by hard piping. Hoses, where used, are necessary to allow flexibility at connection points. All of this piping is within the powerhouse or gas turbine areas.
- Oils delivered in 55-gallon drums would be handled using small pumps or pails to move the oil.
- Oil filtration cleaning is accomplished using a portable filter or centrifuge equipment and hoses supplied with the equipment.
- There are no oil or fuel pipes in the path of normal vehicle traffic.

112.7(i) - Brittle Fracture or Other Catastrophic Failure Testing

There are no field constructed bulk storage tanks at this site and therefore no requirements under this section to provide fracture potential evaluation as would be required under 40 CFR §112.7(i).

112.7(j) - State and Local Conformance with Requirements and Procedures

In accordance with section 40 CFR §112.7(j), all Rules of the State of Connecticut are followed in the handling and storage of oil and the spill reporting requirements.

112.7(k) - Oil Filled Operational Equipment

Oil-filled operational equipment is provided in the Tables found in 112.7(a)(3).

(k)(1) - Qualification Criteria

The Station has not had a single discharge greater than 1,000 gallons to a navigable water from any oil-filled operational equipment, or two spills greater than 42 gallons to a navigable water from any oil-filled operational equipment. As such, the facility meets the qualification criteria in order to not need alternative requirements to general secondary containment.

(k)(2) - Alternative Requirements to General Secondary Containment

Not applicable.

(i) - Inspection Procedures and Monitoring Program

See 112.7(e) for a description of inspection procedures and monitoring program.

(ii) - Response Plan

The facility has not submitted a response plan under §112.20. Therefore, the facility has implemented provisions 112.7(k)(2)(ii)(A) and (B) below:

(ii)(A) - Oil Spill Contingency Plan

An oil spill contingency plan has been developed for the facility. Refer to Sections 112.7(a)(3)(iv) through 112.7(a)(5).

(ii)(B) - Written Commitment of Manpower, Equipment and Materials

Under the Management Approval and Commitment section of the SPCC Plan (on Page i), the management of the Station has made a written commitment of manpower, equipment and materials to expeditiously control and remove any quantity of discharged oil that may be harmful.

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SECTION 3

Section 3
112.8 - SPCC Plan Requirements For Onshore Facilities

112.8(a) - General Requirements and Specific Discharge Prevention and Containment

The Station meets the general requirements for the SPCC Plan listed under Section 112.7 and the specific discharge prevention and containment procedures listed in this Section, 112.8.

112.8(b) - Facility Drainage

(b)(1) - Dike Drainage

The facility does not operate with the use of dikes as drainage structures.

(b)(2) - Dike Drainage Valves

The facility does not operate with the use of dikes as drainage structures.

(b)(3) - Undiked Area Drainage

Oil filled equipment are not believed to occur in this area, and as such releases to these catch basins have not been identified.

(b)(4) - Diversion system

None.

(b)(5) - Drainage Water Treatment Units

None.

112.8(c) - Bulk Storage Containers

Bulk storage tanks are defined as a tank or container of 55-gallons or greater capacity that has the intended sole use to store oil or other petroleum products (i.e. tanks that are part of an operating system such as hydraulic systems are not to be considered bulk storage in this rule).

TABLE 112.8(c)
Bulk Storage Containers
Tunnel Station

BULK STORAGE CONTAINERS

Equipment	Description
Jet Fuel Tank	A 50,000-gallon Jet Fuel Tank is located in the northwest area of the facility. The tank is protected internally and externally from corrosion/deterioration and is equipped with a mechanical level and high-level alarm. A separate 7,500-gallon overflow tank is located adjacent to the Jet Fuel Tank and is designed to capture spills from the fueling truck during delivery.
Generator Tank	A 100-gallon tank containing jet fuel is located towards the rear of the turbine.
Various Drums	55-gallon drums are stored throughout the station for dispensing dielectric oil, lubricants or collecting used oil. Used and new oil drums are located on plastic secondary containment units inside the generation hall.

(c)(1) - Material and Construction Compatibility

The material and construction for all containers for the storage of oil are compatible with the oil stored and conditions of storage, including pressure and temperature.

(c)(2) - Secondary Containment

Secondary containment structures are provided for bulk storage containers listed in Tables under section 112.7(c). The volume of containment is sufficient to contain the contents of the tank or transformer with adequate freeboard for precipitation. Precipitation is not an issue for structures located within buildings.

(c)(3) - Secondary Containment Drainage

Refer to Section 112.8(b)(1).

(c)(4) - Coatings & Cathodic Protection for Buried Metallic Tank

There are no buried metallic tanks for oil storage at the Station.

(c)(5) - Coatings & Cathodic Protection for Partially Buried or Bunkered Metallic Tanks

There are no partially buried or bunkered metallic tanks for oil storage at the facility.

(c)(6) - Inspections and Integrity Testing of Aboveground Storage Containers

Aboveground Storage Tanks (Applies to the Jet Fuel tank and Generator tank)

There are two tanks regulated by 112.8(c)(6) for tank integrity testing requirements. Inspections performed by the owner meet the STI Standard.

The periodic inspections are defined in Section 6 of the STI Standard (see Appendix H) to include:

- Periodic AST inspections are to be conducted by owner's inspector. Checklists for periodic AST inspections are found in the STI standard. These are to be used as a guide for recording inspection data.
- The owner's inspector must meet the requirements of paragraph 4.1 of STI SP001, i.e. ... [t]he personnel performing these inspections shall be knowledgeable of storage facility operations, the type of AST and its associated components, and characteristics of the liquid stored.
- Review prior inspection, repair, and alteration data before each inspection. Note special conditions for a particular AST.
- The owner's inspector is to complete the STI SP001 AST Record for each AST or tank site as designated in the checklists. Note special conditions and changes or alterations to the tank.
- The owner's inspector is to complete the STI SP001 Monthly Inspection Checklist each month. Take note of instructions on the checklist. Note special conditions.
- The owner's inspector is to complete the STI SP001 Annual Inspection Checklist each year. Take note of instructions on the checklist. Note special conditions.
- By removing water or taking other corrective action on a regular basis, harmful Microbiological Influenced Corrosion (MIC) is prevented. Monitor for water accumulation monthly. If corrosion is found due to MIC, treat the AST with a proper biocide or otherwise sterilize the fuel in the AST. In addition, take necessary steps to repair or remove the AST from service, if warranted by the extent of the corrosion.

(c)(7) - Internal Heating Coils

Internal heating coils are not installed on storage containers at this facility.

(c)(8) - Liquid Level Sensing Devices

Pursuant to this section, one of the following devices must be installed on the bulk storage containers to avoid discharges of oil from overfills:

- High level alarm (c)(8)(i); or
- High level pump cutoff to stop flow(c)(8)(ii); or
- Direct audible or code signal between tank gauger and pumping station(c)(8)(iii); or
- Fast response system for determining liquid level (a person must be present to monitor tank gauges and overall overfilling of tank (c)(8)(iv).

Additional details regarding tank overfill can be found in section 112.8(c).

(c)(9) - Effluent Treatment Facilities

None.

(c)(10) - Visual Discharges

Visible discharges of oil from containers or piping systems are corrected upon discovery. Accumulations of oil in diked areas are promptly removed by Station personnel or a contractor for proper off-site management.

(c)(11) - Mobile or Portable Oil Storage Containers

There are no mobile or portable oil storage containers located outside at the Station facility. Oil-filled mobile equipment does not fall under this category.

112.8(d) - Facility Transfer Operations, Pumping, and Facility Process

(d)(1) - Buried Piping

There is no buried piping at the facility.

(d)(2) - Out of Service Piping

There is no out of service or standby piping at the Station.

(d)(3) - Pipe Supports

Pipe supports are properly designed to minimize abrasion and corrosion and to allow for expansion and contraction.

(d)(4) - Inspection of Aboveground Piping, Valves and Appurtenances

Aboveground piping is inspected for the general condition of piping and components such as flange joint, expansion joints, valve glands and bodies, catch pans, and pipeline supports. Bulk storage inspections are carried out according to written procedures on a frequency as presented in Section 112.8 (c)(6).

(d)(5) - Aboveground Piping

There is no aboveground piping that is vulnerable to vehicle traffic at the Station.

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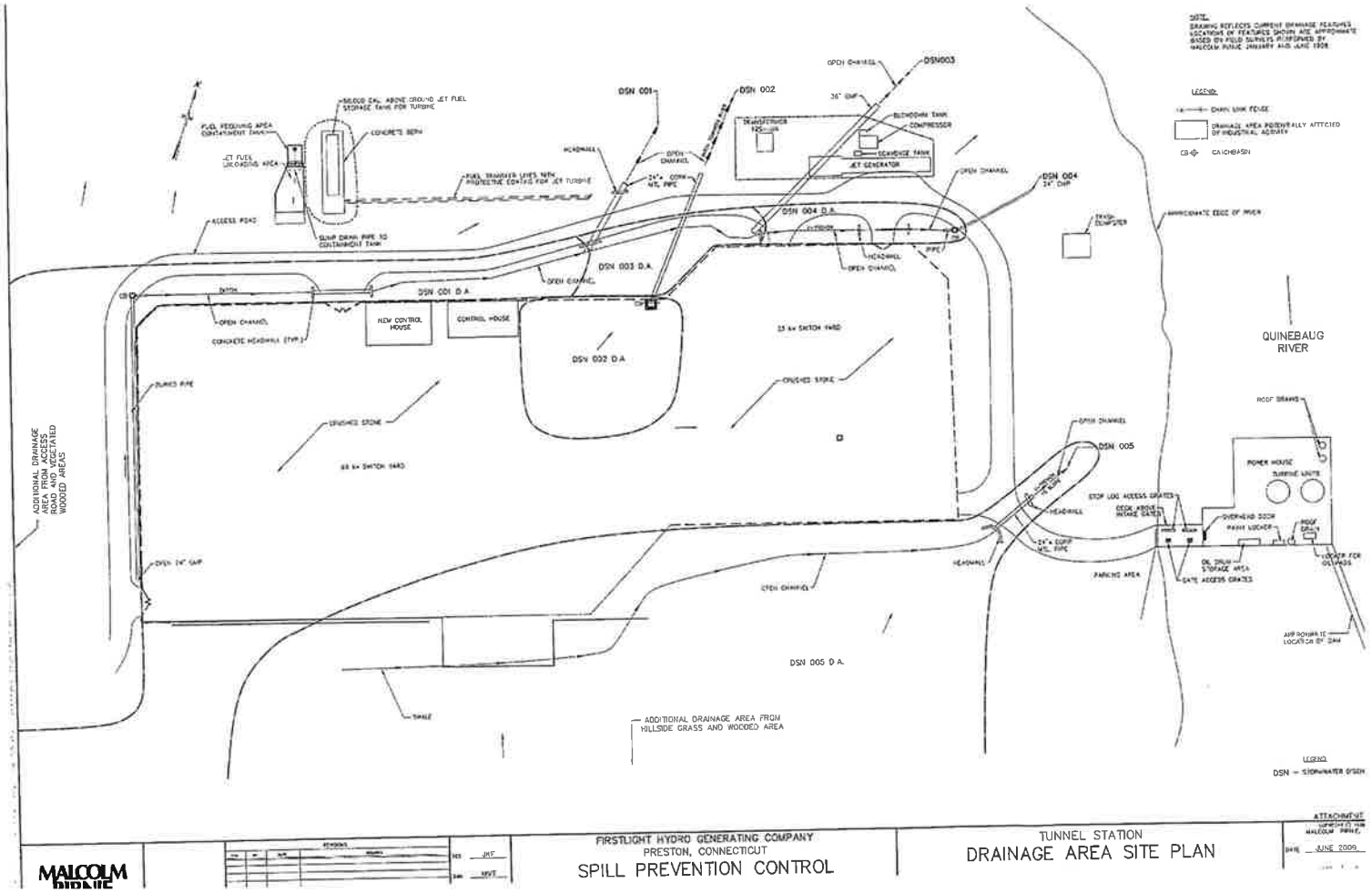
APPENDIX A

Appendix A

Figures



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FIRSTLIGHT HYDRO GENERATING COMPANY
PRESTON, CONNECTICUT

SPILL PREVENTION CONTROL

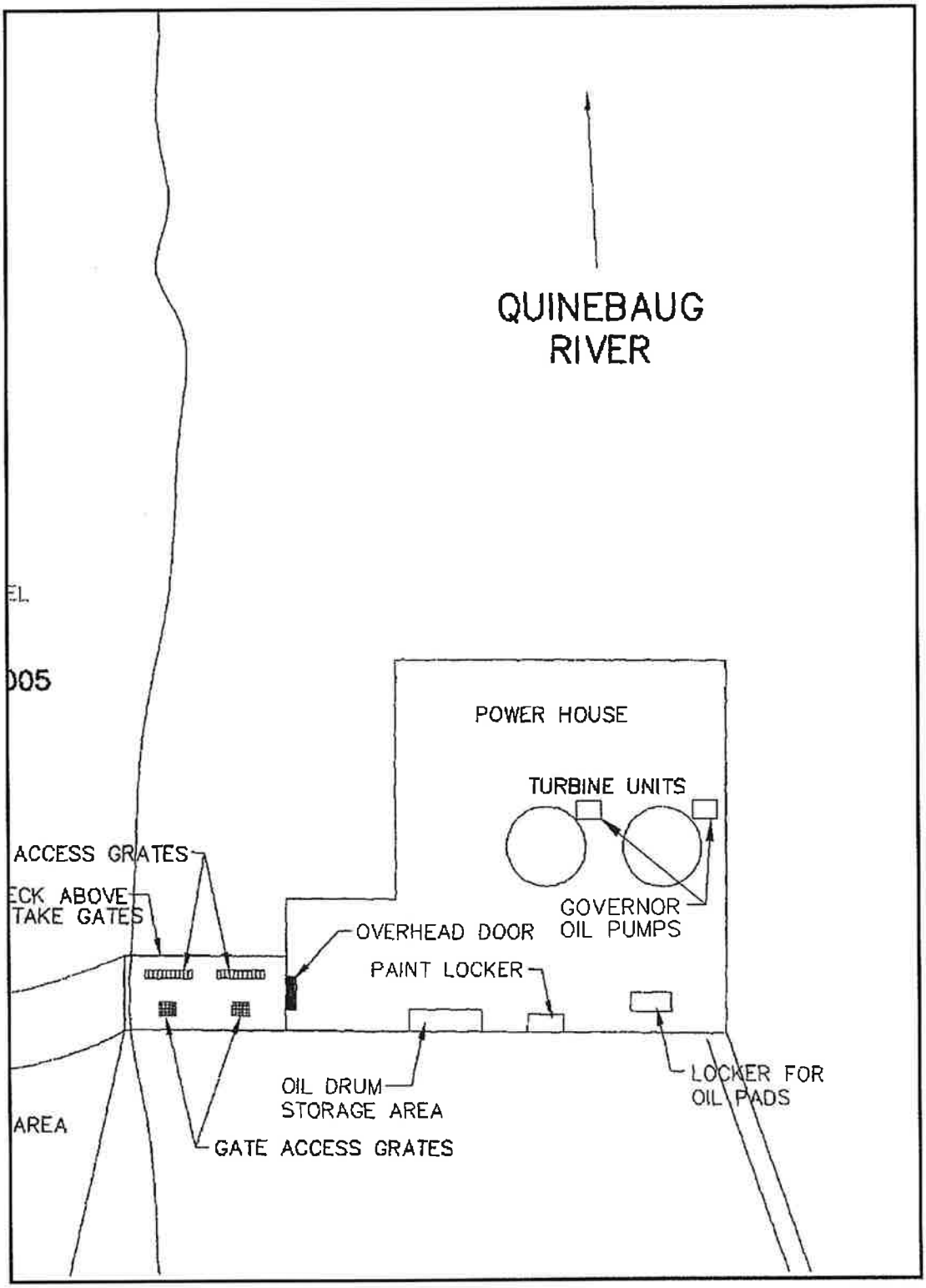
TUNNEL STATION

DRAINAGE AREA SITE PLAN

ATTACHMENT

DATE JUNE 2009

ATTACHMENT 1 – FACILITY SITE PLAN (Page 2 of 2)



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APPENDIX B

Appendix B

Glossary of Terms

Berm:

An earthen mound used to direct the flow of runoff around or through a structure.

Best Management Practice (BMP):

Schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the United States. BMPs also include treatment requirements, operating procedures, and practices to control facility site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

Biodegradable:

Having the ability to break down or decompose under natural conditions and processes.

Boom:

1. A floating device used to contain oil on a body of water.

2. A piece of equipment used to apply pesticides from ground equipment such as a tractor or truck.

Buffer Strip or Zone:

Strips of grass or other erosion-resistant vegetation between a waterway and an area of more intensive land use.

By-product:

Material, other than the principal product, that is generated as a consequence of an industrial process.

CERCLA:

Comprehensive Environmental Response, Compensation, and Liability Act.

Conduit:

Any channel or pipe for transporting the flow of water.

Conveyance:

Any natural or manmade channel or pipe in which concentrated water flows.

Corrosion:

The dissolving and wearing away of metal caused by a chemical reaction such as between water and the pipes that the water contacts, chemicals touching a metal surface, or contact between two metals.

Culvert:

A covered channel or a large-diameter pipe that directs water flow below the ground level.

CWA:

Clean Water Act (formerly referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972).

Dike:

An embankment to confine or control water, often built along the banks of a river to prevent overflow of lowlands; a levee.

Discharge:

A release or flow of stormwater or other substance from a conveyance or storage container.

Emission:

Pollution discharged into the atmosphere from smokestacks, other vents, and surface areas of commercial or industrial facilities and from motor vehicle, locomotive, or aircraft exhausts.

Emulsion:

A mixture of two or more liquids that are normally immiscible (unmixable or unblendable)

Erosion:

The wearing away of land surface by wind or water. Erosion occurs naturally from weather or runoff, but can be intensified by land-clearing practices related to farming, residential or industrial development, road building, or timber cutting.

Excavation:

The process of removing earth, stone, or other materials.

Fertilizer:

Materials such as nitrogen and phosphorus that provide nutrients for plants. Commercially sold fertilizers may contain other chemicals or may be in the form of processed sewage sludge.

Filter Fabric:

Textile of relatively small mesh or pore size that is used to allow water to pass through while keeping sediment out (permeable), or (b) prevent both runoff and sediment from passing through (impermeable).

Filter Strip:

Usually long, relatively narrow area of undisturbed or planted vegetation used to retard or collect sediment for the protection of watercourses, reservoirs, or adjacent properties.

General Permit:

A permit issued under the NPDES program to cover a certain class or category of stormwater discharges. These permits allow for a reduction in the administrative burden associated with permitting stormwater discharges associated with industrial activities. For example, EPA is planning to issue two general permits:

1. NPDES General Permits for Stormwater Discharges from Construction Activities that are classified as "Associated with Industrial Activity" and
2. NPDES General Permits for Stormwater Discharges from Industrial Activities that are classified as "Associated with Industrial Activities."

EPA is also encouraging delegated states that have an approved general permits program to issue general permits.

Grading:

The cutting and/or filling of the land surface to a desired slope or elevation.

Hazardous Substance:

1. Any material that poses a threat to human health and/or the environment. Hazardous substances can be toxic, corrosive, ignitable, explosive, or chemically reactive.

2. Any substance required by EPA to be reported if a designated quantity of the substance is spilled in the waters of the United States or if otherwise emitted into the environment.

Hazardous Waste:

A by-product of human activities that can pose a substantial or potential hazard to human health or the environment when improperly managed. Possesses at least

one of four characteristics (ignitability, corrosivity, reactivity, or toxicity), or appears on special EPA lists.

Holding Pond:

A pond or reservoir, usually made of earth, built to store polluted runoff for a limited time.

Illicit Connection:

Any discharge to a municipal separate storm sewer that is not composed entirely of stormwater except discharges authorized by an NPDES permit (other than the NPDES permit for discharges from the municipal separate storm sewer) and discharges resulting from fire fighting activities.

Infiltration:

1. The penetration of water through the ground surface into sub-surface soil or the penetration of water from the soil into sewer or other pipes through defective joints, connections, or manhole walls.
2. A land application technique where large volumes of wastewater are applied to land, allowed to penetrate the surface, and percolate through the underlying soil.

Inlet:

An entrance into a ditch, storm sewer, or other waterway.

Intermediate:

A chemical compound formed during the making of a product.

Lagoon:

A shallow pond where sunlight, bacterial action, and oxygen work to purify wastewater.

Landfill:

An area of land or an excavation in which wastes are placed for permanent disposal, and which is not a land application unit, surface impoundment, injection well, or waste pile.

Large and Medium Municipal Separate Storm Sewer System:

All municipal separate storm sewers that are either:

i. Located in an incorporated place (city) with a population of 100,000 or more as determined by the latest Decennial Census by the Bureau of Census (these cities are listed in Appendices F and G of 40 CFR Part 122); or

ii. Located in the counties with unincorporated urbanized populations of 100,000 or more, except municipal separate storm sewers that are located in the incorporated places, townships, or towns within such counties (these counties are listed in Appendices H and I of 40 CFR Part 122); or

iii. Owned or operated by a municipality other than those described in paragraph (i) or (ii) and that are designated by the Director as part of the large or medium municipal separate storm sewer system.

Leaching:

The processes by which soluble constituents are dissolved in a solvent such as water and carried down through the soil.

Material Storage Areas:

On-site locations where raw materials, products, final products, by-products, or waste materials are stored.

Mobile Equipment:

While the SPCC rule does not specifically define "mobile" containers, such containers may include 55-gallon drums, skid tanks, totes, Intermediate Bulk Containers (IBCs), and other small containers put into place and later moved.

Mulch:

A natural or artificial layer of plant residue or other materials covering the land surface that conserves moisture, holds soil in place, aids in establishing plant cover, and minimizes temperature fluctuations.

Non-contact Cooling Water:

Water used to cool machinery or other materials without directly contacting process chemicals or materials.

Notice of Intent (NOI):

An application to notify the permitting authority of a facility's intention to be covered by a general permit; exempts a facility from having to submit an individual or group application.

NPDES:

EPA's program to control the discharge of pollutants to waters of the United States. See the definition of "National Pollutant Discharge Elimination System" in 40 CFR 122.2 for further guidance.

NPDES Permit:

An authorization, license, or equivalent control document issued by EPA or an approved state agency to implement the requirements of the NPDES program.

Oil Sheen:

A thin, glistening layer of oil on water.

Oil/Water Separator:

A device installed, usually at the entrance to a drain, which removes oil and grease from water flows entering the drain.

Organic Pollutants:

Substances containing carbon which may cause pollution problems in receiving streams.

Organic Solvents:

Liquid organic compounds capable of dissolving solids, gases, or liquids.

Outfall:

The point, location, or structure where wastewater or drainage discharges from a sewer pipe, ditch, or other conveyance to a receiving body of water.

Permeability:

The quality of soil that enables water or air to move through it. Usually expressed in inches/hour or inches/day.

Permit:

An authorization, license, or equivalent control document issued by EPA or an approved state agency to implement the requirements of an environmental regulation; e.g., a permit to operate a waste-water treatment plant or to operate a facility that may generate harmful emissions.

Permit Issuing Authority (or Permitting Authority):

The state agency or EPA regional office that issues environmental permits to regulated facilities.

Point Source:

Any discernible, confined, and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural stormwater runoff.

Pollutant:

Any dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials (except those regulated under the Atomic Energy Act of 1954, as amended (42 [U.S.C. 2011 et seq.]), heat, wrecked or discharged equipment, rocks, and, cellar dirt, and industrial, municipal, and agricultural waste discharged into water. It does not mean:

i. Sewage from vessels; or

ii. Water, gas, or other material which is injected into a well to facilitate production of oil or gas, or water derived in association with oil and gas production and disposed of in a well, if the well used either to facilitate

production or for disposal purposes is approved by the authority of the state in which the well is located, and if the state determines that the injection or disposal will not result in the degradation of ground or surface water resources [Section 502(6) of the CWA] Radioactive materials covered by the Atomic Energy Act are those encompassed in its definition of source, byproduct, or special nuclear materials. Examples of materials not covered include radium and accelerator-produced isotopes. See Train v. Colorado Public Interest Research Group, Inc., 426 U.S. 1 (1976).

Porous Pavement:

A human-made surface that will allow water to penetrate through and percolate into soil (as in porous asphalt pavement or concrete). Porous asphalt pavement is comprised of irregular shaped crush rock pre-coated with asphalt binder. Water seeps through into lower layers of gravel for temporary storage, then filters naturally into the soil.

Precipitation:

Any form of rain or snow.

Preventive Maintenance Program:

A schedule of inspections and testing at regular intervals intended to prevent equipment failures and deterioration.

Process Wastewater:

Water that comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, by-product, waste products, or wastewater.

Raw Material:

Any product or material that is converted into another material by processing or manufacturing.

RCRA:

Resource Conservation and Recovery Act.

Recycle:

The process of minimizing the generation of waste by recovering usable products that might otherwise become waste; e.g., recycling of aluminum cans, wastepaper, and bottles.

Reportable Quantity (RQ):

The quantity of a hazardous substance or oil that triggers reporting requirements under CERCLA or the Clean Water Act. If a substance is released in amounts exceeding its RQ, the release must be reported to the National Response Center, the State Emergency

Response Commission, and community emergency coordinators for areas likely to be affected.

Residual:

Amount of pollutant remaining in the environment after a natural or technological process has taken place; e.g., the sludge remaining after initial wastewater treatment, or particulates remaining in air after the air passes through a scrubbing or other pollutant removal process.

Retention:

The holding of runoff in a basin without release except by means of evaporation, infiltration, or emergency bypass.

Runoff:

That part of precipitation, snowmelt, or irrigation water that runs off the land into streams or other surface water. It can carry pollutants from the air and land into the receiving waters.

Sanitary Sewer:

A system of underground pipes that carries sanitary waste or process wastewater to a treatment plant.

SARA:

Superfund Amendments and Reauthorization Act.

Secondary Containment:

Structures, usually dikes or berms, surrounding tanks or other storage containers and designed to catch spilled material from the storage containers.

Sediment Trap:

A device for removing sediment from water flows; usually installed at outfall points.

Sedimentation:

The process of depositing soil particles, clays, sands or other sediments that were picked up by flowing water.

Sediments:

Soil, sand, and minerals washed from land into water, usually after rain. They pile up in reservoirs, rivers, and harbors, destroying fish-nesting areas and holes of water animals and cloud the water so that needed sunlight might not reach aquatic plants. Careless farming, mining, and building activities will expose sediment materials, allowing them to be washed off the land after rainfalls.

Significant Materials:

Include, but are not limited to:

- Raw materials;
- Fuels;
- Materials such as solvents, detergents, and plastic pellets;
- Finished materials such as metallic products;
- Raw materials used in food processing or production;
- Hazardous substances designated under section 101(14) of CERCLA;
- Any chemical the facility is required to report pursuant to Section 313 of Title III of SARA;
- Fertilizers;
- Pesticides; and
- Waste products such as ashes, slag, and sludge that have a potential to be released with stormwater discharges [122.26(b 12)].

Significant Spills:

Include, but are not limited to: releases of oil or hazardous substances in excess of reportable quantities under Section 311 of the CWA (see 40 CFR 110.10 and CFR 117.21) or Section 102 of CERCLA (see 40 CFR 302.4).

Sludge:

A semi-solid residue from any of a number of air or water treatment processes. Sludge can be a hazardous waste.

Soil:

The unconsolidated mineral and organic material on the immediate surface of the earth that serves as a natural medium for the growth of plants.

Spill Prevention Control and Countermeasures Plan (SPCC):

Plan consisting of structures, such as curbing, and action plans to prevent and respond to spills of hazardous substances as defined in the Clean Water Act.

Spill to the Environment:

A spill occurring outdoors which is not captured entirely by structural secondary containment.

Stopcock Valve:

A small valve for stopping or controlling the flow of water or other liquid through a pipe.

Storm Drain:

A slotted opening leading to an underground pipe or an open ditch for carrying surface runoff.

Stormwater:

Runoff from a storm event, snowmelt runoff, and surface runoff and drainage.

Subsoil:

The bed or stratum of earth lying below the surface soil.

Sump:

A pit or tank that catches liquid runoff for drainage or disposal.

Surface Impoundment:

Treatment, storage, or disposal of liquid wastes in ponds.

Surface Water:

All water naturally open to the atmosphere (rivers, lakes, reservoirs, streams, wetlands impoundments, seas, estuaries, etc.); also refers to springs, wells, or other collectors which are directly influenced by surface water.

Swale:

An elongated depression in the land surface that is at least seasonally wet, is usually heavily vegetated, and is normally without flowing water. Swales direct stormwater flows into primary drainage channels and allow some of the stormwater to infiltrate into the ground surface.

Tarp:

A sheet of waterproof canvas or other material used to cover and protect materials, equipment, or vehicles.

Topography:

The physical features of a surface area including relative elevations and the position of natural and human-made features.

Tributary:

A river or stream that flows into a larger river or stream.

Underground Storage Tanks (USTs):

Storage tanks with at least 10 percent or more of its storage capacity underground (the complete regulatory definition is at 40 CFR Part 280.12).

Waste:

Unwanted materials left over from a manufacturing or other process.

Waters of the United States:

1. All waters, which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;

2. All interstate waters, including interstate "wetlands;"

3. All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, "wetlands," sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce including any such waters:

    a. Which are or could be used by interstate or foreign travelers for recreational or other purposes;

    b. From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or

    c. Which are used or could be used for industrial purposes by industries in interstate commerce;

4. All impoundments of waters otherwise defined as waters of the United States under this definition;

5. Tributaries of waters identified in paragraphs (a) through (d) of this definition;

6. The territorial sea; and

7. Wetlands" adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a) through (f) of this definition.

Waterway:

A channel for the passage or flow of water.

Wet Well:

A chamber used to collect water or other liquid and to which a pump is attached.

Wetlands:

An area that is regularly saturated by surface or ground water and subsequently is characterized by a prevalence of vegetation that is adapted for life in saturated soil conditions. Examples include: swamps, bogs, fens, marshes, and estuaries.

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APPENDIX C

Appendix C

Spill Response Equipment

Firstlight - Tunnel Station

MONTHLY SPILL CONTROL EQUIPMENT INSPECTIONS

Is the Spill Kit Sealed ☐ Yes* ☐ No

*If yes, do not open to inspect

Inspection Item	Jet Fuel Yard	Turbine Room	Generator Hall
Absorbent Material			
Pads			
Booms			
Towels/Rags			
Pillows			
Containers			
30-50 Gallon Plastic Container			
Plastic Bags			
Misc.			
Personnal Protective Equipment			
No extraneous material in kit			
Drain cover			
Sign is posted and visible			
Kit is sealed			
Shovels and Squeegies			
Resealed Date			

Name _____ **Signature**

Date

Replenish material as necessary
Check each box after verifying contents or after replenishing
Sign form when all kits have been checked. File form in SPCC

***Outside**

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APPENDIX D

Appendix D

Oil Incident Report Form

**** REFER TO THE OIL SPILL REPORTING SCENARIO IN APPENDIX C TO DETERMINE IF AN OIL SPILL NEEDS TO BE REPORTED TO THE STATE – DOCUMENTATION IS ONLY REQUIRED TO BE MAINTAINED AT THE FACILITY ****

1. Location of Release: _____
2. Date, Time & Duration of Release: _____
3. Description of Release: _____

   _____

   _____
4. Quantity Released: _____
5. Nature of Cleanup Performed: _____
6. Environmental Contractor Used (if any): _____
7. Environmental Consultant Used (if any): _____
8. Fuel Oil Released to ☐ Surface Water ☐ Groundwater ☐ Land ☐ Pavement
9. Release Notification Status
   - ☐ in-house only
   - ☐ reported as an oil spill
   - ☐ reported as a release to water
10. Agency Notification
    - ☐ National Response Center
      time contacted: _____ person contacted: _____
      reporting number: _____
    - ☐ CT DEEP (Refer to Appendix F for additional details)
      time contacted: _____ person contacted: _____
      comments: _____
    - ☐ Other (name) _____
      time contacted: _____ person contacted: _____
      comments: _____

Name of Preparer: _____ Date: _____

Signature: _____

Copies to: _____

_____

_____

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APPENDIX E

Appendix E

Inspection Forms

Firstlight - Tunnel Station
SPCC Plan
Inspection Checklist

		Jet Fuel Yard	*Turbine Shed*		*Transformer Yard*		*Maintenance Room*
		Jet Fuel Tank	*Transformer: 12S-10X*	*Generator Tank*	*Transformer: 12S-20X*	*Transformer: 12S-20S*	*Used Oil*
Tanks/Drums/Transformers	Surfaces show signs of leakage	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No
	Tanks are damaged, rusted, or deteriorated	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No
	Bolts, rivets, or seams are damaged	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No
	Supports are deteriorated or buckled	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No
	Foundations have eroded or settled	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No
	Level gauges or alarms are inoperative	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No
	Vents are obstructed	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No
	Secondary containment is damaged or stained	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No
	Water/product in interstice of double-walled tank	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No
	Dike drainage valve is open or is not locked	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No
Piping (Inspect at Connections)	Valve seals, gaskets, or other appurtenances are leaking	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	--
	Pipelines or supports are damaged or deteriorated	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	--
	Joints, valves and other appurtenances are leaking	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	--
	Buried piping is exposed	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	--
Loading/Unloading and Transfer Equipment	Loading/unloading rack is damaged or deteriorated	Yes / No	--	--	--	--	--
	Connections are not capped or blank-flanged	Yes / No	--	--	--	--	--
	Secondary containment is damaged or stained	Yes / No	--	--	--	--	--
	Berm drainage valve is open or is not locked	Yes / No	--	--	--	--	--
Oil/Water Seperator	Oil/water separator > 2 inches of accumulated oil	--	--	--	--	--	--
	Oil/water separator effluent has a sheen	--	--	--	--	--	--
Security	Fencing, gates, or lighting is non-functional	Yes / No	--	--	--	--	--
	Pumps and valves are locked if not in use	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No
Response Equipment	Response equipment inventory is complete	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No

Comments: _____

_____

_____

_____

_____

Inspectors Name _____

Date: _____

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APPENDIX F

Appendix F

Oil Spill Response Procedure

OIL SPILL RESPONSE PROCEDURE

If a spill has occurred, follow the steps in the flow chart below to determine how to proceed and who to contact.

CT DEEP – Oil Spill Reporting Scenarios

Spill Volume	In Containment?	Removed within 2-Hours?	Report
<5 Gallons	YES	YES	NO
	YES	NO	YES
	NO	YES	NO
	NO	NO	YES
5-15 Gallons	YES	YES	NO
	YES	NO	YES
	NO	YES	YES
	NO	NO	YES
>15 Gallons	YES	YES	YES
	YES	NO	YES
	NO	YES	YES
	NO	NO	YES

When Finding a Spill:

Step	Action	Who
1.	Determine the source and type of spill	Employee
2.	Stop spill at source and contain if possible, and if it can be done safely	Employee
3.	Divert spills from entering storm water drains or waterways if safe	Employee
4.	Were any damages or injuries caused? Will an evacuation be necessary?	Employee
5.	Report and obtain help by calling the control room at extension	Employee
6.	Contact appropriate site personnel • **Primary Contact** HS&E, Kevin Gerardi Cell: (203) 470-8366 Office: (860) 350-3631 **Backup** Maintenance Manager, Cliff Esmiol Cell: (203) 927-8683 o Office: (860) 915-1154	Supervisor on shift
7.	Complete incident report (form F-8)	HS&E
8.	Notify appropriate agencies CT DEEP: 1-866-337-7745 NRC: 1-800-424-8802	HS&E
9.	Contact LEP (see following page)	HS&E
10.	Contact clean up resources, if large spill. (see following page)	HS&E

Release notification forms are completed over the phone with CT DEEP's Spill Response Hotline. As such, a spill notification form is not required to be developed by the responder.

The Station HS&E will also contact the Licensed Environmental Professional (LEP) as soon as possible after notification to the CT DEEP. This will assure that appropriate actions are taken.

Start Cleanup:

For small spills (less than 10 gallons) :

Clean up with absorbents. Ensure cleanup materials are disposed in accordance with applicable regulations.

For large spills (greater than 10 gallons):

Call spill response contractors as in the attached list (or other known locally) who will perform expedient containment and cleanup. If safe and practicable, try to contain the spill while reaching out to a spill contractor.

SPILL CLEANUP RESOURCES

SPILL CLEANUP CONTRACTOR
Moran Environmental Recovery, LLC
20 Commerce Road
Newtown, CT 06470

Daytime: (203) 270-0095
After Hours: (800) 562-7611
Fax: (203) 270-0096

LICENSED ENVIRONMENTAL PROFESSIONAL
Licensed Environmental Professionals
Tighe & Bond Consulting Engineers
Attn: Harley Langford
213 Court Street
Middletown, CT. 06457

Office: (860) 704-4781
Cell: (860) 878-2943

EVERSOURCE SPILL CONTACT
Mr. Kenneth Hynes
Supervisor - Environmental Operations
Environmental Feld Response

Office: (860) 496-3213

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APPENDIX G

Appendix G

Certification of Applicability Substantial Harm Criteria

CERTIFICATION OF THE APPLICABILITY OF THE SUBSTANTIAL HARM CRITERIA CHECKLIST

Facility Name: Tunnel Station

Facility Address: 72 Roosevelt Avenue Extension

Preston, CT 06365

Questionnaire

This questionnaire is excerpted from Attachment C-II of 40 CFR 112 Appendix C. The questionnaire must be completed and signed for all facilities applicable to SPCC Plan requirements, even if they do not meet the substantial harm criteria (per 40 CFR 112 Appendix C Section 3.0). This certification must be present within the SPCC Plan and available for examination by the EPA Regional Administrator or his delegates.

Yes ☐ No ☒ 1. Does the facility transfer oil over water to or from vessels and does the facility have a total oil storage capacity greater than or equal to 42,000 gallons?

Yes ☐ No ☒ 2. Does the facility have a total oil storage capacity greater than or equal to 1 million gallons and does the facility lack secondary containment that is sufficiently large to contain the capacity of the largest aboveground oil storage tank plus sufficient freeboard to allow for precipitation within any aboveground oil storage tank area?

Yes ☐ No ☒ 3. Does the facility have a total oil storage capacity greater than or equal to 1 million gallons and is the facility located at a distance (as calculated using the formula in Attachment C-III, Appendix C, 40 CFR 112 or a comparable formula[1]) such that a discharge from the facility could cause injury to fish and wildlife and sensitive environments? For further description of fish and wildlife and sensitive environments, see Appendices I, II and III to DOC/NOAA's "Guidance for Facility and Vessel Response Environments" (Section 10, Appendix E, 40 CFR 112 for availability) and the applicable Area Contingency Plan.

Yes ☐ No ☒ 4. Does the facility have a total oil storage capacity greater than or equal to 1 million gallons and is the facility located at a distance, as calculated using the appropriate formula (Attachment C-III, Appendix C, 40 CFR 112 or a comparable formula), such that a discharge from the facility would shut down a public drinking water intake[2]?

[1] If a comparable formula is used, documentation of the reliability and analytical soundness of the comparable formula must be attached to this form.
[2] For the purposes of 40 CFR part 112, public drinking water intakes are analogous to public water systems as described at 40 CFR 143.2(c).

Substantial Harm Criteria Certification

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Yes ☐ No ☒ 5. Does the facility have a total oil storage capacity greater than or equal to 1 million gallons and has the facility experienced a reportable oil spill in an amount greater than or equal to 10,000 gallons within the last 5 years?

Certification

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document, and that based on my inquiry of those individuals responsible for obtaining this information, I believe that the submitted information is true, accurate and complete.

Daniel Timlake
Name (please type or print)

Daniel Timlake
Signature

Senior Operations Manager
Title

12/3/2024
Date

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APPENDIX H

Appendix H
Integrity Testing

INTEGRITY TESTING OF BULK TANKS

Aboveground Storage Tanks

- Jet Fuel Tank
- Generator Tank

There are two tanks at this facility that come under the jurisdiction of 112.8 (c)(6) for tank integrity testing requirements. All tanks are double wall aboveground storage tanks or fully contained and therefore meet the criteria of "continuous release detection method" described in STI SP001. Because of their size, all three will require only "Periodic AST Inspection" as defined in the Standard rather than formal certified tester inspections.

The periodic inspections are defined in section 6 of the Standard to include:

- Periodic AST inspections are to be conducted by owner's inspector. Checklists for periodic AST inspections are found in Appendix C of this standard (part of this attachment). These are to be used as a guide for recording inspection data.

- The owner's inspector must meet the requirements of paragraph 4.1 of STI SP001, i.e. ... [t]he personnel performing these inspections shall be knowledgeable of storage facility operations, the type of AST and its associated components, and characteristics of the liquid stored.

- Review prior inspection, repair and alteration data before each inspection. Note special conditions for a particular AST.

- The owner's inspector is to complete the STI SP001 AST Record for each AST or tank site as designated in the checklists. Note special conditions and changes or alterations to the tank.

- The owner's inspector is to complete the STI SP001 Monthly Inspection Checklist each month. Take note of instructions on the checklist. Note special conditions.

- The owner's inspector is to complete the STI SP001 Annual Inspection Checklist each year. Take note of instructions on the checklist. Note special conditions.

- By removing water or taking other corrective action on a regular basis, harmful Microbiological Influenced Corrosion (MIC) is prevented. Monitor for water accumulation monthly. If corrosion is found due to MIC, treat the AST with a proper biocide or otherwise sterilize the AST. In addition, take necessary steps to repair or remove the AST from service, if warranted by the extent of the corrosion.

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ATTACHMENT TO TBL RESPONSE

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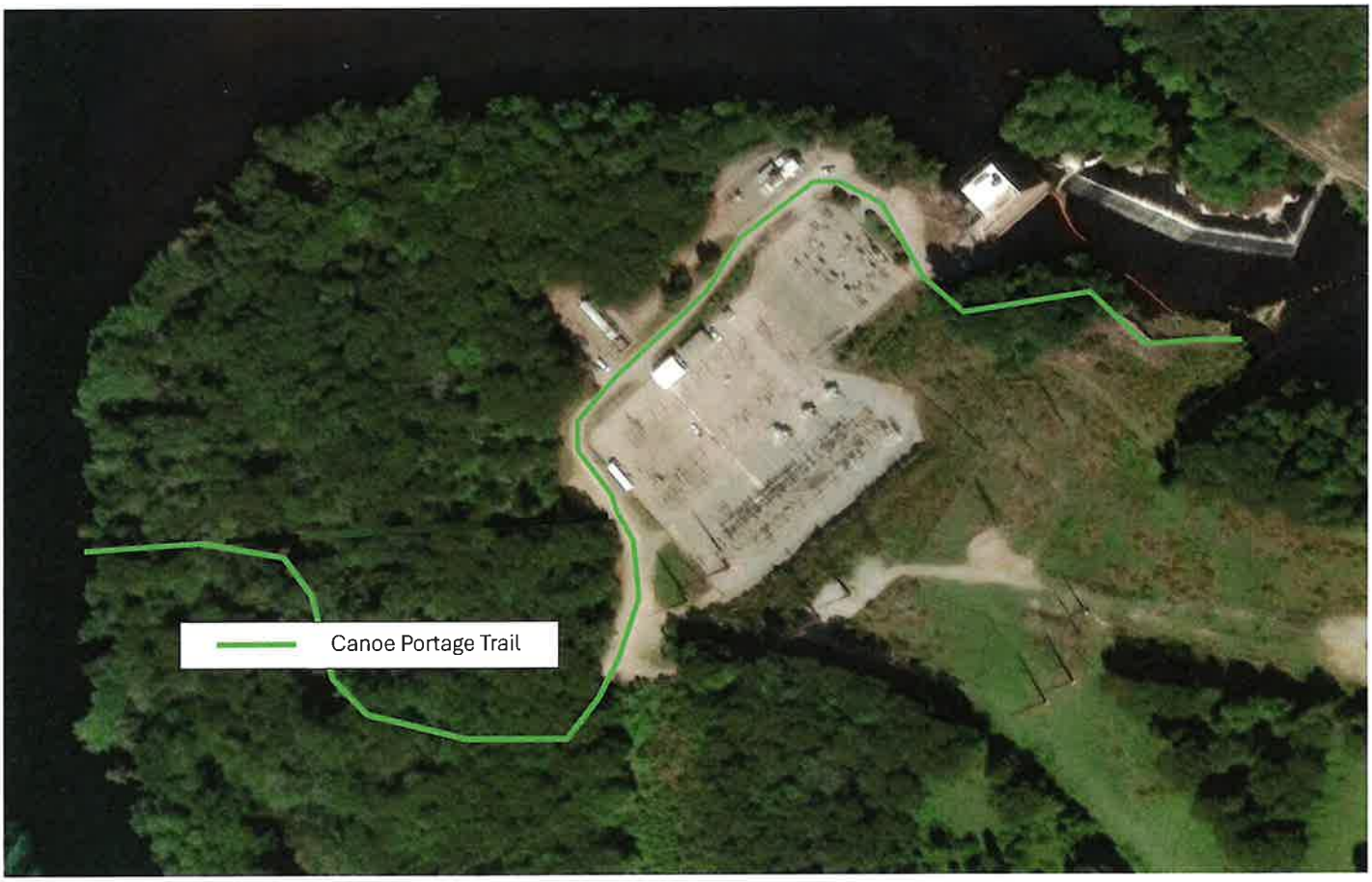
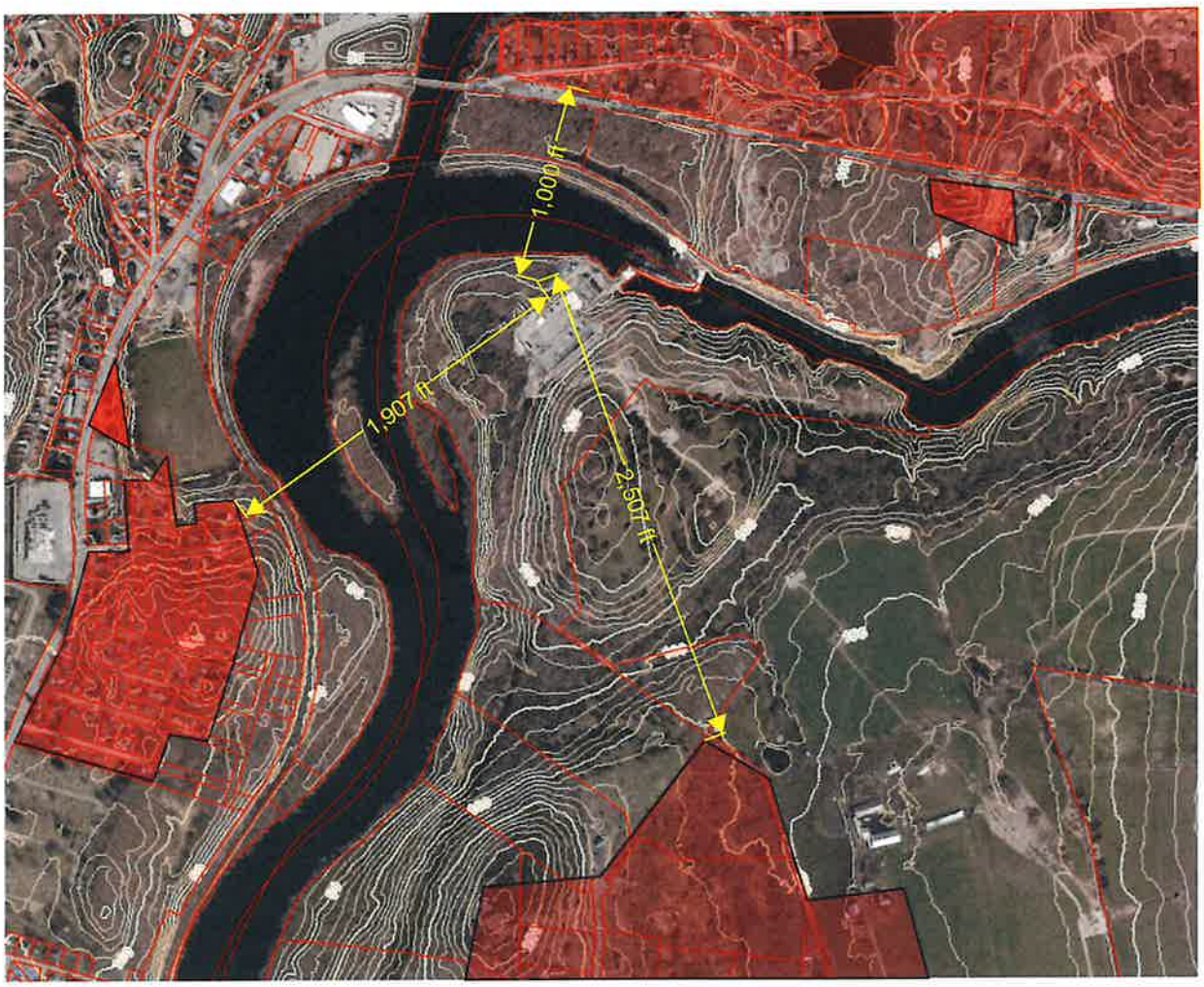
Canoe Portage Map


Canoe Portage Trail

Prime Farmland Soils Overlay

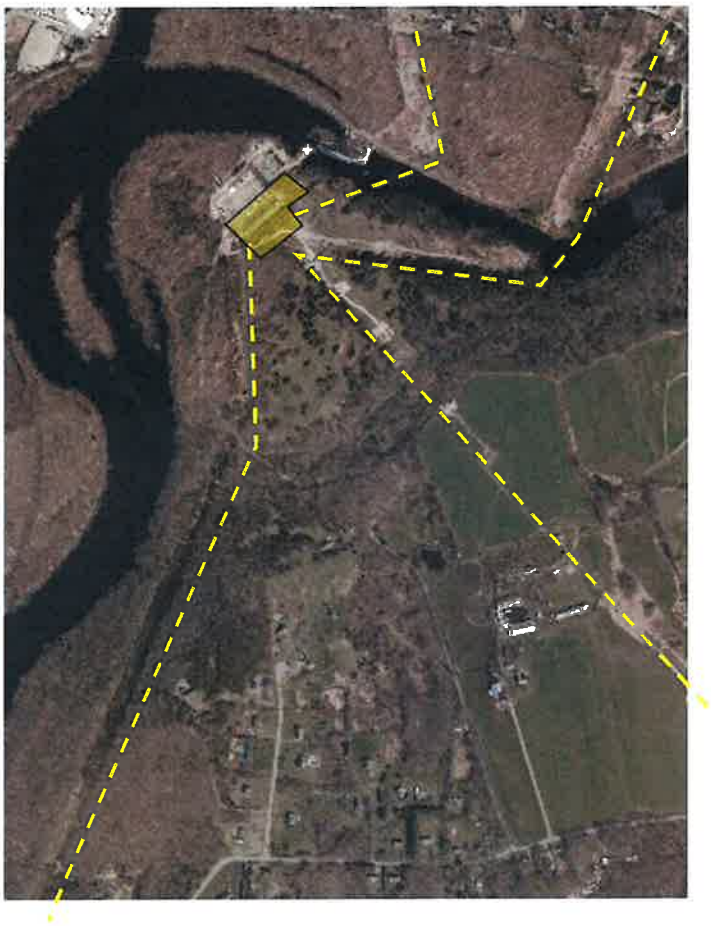
Site Topography 2016 contours

Nearest Residences Map – Residences shaded in Red



Private Site Access and Existing Roads – Yellow

Existing Utility Infrastructure – Yellow



ATTACHMENT TO TBL RESPONSE

65

Photolog of Proposed Site

(Attachment will also be delivered electronically, as requested)

FIRSTLIGHT BATTERY ENERGY STORAGE SYSTEM PHOTOLOG

SCALE: 1" = 30'

0 30' 60'

new leaf energy

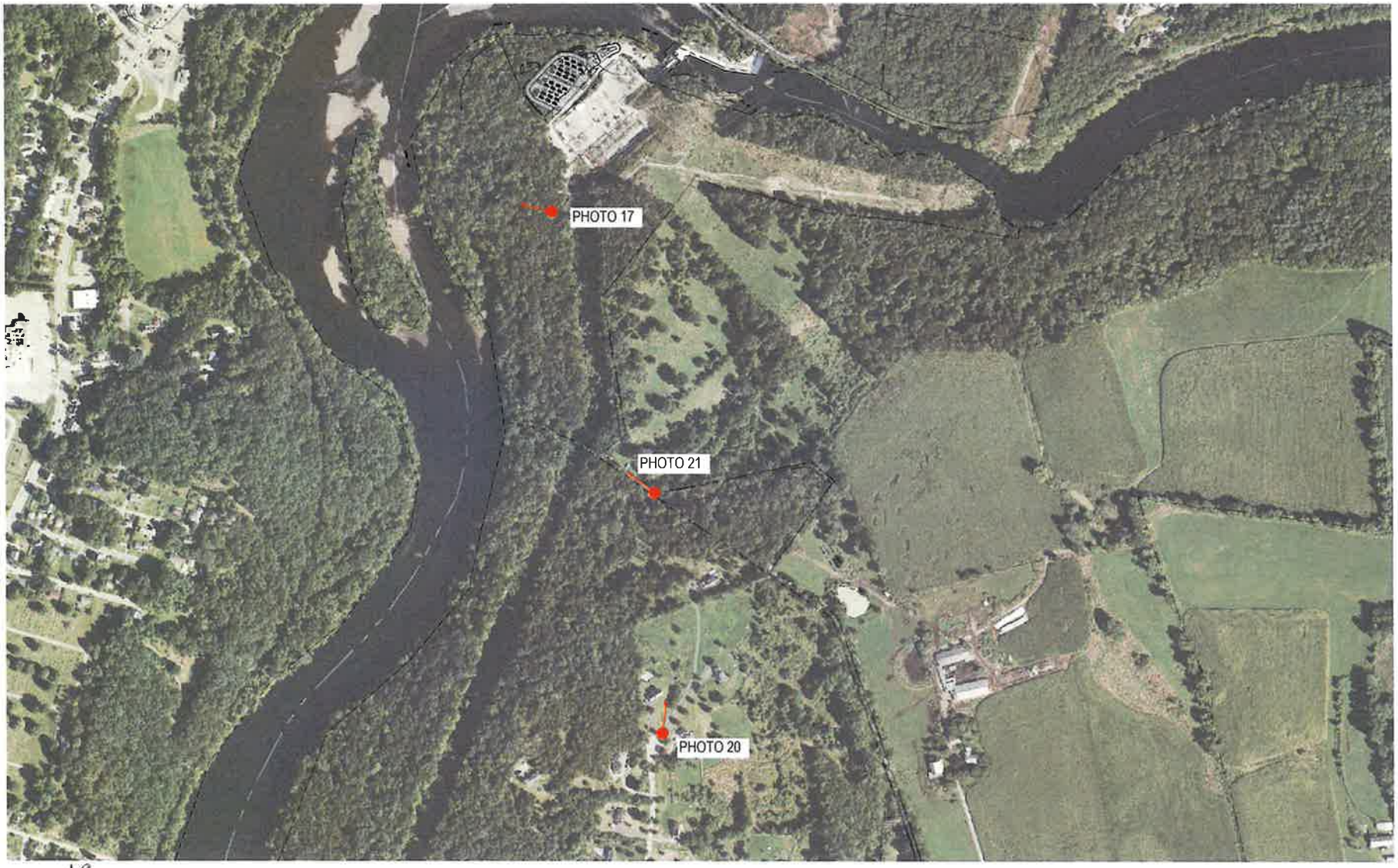
NOT FOR CONSTRUCTION

TUNNEL BESS
72 ROOSEVELT AVE EXTENSION
PRESTON, CT 06365

PROJECT NUMBER: 120-0319

REV	DATE	DRAWN	CHECKED	RELEASE LEVEL
	03/27/25	BLS	BLS	PHOTOLOG

TUNNEL BESS
SITE PLAN



FIRSTLIGHT BATTERY ENERGY STORAGE SYSTEM PHOTOLOG

SCALE: 1" = 200'

0 200' 400'

new leaf energy

NOT FOR CONSTRUCTION

TUNNEL BESS
72 ROOSEVELT AVE EXTENSION
PRESTON, CT 06365

PROJECT NUMBER:
120-0319

REV	DATE	DRAWN	CHECKED	RELEASE LEVEL
	03/27/25	BLS	BLS	PHOTOLOG

TUNNEL BESS
SITE PLAN

Tunnel BESS LLC

North Facing

08/03/2021

Tunnel BESS, LLC

West Facing

08/03/2021

Tunnel BESS, LLC

South Facing

08/02/2021

Tunnel BESS, LLC

East Facing

08/03/2021

Photo 1: Existing Substation Infrastructure, looking Southeast

Photo 2: Existing Tunnel Jet Facility

Photo 3: Rear of Existing Tunnel Jet Facility showing monitoring wells. This area is proposed to be repurposed for stormwater basin #3.

Photo 4: Rear of Existing Tunnel Jet Facility transformer. This is where the pad-mounted interconnection equipment for the Tunnel BESF is proposed.

Photo 5: View of monitoring wells installed between Tunnel Jet facility and Quinebaug River.

Photo 6: View from southwest corner of Tunnel Jet facility into area that is proposed for

battery containers.

Photo 7: View west from location of proposed stormwater basin #2

Photo 8: View from north fence line of proposed facility south into main area of battery container installation.

Photo 9: View from north fence line of proposed facility towards the access road.

Photo 10: View from location proposed for stormwater basin 1 into main area of BESF.

Photo 11: Existing Tunnel Jet fuel tank. Southern end of proposed BESF area.

Photo 12: View toward existing substation and access road. Location of proposed southern access drive entrance.

Photo 13: Existing Tunnel Jet fuel tank. Photo taken along proposed southeastern BESF fence line.

Photo 14: View north from the existing Tunnel Jet fuel tank into main area proposed for BESF.

Photo 15: View towards existing Tunnel Jet from central location of proposed BESF.

Photo 16: View from area proposed for BESF toward Quinebaug River

Photo 17: Canoe Portage entrance onto access drive

Photo 18: View towards Quinebaug River

Photo 19: View near wetlands facing south

Photo 20: View from closest public road looking towards site (approximately 3,000ft away)

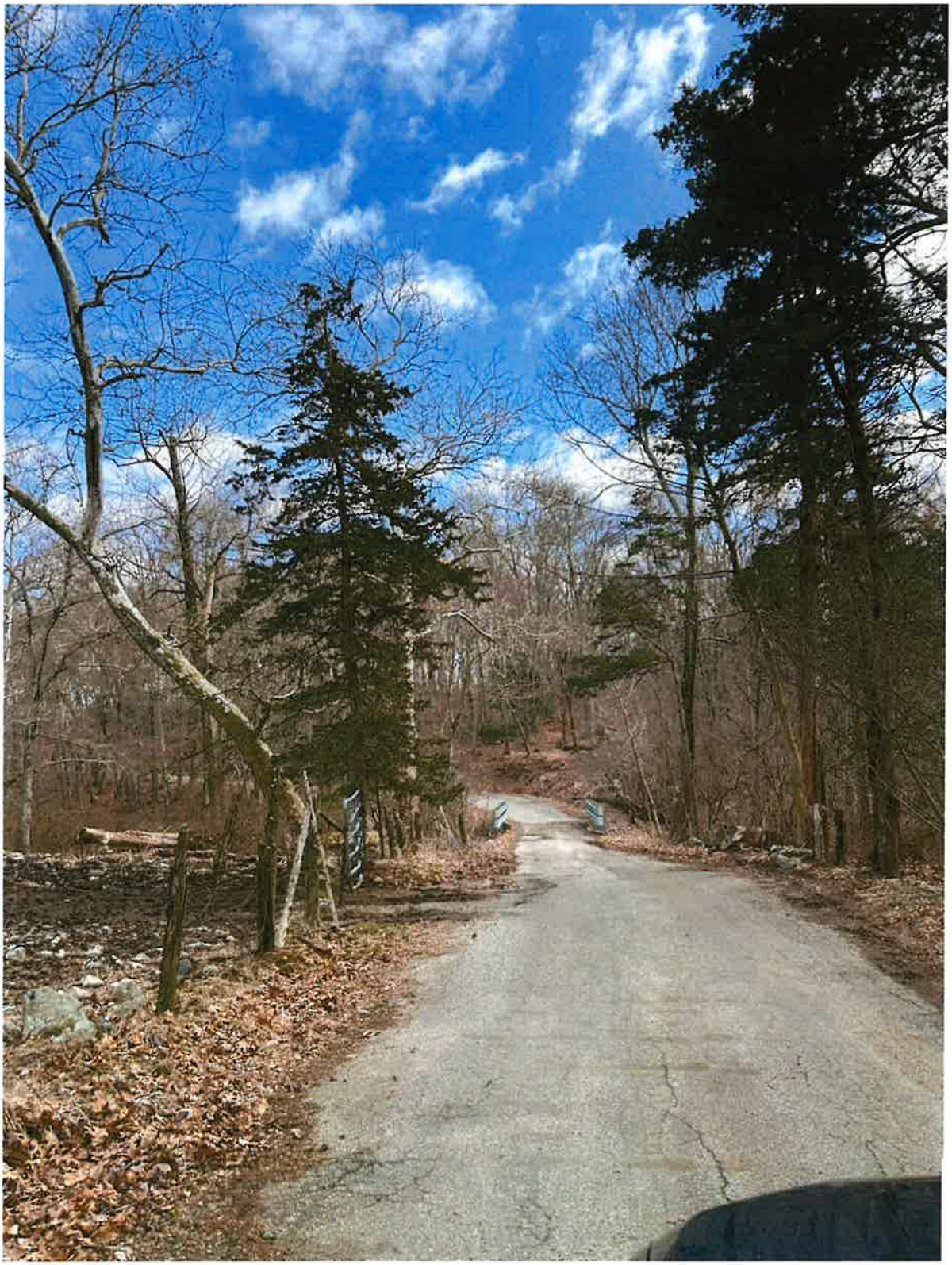


Photo 21: Site access road (Private way off Roosevelt Ave Extension)