

**GRID STORAGE LAUNCHPAD (GSL) FACILITY**

**Project No. 2019015**

**Extension of Time Request “EOT”**

**Delay Analysis Report**

**(Windows Analysis)**



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## 1. Executive Summary

This report demonstrates Harvey-Cleary Builders' entitlement to an extension of time based on events that are beyond Harvey's control and could not be anticipated prior to bidding. The project was impacted by multiple delay events as detailed in Table (2) below, which affected the contractual date for Project Beneficial Occupancy per Table (1) below which summarizes the impact on the contractual project completion milestone.

The delay events affected the critical path of the project throughout each window and caused a loss of momentum and disruption of construction work. For purposes of this analysis, we define a delay as the number of days of critical path delay from the contractual completion date to the actual completion of the project. This report demonstrates Harvey's entitlement to an extension of time and compensation as per Table (1) below which summarizes the impact on the contractual project completion milestone.

This analysis is performed using a contemporaneous Time Impact Analysis (TIA) with a detailed incremental review (Window Method) as shown in Table (1) below. This method finds the impact on the Completion Date of each Milestone at different intermediate cutoff dates in order to see the full impact and how delays have increased from window to window. The chosen time windows represent the schedule updates just before the occurrence of the delay events which are modeled on the same time window.

Table (1) Delay Analysis - Combined Impact of All Delay Events

	Time Window	Schedule Beneficial Occupancy Finish Date	Harvey Delay Days	Harvey Recovery Days	Excusable Delay Days
1	Baseline Schedule Before Occurrence of Delay Events	4/3/2023	-		-
2	Baseline Schedule After Occurrence of Delay Events	7/13/2023	-		101
3	June 2021 Schedule Update Before Occurrence of Delay Events	7/13/2023	-		-
4	June 2021 Schedule Update After Occurrence of Delay Events	12/22/2023	-		162
5	March 2022 Schedule Update Before Occurrence of Delay Events	12/22/2023	-		-
6	March 2022 Schedule Update After Occurrence of Delay Events	7/10/2024	-		201
7	Harvey released gear prior to approval for schedule mitigation.	12/22/2023	-	201	
	<b>Total</b>		-		<b>263</b>

The sum of the total number of days impacted by each delay event amounts to **464 calendar days**. Harvey acted in good faith and attempted to minimize the impact of these delays, and was able to recover 201 days of the delays by taking the risk to release the switchgear early and not wait for the T&V program; accordingly, Harvey is only requesting **263 calendar days**.



Table (2) Detailed Incremental Review (Window Method) - Impacted Activities

	Delay Event	Start	Finish	Impacted Activities
<b>Window #1: Baseline Schedule "March 30<sup>th</sup>, 2021"</b>				
1	Dry room Equipment & Panels Submittal	5/21/2021	7/6/2022	Dry Room Equipment & Panels Submittal
2	Dry room Equipment & Panels Delivery	11/11/2022	2/27/2023	Install Dry room Equipment/Panels
<b>Window #2: June 2021 Schedule Update</b>				
3	Furnish of Lab Layout & Equipment Sheet	9/17/2021	3/10/2022	Electrical Switchgear Submittal
4	Release of Switchgear for Delivery	7/1/2021	6/12/2022	Electrical Switchgear Delivery
5	Additional Duration for Switchgear Delivery	7/26/2023	11/26/2023	Set & Terminate Switch Boards
6	Additional Duration for Commissioning	5/7/2024	7/10/2024	Beneficial Occupancy
<b>Window #3: March 2022 Schedule Update</b>				
7	T&V 2 Program Change	4/1/2022	11/20/2022	Electrical Switchgear Delivery

## 2. Background and Introduction

Memorial Institute (Battelle), in connection with Battelle's operation and maintenance of the U.S. Department of Energy's (DOE) Pacific Northwest National Laboratory (PNNL) in Richland, Washington under Contract No. DE-AC05-76RL01830 has a need for Design/Build (D/B) services to provide architecture, engineering, design, procurement, construction, and support of Battelle commissioning for a new facility (hereinafter referred to as the "Grid Storage Launchpad (GSL) facility).

### 2.1. Project Scope of Work

The Project Scope Outline includes but is not limited to the following items:

#### Preconstruction Phase:

- Permits.
- Permitted set of drawings.
- BIM Model and Coordination.
- Submittals and Approvals.
- Fabrication And Delivery.
- Mobilization.

#### Construction Phase:

- Site work.
- A "signature" facility, an iconic PNNL landmark symbolic of world-class science.
- Thirty Laboratory module equivalents.
- A Laboratory Suite, or space dedicated to testing and validation of energy storage technologies.
- Workstations, including a combination of hard-walled office "executive suites", hard-walled individual offices, and open landscape partitioned spaces (105 total).

- Lobby and open collaboration spaces, including a second-floor outdoor covered “terrace” area.
- A Visualization space; a multipurpose room for video observation, instruction, and Conferencing.
- Two medium conference rooms.
- Four small conference rooms.
- Six “huddle” conference rooms.
- Laboratory service corridors.
- Interstitial mechanical mezzanines.
- Mechanical, electrical, IT server, and MDF/IDF rooms.
- Loading dock, and shipping/receiving areas.
- Chemical storage room.
- Waste Storage Room.
- Site improvements including required utility infrastructure, paved vehicular parking and access areas, pedestrian circulation, and landscaping.

Closeout Phase:

- Comprehensive Punch List.
- Close out for all permits.
- Substantial Completion.
- Close Out Documents and Manuals.
- Punchlist completion
- Final Completion.
- Demobilization

### 3. Delay Events

#### 3.1. Delay Event 01 – Dry Room Equipment & Panels Delays

The submittal of the Dry Room Equipment & Panels was originally scheduled to start within 2 weeks of receiving the design NOA on March 31st, 2021, and the Dry Room quote for timeframes that was dated October 30th, 2020 stated that the duration should be 3 to 4 weeks of submittal drawings and 1 week of approval.

Then after receiving the NOA design, PNNL started making changes to finish the Dry Room Equipment and Panels Submittal on July 6th, 2022. This pushed the release of delivery for the Dry Room Equipment & Panels to start on July 7th, 2022.

Due to the delay in the submittal of the Dry Room Equipment & Panels, the delivery duration of the Equipment delivery had to increase to 33 weeks instead of the original 16-18 weeks.

This has an impact on the installation of the Dry Room Equipment and Panels and the Mechanical Equipment Installation for the Lab and hence delaying the startup and commissioning wet.

#### 3.2. Delay Event 02 – Lab Layout & Equipment

Harvey was to finalize the Lab Layout and Equipment Sheet for the Design Development and issue for the layout approval on September 9<sup>th</sup>, 2021; however, PNNL delayed the lab layout. To reduce the delays that would result from such an event, Harvey had to move forward and make assumptions.

Accordingly, these delays have delayed the submittal of the Electrical Switchgear besides the start of Construction Package 1 and its following successors.

PNNL was eventually able to furnish the Lab Layout and Equipment Sheet on March 10th, 2022 except it was still missing equipment data and we had to proceed with assumptions for missing data.

### 3.3. Delay Event 03 – Switchgear Delays

Due to the upsized square footage of the building from 85,000 square feet to 94,000 square feet. ERUs had to be upsized to accommodate the added square footage. This change in design has impacted the equipment sizing until the 95% design stage and therefore delayed the submittals of the items including the Electrical Switchgear Submittal. The release of the switchgear delivery is pushed to June 13<sup>th</sup>, 2022 with a duration of 12 months instead of 8 months. This has an impact on the Setting & Termination of the Switch Boards which was on the critical path.

According to the delays of the switchgear and dry room, and the increase in size of the switchgear, commissioning and startup will take longer time than the original duration expected in the baseline.

### 3.4. Delay 04 – T&V Program Change

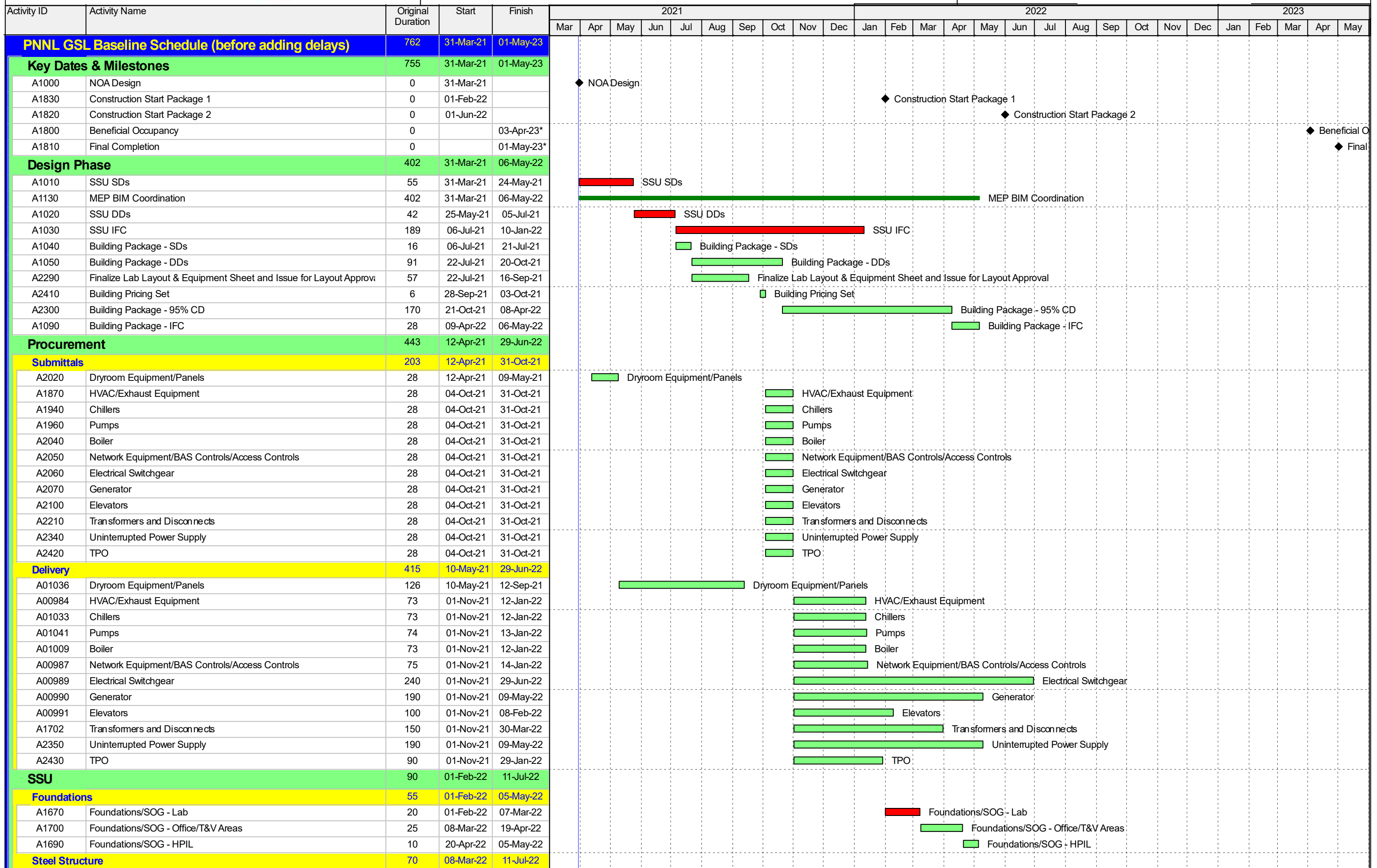
According to ECN#06, T&V Design changes were not finalized until November 11<sup>th</sup>, 2022. This delay should have impacted the release date for the switchgear had it not been for Harvey's decision to not delay the switchgear release until this item was finalized. This delay is modeled to show the potential impact this had on the beneficial occupancy date and Harvey's mitigation efforts to bring back the finish date of the project.

## 4. Conclusion

The delays described in this EOT request were disruptive to the project's critical path. The main delay that had the largest impact on overall completion were: the delay in Switchgear release for delivery, the actual delivery duration for the switchgear, and the T&V 2 Design Change. Harvey acted in good faith and attempted to minimize the impact of these delays, and actually managed to recover a big portion of the delay days. However, Harvey believes that it is entitled to excusable and compensable additional time for the delays as they were beyond Harvey's control and could not be anticipated prior to bidding.

The EOT Report demonstrates that Harvey- Cleary Builders is entitled to excusable and compensable delay days from April 3<sup>rd</sup>, 2023 to December 22<sup>nd</sup>, 2023 which represents a duration of **263 consecutive calendar days**.

Appendix (A): Baseline Schedule – Detailed Schedule Before Occurrence of Delay  
Events

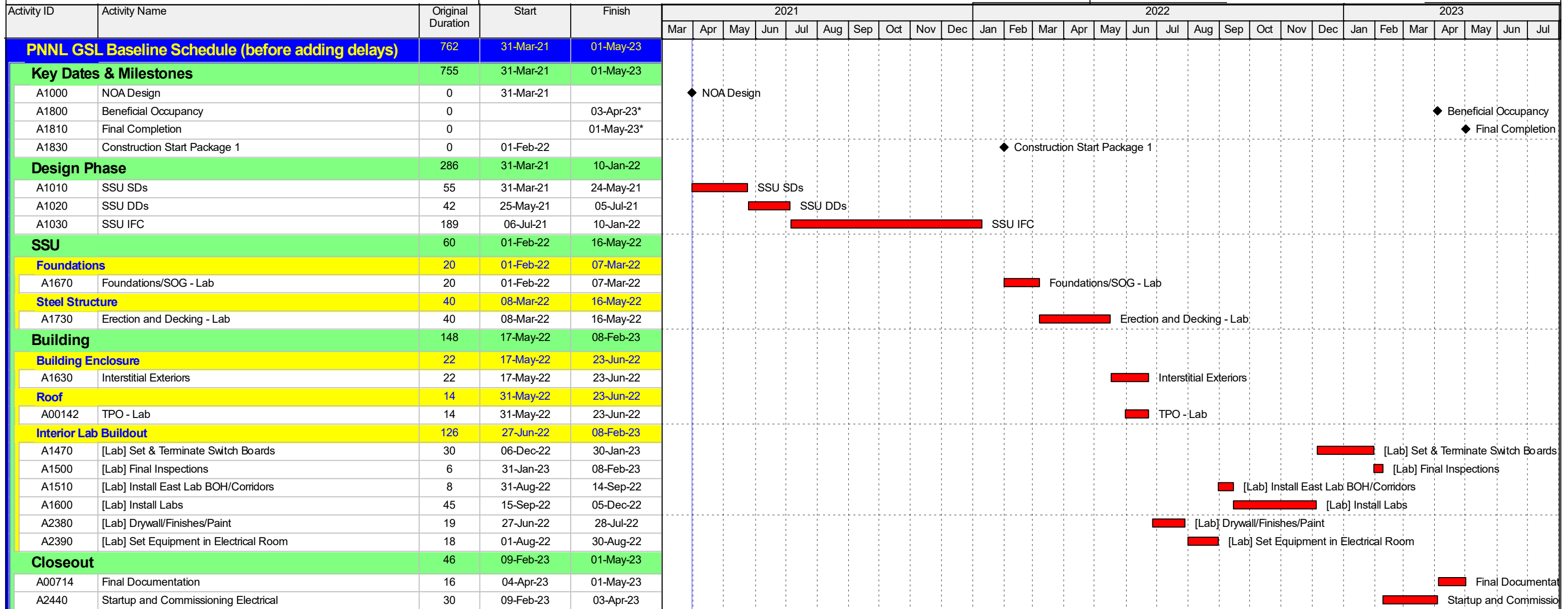




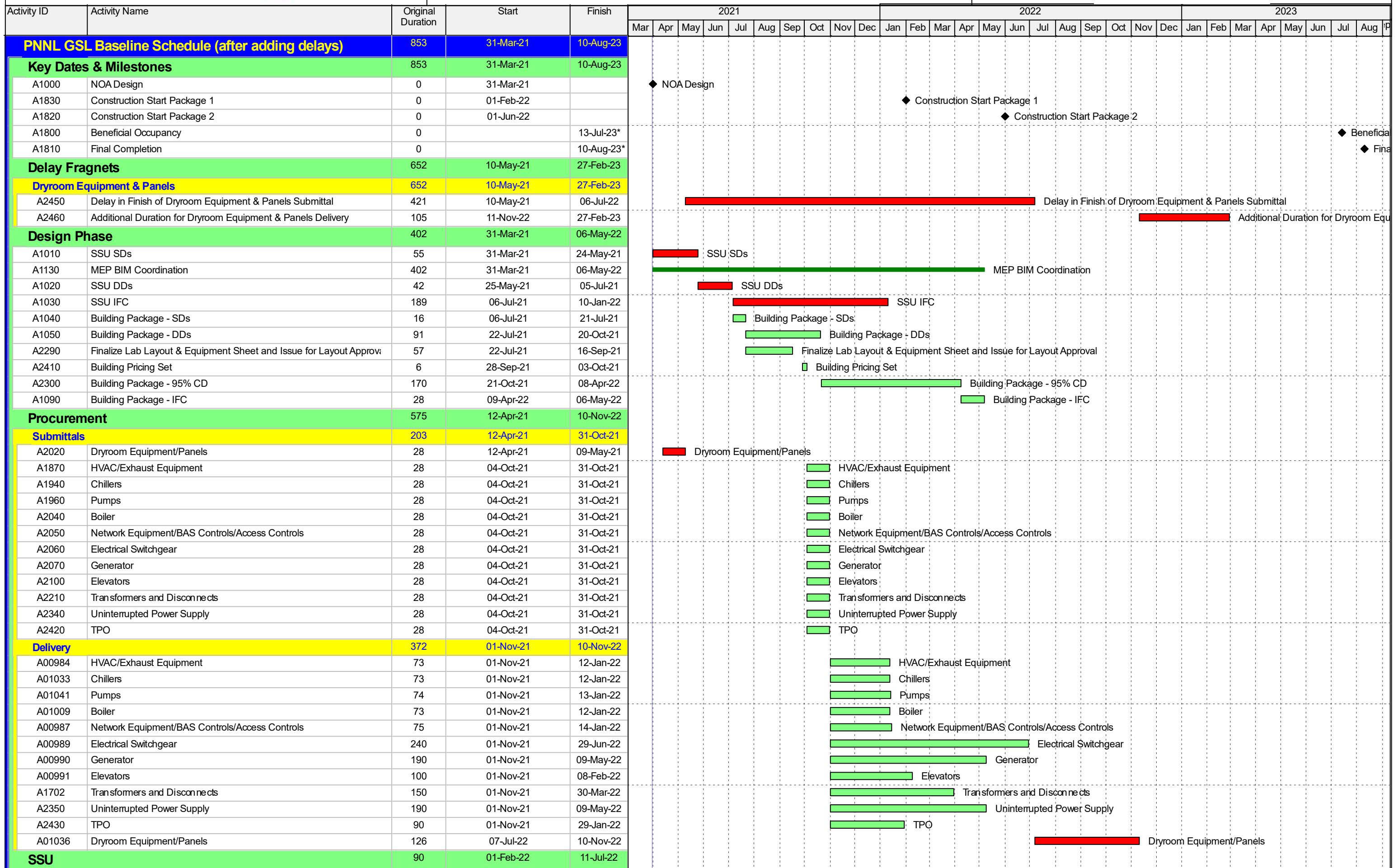
Activity ID	Activity Name	Original Duration	Start	Finish	2021												2022												2023				
					Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May		
	A1730	Erection and Decking - Lab	40	08-Mar-22	16-May-22																												
	A1750	Erection and Decking - Office/T&V Areas	45	20-Apr-22	11-Jul-22																												
	A1790	Erection and Decking - HPIL	10	09-May-22	24-May-22																												
Building		153	09-May-22	08-Feb-23																													
Building Enclosure		73	09-May-22	15-Sep-22																													
A1780	CMU Walls "HPIL & T&V 2 Suite"	18	09-May-22	07-Jun-22																													
A1630	Interstitial Exteriors	22	17-May-22	23-Jun-22																													
A1640	Install Building Facades	40	25-May-22	04-Aug-22																													
A1650	Install Terrace/Soffit	23	08-Aug-22	15-Sep-22																													
Roof		45	31-May-22	18-Aug-22																													
A00142	TPO - Lab	14	31-May-22	23-Jun-22																													
A00140	Parapet Framing and Sheathing	14	01-Jun-22	27-Jun-22																													
A1540	Set Roof Top Equipment	10	27-Jun-22	13-Jul-22																													
A00145	TPO - Office/T&V Areas	14	12-Jul-22	03-Aug-22																													
A00144	TPO - HPIL	9	04-Aug-22	18-Aug-22																													
Interior Lab Buildout		139	01-Jun-22	08-Feb-23																													
A2370	[Lab] Framing/Rough-ins	9	01-Jun-22	15-Jun-22																													
A2380	[Lab] Drywall/Finishes/Paint	19	27-Jun-22	28-Jul-22																													
A1490	[Lab] Install UPS	35	01-Aug-22	29-Sep-22																													
A2390	[Lab] Set Equipment in Electrical Room	18	01-Aug-22	30-Aug-22																													
A1510	[Lab] Install East Lab BOH/Corridors	8	31-Aug-22	14-Sep-22																													
A1600	[Lab] Install Labs	45	15-Sep-22	05-Dec-22																													
A2330	[Lab] Install Dryroom Equipment/Panels	15	15-Sep-22	11-Oct-22																													
A1520	[Lab] Install MDF	18	12-Oct-22	10-Nov-22																													
A1530	[Lab] Instal Mech Equipment	16	12-Oct-22	08-Nov-22																													
A2400	[Lab] Install Transformers	25	12-Oct-22	23-Nov-22																													
A1470	[Lab] Set & Terminate Switch Boards	30	06-Dec-22	30-Jan-23																													
A1500	[Lab] Final Inspections	6	31-Jan-23	08-Feb-23																													
Office Interior Buildout		103	12-Jul-22	12-Jan-23																													
A1230	[Office] Framing/Rough-ins	15	12-Jul-22	04-Aug-22																													
A1240	[Office] Drywall/Finishes/Paint	24	08-Aug-22	19-Sep-22																													
A1280	[Office] MEP Ceiling and Wall Trimouts	18	20-Sep-22	19-Oct-22																													
A1360	[Office] Install Elevators	45	20-Sep-22	07-Dec-22																													
A1320	[Office] Final Clean	3	08-Dec-22	13-Dec-22																													
A1330	[Office] Harvey Punch / Completion	1	14-Dec-22	14-Dec-22																													
A1370	[Office] Install Office Restrooms	15	15-Dec-22	12-Jan-23																													
Sitescape		107	01-Jun-22	12-Dec-22																													
A1400	Generator Pad/Generator	14	01-Jun-22	27-Jun-22																													
A2310	Hardscape	17	10-Oct-22	07-Nov-22																													
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A1420	Site Furnishing	7	30-Nov-22	12-Dec-22																													
Closeout		107	20-Oct-22	01-May-23																													
A1430	Demobilize Onsite Offices	10	20-Oct-22	07-Nov-22																													
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A2440	Startup and Commissioning Electrical	30	09-Feb-23	03-Apr-23																													
A00714	Final Documentation	16	04-Apr-23	01-May-23																													

Appendix (B): Baseline Schedule – Longest Path Schedule Before Occurrence of  
Delay Events





Appendix (C): Baseline Schedule – Detailed Schedule After Occurrence of Delay  
Events



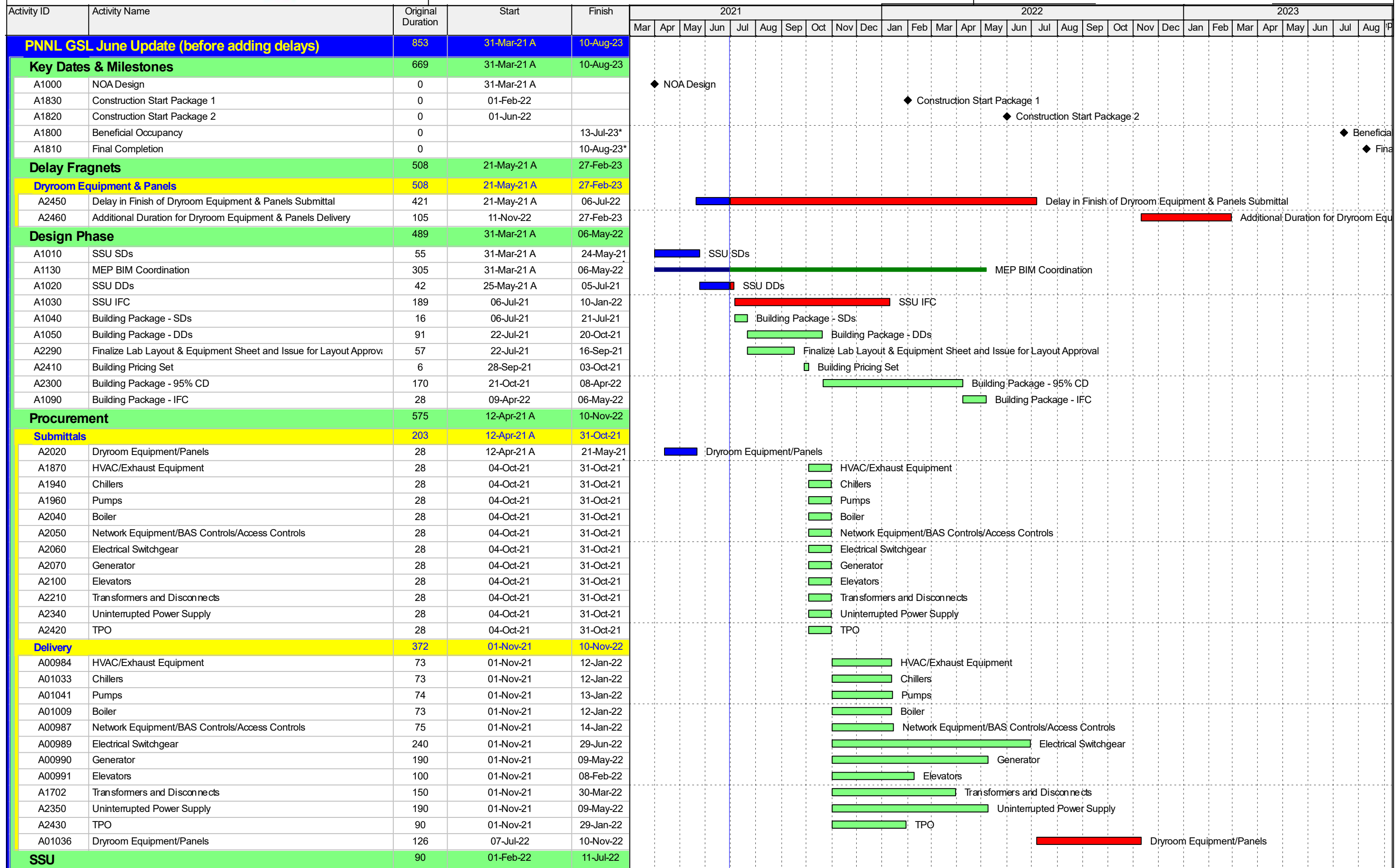
Activity ID	Activity Name	Original Duration	Start	Finish	2021												2022												2023							
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Foundations		55	01-Feb-22	05-May-22																																
A1670	Foundations/SOG - Lab	20	01-Feb-22	07-Mar-22																																
A1700	Foundations/SOG - Office/T&V Areas	25	08-Mar-22	19-Apr-22																																
A1690	Foundations/SOG - HPIL	10	20-Apr-22	05-May-22																																
Steel Structure		70	08-Mar-22	11-Jul-22																																
A1730	Erection and Decking - Lab	40	08-Mar-22	16-May-22																																
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A00140	Parapet Framing and Sheathing	14	01-Jun-22	27-Jun-22																																
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Appendix (D): Baseline Schedule – Longest Path Schedule After Occurrence of Delay  
Events

Activity ID	Activity Name	Original Duration	Start	Finish	2021												2022												2023											
					Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
PNNL GSL Baseline Schedule (after adding delays)		853	31-Mar-21	10-Aug-23																																				
Key Dates & Milestones		853	31-Mar-21	10-Aug-23																																				
A1000	NOA Design	0	31-Mar-21		◆ NOA Design																																			
A1800	Beneficial Occupancy	0		13-Jul-23*	◆ Beneficial Occupancy																																			
A1810	Final Completion	0		10-Aug-23*	◆ Final Completion																																			
Delay Fragnets		652	10-May-21	27-Feb-23																																				
Dryroom Equipment & Panels		652	10-May-21	27-Feb-23																																				
A2450	Delay in Finish of Dryroom Equipment & Panels Submittal	421	10-May-21	06-Jul-22	Delay in Finish of Dryroom Equipment & Panels Submittal																																			
A2460	Additional Duration for Dryroom Equipment & Panels Delivery	105	11-Nov-22	27-Feb-23	Additional Duration for Dryroom Equipment & P																																			
Procurement		575	12-Apr-21	10-Nov-22																																				
Submittals		28	12-Apr-21	09-May-21																																				
A2020	Dryroom Equipment/Panels	28	12-Apr-21	09-May-21	Dryroom Equipment/Panels																																			
Delivery		126	07-Jul-22	10-Nov-22																																				
A01036	Dryroom Equipment/Panels	126	07-Jul-22	10-Nov-22	Dryroom Equipment/Panels																																			
Building		46	28-Feb-23	17-May-23																																				
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Appendix (E): June 2021 Schedule Update – Detailed Schedule Before Occurrence of  
Delay Events





Activity ID	Activity Name	Original Duration	Start	Finish	2021												2022												2023							
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A1510	[Lab] Install East Lab BOH/Corridors	8	31-Aug-22	14-Sep-22																																
A1600	[Lab] Install Labs	45	15-Sep-22	05-Dec-22																																
A1470	[Lab] Set & Terminate Switch Boards	30	06-Dec-22	30-Jan-23																																
A2330	[Lab] Install Dryroom Equipment/Panels	15	28-Feb-23	23-Mar-23																																
A1520	[Lab] Install MDF	18	27-Mar-23	25-Apr-23																																
A1530	[Lab] Instal Mech Equipment	16	27-Mar-23	20-Apr-23																																
A2400	[Lab] Install Transformers	25	27-Mar-23	08-May-23																																
A1500	[Lab] Final Inspections	6	09-May-23	17-May-23																																
Office Interior Buildout		103	12-Jul-22	12-Jan-23																																
A1230	[Office] Framing/Rough-ins	15	12-Jul-22	04-Aug-22																																
A1240	[Office] Drywall/Finishes/Paint	24	08-Aug-22	19-Sep-22																																
A1280	[Office] MEP Ceiling and Wall Trimouts	18	20-Sep-22	19-Oct-22																																
A1360	[Office] Install Elevators	45	20-Sep-22	07-Dec-22																																
A1320	[Office] Final Clean	3	08-Dec-22	13-Dec-22																																
A1330	[Office] Harvey Punch / Completion	1	14-Dec-22	14-Dec-22																																
A1370	[Office] Install Office Restrooms	15	15-Dec-22	12-Jan-23																																
Sitescape		107	01-Jun-22	12-Dec-22																																
A1400	Generator Pad/Generator	14	01-Jun-22	27-Jun-22																																
A2310	Hardscape	17	10-Oct-22	07-Nov-22																																
A2320	Landscape	12	08-Nov-22	29-Nov-22																																
A1420	Site Furnishing	7	30-Nov-22	12-Dec-22																																
Closeout		163	20-Oct-22	10-Aug-23																																
A1430	Demobilize Onsite Offices	10	20-Oct-22	07-Nov-22																																
A1440	Startup and Commissioning Wet	30	03-May-23	27-Jun-23																																
A2440	Startup and Commissioning Electrical	30	18-May-23	13-Jul-23																																
A00714	Final Documentation	16	17-Jul-23	10-Aug-23																																

Appendix (F): June 2021 Schedule Update – Longest Path Schedule Before  
Occurrence of Delay Events

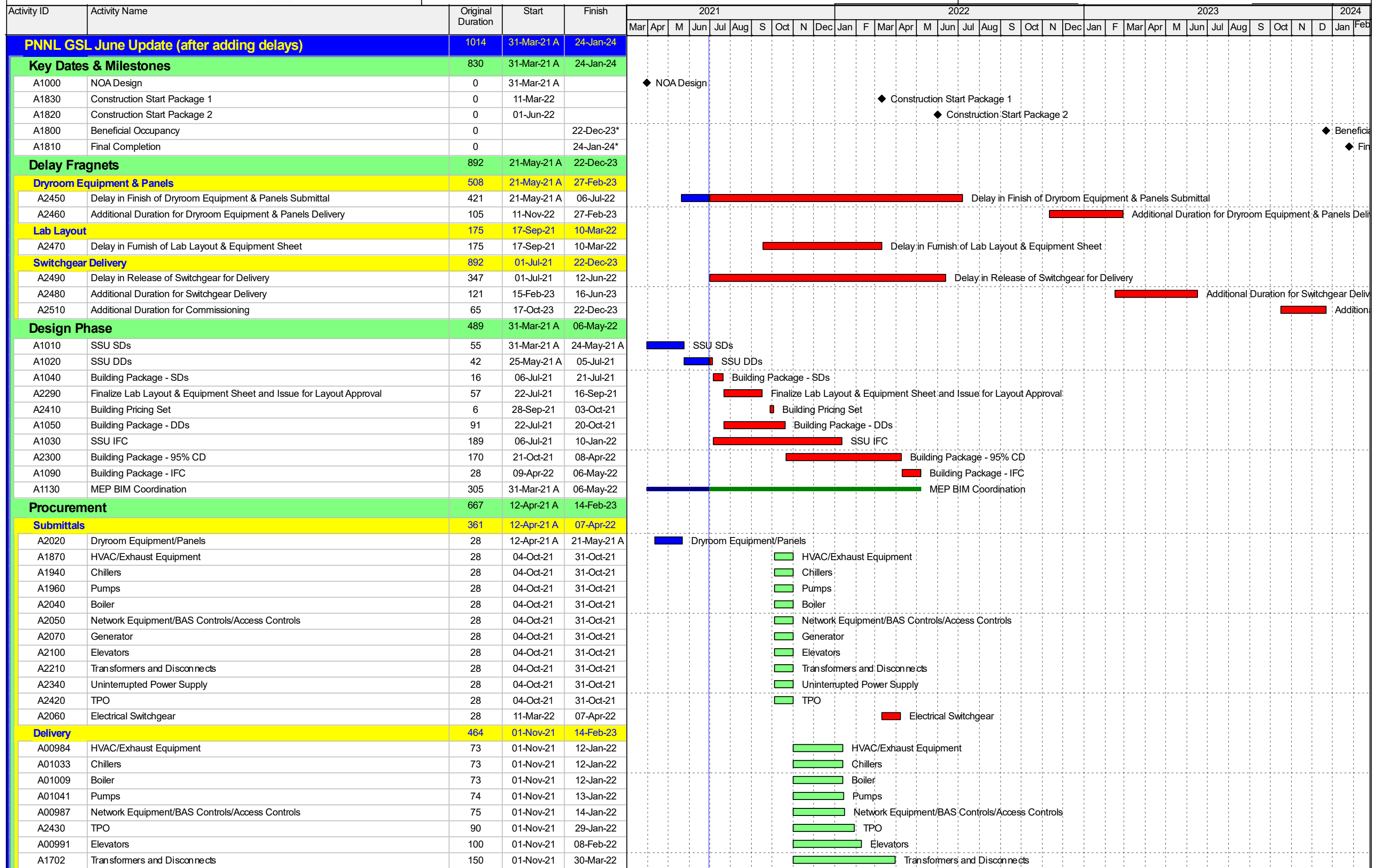


PNNL GSL June Update (before adding delays)  
Longest Path Schedule



Activity ID		Activity Name		Original Duration	Start	Finish	2021							2022												2023																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
							Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
PNNL GSL June Update (before adding delays)				669	21-May-21 A	10-Aug-23																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														

Appendix (G): June 2021 Schedule Update – Detailed Schedule After Occurrence of  
Delay Events





Activity ID	Activity Name	Original Duration	Start	Finish	2021												2022												2023												2024				
					Mar	Apr	M	Jun	Jul	Aug	S	Oct	N	Dec	Jan	F	Mar	Apr	M	Jun	Jul	Aug	S	Oct	N	Dec	Jan	F	Mar	Apr	M	Jun	Jul	Aug	S	Oct	N	D	Jan	Feb					
SSU	A00990	Generator	190	01-Nov-21	09-May-22																																								
	A2350	Uninterrupted Power Supply	190	01-Nov-21	09-May-22																																								
	A01036	Dryroom Equipment/Panels	126	07-Jul-22	10-Nov-22																																								
	A00989	Electrical Switchgear	240	13-Jun-22	14-Feb-23																																								
SSU		90	14-Mar-22	18-Aug-22																																									
Foundations		55	14-Mar-22	15-Jun-22																																									
A1670	Foundations/SOG - Lab	20	14-Mar-22	14-Apr-22																																									
A1700	Foundations/SOG - Office/T&V Areas	25	18-Apr-22	30-May-22																																									
A1690	Foundations/SOG - HPIL	10	31-May-22	15-Jun-22																																									
Steel Structure		70	18-Apr-22	18-Aug-22																																									
A1730	Erection and Decking - Lab	40	18-Apr-22	27-Jun-22																																									
A1790	Erection and Decking - HPIL	10	16-Jun-22	06-Jul-22																																									
A1750	Erection and Decking - Office/T&V Areas	45	31-May-22	18-Aug-22																																									
Building		247	01-Jun-22	22-Aug-23																																									
Building Enclosure		73	16-Jun-22	26-Oct-22																																									
A1780	CMU Walls "HPIL & T&V 2 Suite"	18	16-Jun-22	20-Jul-22																																									
A1630	Interstitial Exteriors	22	28-Jun-22	04-Aug-22																																									
A1640	Install Building Facades	40	07-Jul-22	15-Sep-22																																									
A1650	Install Terrace/Soffit	23	19-Sep-22	26-Oct-22																																									
Roof		53	28-Jun-22	29-Sep-22																																									
A00140	Parapet Framing and Sheathing	14	28-Jun-22	21-Jul-22																																									
A00142	TPO - Lab	14	13-Jul-22	04-Aug-22																																									
A1540	Set Roof Top Equipment	10	08-Aug-22	23-Aug-22																																									
A00145	TPO - Office/T&V Areas	14	22-Aug-22	14-Sep-22																																									
A00144	TPO - HPIL	9	15-Sep-22	29-Sep-22																																									
Interior Lab Buildout		233	28-Jun-22	22-Aug-23																																									
A2370	[Lab] Framing/Rough-ins	9	28-Jun-22	13-Jul-22																																									
A2380	[Lab] Drywall/Finishes/Paint	19	08-Aug-22	08-Sep-22																																									
A2390	[Lab] Set Equipment in Electrical Room	18	12-Sep-22	11-Oct-22																																									
A1510	[Lab] Install East Lab BOH/Corridors	8	12-Oct-22	25-Oct-22																																									
A1490	[Lab] Install UPS	35	12-Sep-22	09-Nov-22																																									
A1600	[Lab] Install Labs	45	26-Oct-22	17-Jan-23																																									
A2330	[Lab] Install Dryroom Equipment/Panels	15	28-Feb-23	23-Mar-23																																									
A1530	[Lab] Install Mech Equipment	16	27-Mar-23	20-Apr-23																																									
A1520	[Lab] Install MDF	18	27-Mar-23	25-Apr-23																																									
A2400	[Lab] Install Transformers	25	27-Mar-23	08-May-23																																									
A1470	[Lab] Set & Terminate Switch Boards	30	20-Jun-23	10-Aug-23																																									
A1500	[Lab] Final Inspections	6	14-Aug-23	22-Aug-23																																									



PNNL GSL June Update (after adding delays)  
Detailed Schedule



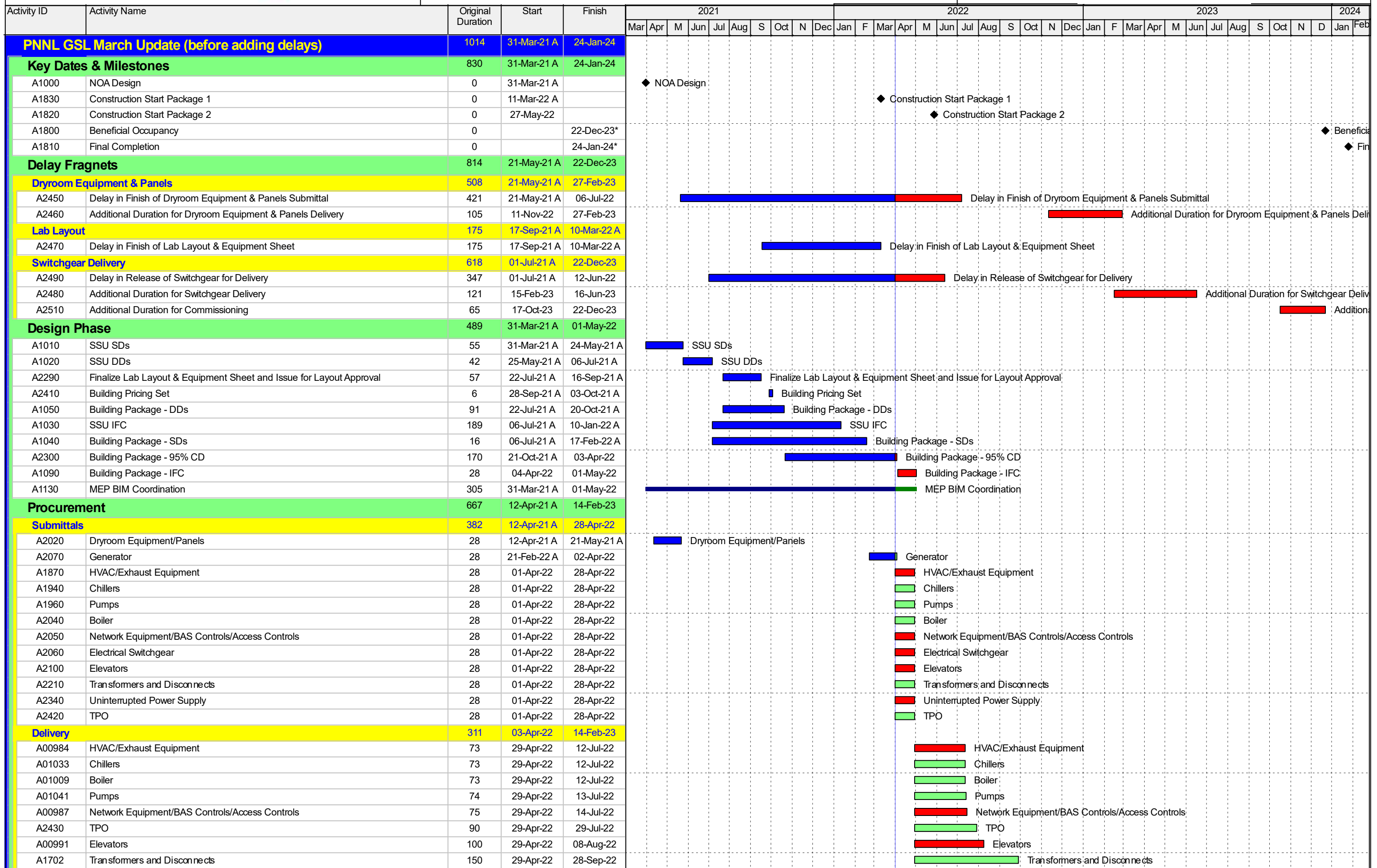
Activity ID	Activity Name	Original Duration	Start	Finish	2021												2022												2023												2024																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
					Mar	Apr	M	Jun	Jul	Aug	S	Oct	N	Dec	Jan	F	Mar	Apr	M	Jun	Jul	Aug	S	Oct	N	Dec	Jan	F	Mar	Apr	M	Jun	Jul	Aug	S	Oct	N	D	Jan	Feb																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
Closeout		230	01-Dec-22	24-Jan-24																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			


Appendix (H): June 2021 Schedule Update – Longest Path Schedule After Occurrence  
of Delay Events



Activity ID	Activity Name	Original Duration	Start	Finish	2021												2022												2023												2024																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
					Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	F	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	F	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
PNNL GSL June Update (after adding delays)		922	01-Jul-21	24-Jan-24																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															

Appendix (I): March 2022 Schedule Update – Detailed Schedule Before Occurrence of  
Delay Events



<div style="display: flex; justify-content: space-between;"> <div> <div style="width: 20px; height: 10px; background-color: #28a745; margin-bottom: 5px;"></div> Remaining Level of Effort             </div> <div> <div style="width: 20px; height: 10px; background-color: #007bff; margin-bottom: 5px;"></div> Actual Work             </div> <div> <div style="width: 20px; height: 10px; background-color: #dc3545; margin-bottom: 5px;"></div> Critical Remaining Work             </div> </div> <div style="display: flex; justify-content: space-between;"> <div> <div style="width: 20px; height: 10px; background-color: #000080; margin-bottom: 5px;"></div> Actual Level of Effort             </div> <div> <div style="width: 20px; height: 10px; background-color: #90ee90; margin-bottom: 5px;"></div> Remaining Work             </div> <div> <div style="width: 10px; height: 10px; background-color: black; margin-bottom: 5px;"></div> Milestone             </div> </div>	Page 2 of 3	
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PNNL GSL March Update (before adding delays)  
Detailed Schedule



Activity ID	Activity Name	Original Duration	Start	Finish	2021												2022												2023												2024	
					Mar	Apr	M	Jun	Jul	Aug	S	Oct	N	Dec	Jan	F	Mar	Apr	M	Jun	Jul	Aug	S	Oct	N	Dec	Jan	F	Mar	Apr	M	Jun	Jul	Aug	S	Oct	N	D	Jan	Feb		
Closeout		220	20-Dec-22	24-Jan-24																																						
A1430	Demobilize Onsite Offices	10	20-Dec-22	09-Jan-23																																						
A1440	Startup and Commissioning Wet	30	03-May-23	27-Jun-23																																						
A2440	Startup and Commissioning Electrical	30	23-Aug-23	16-Oct-23																																						
A00714	Final Documentation	16	27-Dec-23	24-Jan-24																																						

Appendix (J): March 2022 Schedule Update – Longest Path Before Occurrence of  
Delay Events




Activity ID		Activity Name	Original Duration	Start	Finish	2022												2023												2024	
						Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb		
PNNL GSL March Update (before adding delays)			648	01-Jul-21 A	24-Jan-24																										
Key Dates & Milestones			30	22-Dec-23	24-Jan-24																										
A1800	Beneficial Occupancy	0		22-Dec-23*																							◆ Beneficial Oc				
A1810	Final Completion	0		24-Jan-24*																							◆ Final				
Delay Fragnets			618	01-Jul-21 A	22-Dec-23																										
Switchgear Delivery			618	01-Jul-21 A	22-Dec-23																										
A2480	Additional Duration for Switchgear Delivery	121	15-Feb-23	16-Jun-23																											
A2490	Delay in Release of Switchgear for Delivery	347	01-Jul-21 A	12-Jun-22																											
A2510	Additional Duration for Commissioning	65	17-Oct-23	22-Dec-23																											
Procurement			240	13-Jun-22	14-Feb-23																										
Delivery			240	13-Jun-22	14-Feb-23																										
A00989	Electrical Switchgear	240	13-Jun-22	14-Feb-23																											
Building			36	20-Jun-23	22-Aug-23																										
Interior Lab Buildout			36	20-Jun-23	22-Aug-23																										
A1470	[Lab] Set & Terminate Switch Boards	30	20-Jun-23	10-Aug-23																											
A1500	[Lab] Final Inspections	6	14-Aug-23	22-Aug-23																											
Closeout			84	23-Aug-23	24-Jan-24																										
A00714	Final Documentation	16	27-Dec-23	24-Jan-24																											
A2440	Startup and Commissioning Electrical	30	23-Aug-23	16-Oct-23																											

Appendix (K): March 2022 Schedule Update – Detailed Schedule After Occurrence of  
Delay Events





**HSE** | CPM SCHEDULING CONSULTANTS  
New York • London • California • Texas • Washington • Massachusetts

<div style="display: flex; justify-content: space-between;"> <div> <div style="width: 20px; height: 10px; background-color: #28a745; margin-bottom: 5px;"></div> Remaining Level of Effort             </div> <div> <div style="width: 20px; height: 10px; background-color: #007bff; margin-bottom: 5px;"></div> Actual Work             </div> <div> <div style="width: 20px; height: 10px; background-color: #dc3545; margin-bottom: 5px;"></div> Critical Remaining Work             </div> </div> <div style="display: flex; justify-content: space-between;"> <div> <div style="width: 20px; height: 10px; background-color: #000080; margin-bottom: 5px;"></div> Actual Level of Effort             </div> <div> <div style="width: 20px; height: 10px; background-color: #90ee90; margin-bottom: 5px;"></div> Remaining Work             </div> <div> <div style="width: 10px; height: 10px; background-color: black; margin-bottom: 5px;"></div> Milestone             </div> </div>	Page 2 of 3	
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PNNL GSL March Update (after adding delays)  
Detailed Schedule



Activity ID	Activity Name	Original Duration	Start	Finish	2021												2022												2023												2024																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
					M	A	M	J	Jul	A	S	O	N	D	J	F	M	A	M	J	Jul	A	S	O	N	D	J	F	M	A	M	J	Jul	A	S	O	N	D	J	F	M	A	M	J	Jul	A	M																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
A2310	Hardscape	17	07-Dec-22	09-Jan-23																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								

Appendix (L): March 2022 Schedule Update – Longest Path After Occurrence of Delay  
Events

Activity ID		Activity Name	Original Duration	Start	Finish	2022												2023												2024											
						Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep					
PNNL GSL March Update (after adding delays)			844	01-Apr-22	07-Aug-24																																				
Key Dates & Milestones			613	20-Nov-22	07-Aug-24																																				
A1800	Beneficial Occupancy	0			10-Jul-24*																													◆ Beneficial Occupancy							
A1810	Final Completion	0			07-Aug-24*																													◆ Final Completion							
A2520	ECN #06 - TV2 Design Approval	0			20-Nov-22										◆ ECN #06 - TV2 Design Approval																										
Delay Fragnets			816	01-Apr-22	10-Jul-24																																				
Switchgear Delivery			345	26-Jul-23	10-Jul-24																																				
A2480	Additional Duration for Switchgear Delivery	121	26-Jul-23	26-Nov-23																																					
A2510	Additional Duration for Commissioning	65	07-May-24	10-Jul-24																																					
T&V 2			231	01-Apr-22	20-Nov-22																																				
A2500	T&V 2 Program Change	231	01-Apr-22	20-Nov-22																																					
Procurement			240	21-Nov-22	25-Jul-23																																				
Delivery			240	21-Nov-22	25-Jul-23																																				
A00989	Electrical Switchgear	240	21-Nov-22	25-Jul-23																																					
Building			30	27-Nov-23	22-Jan-24																																				
Interior Lab Buildout			30	27-Nov-23	22-Jan-24																																				
A1470	[Lab] Set & Terminate Switch Boards	30	27-Nov-23	22-Jan-24																																					
Closeout			114	23-Jan-24	07-Aug-24																																				
A00714	Final Documentation	16	11-Jul-24	07-Aug-24																																					
A1440	Startup and Commissioning Wet	30	23-Jan-24	13-Mar-24																																					
A2440	Startup and Commissioning Electrical	30	14-Mar-24	06-May-24																																					

Appendix (M): March 2022 Schedule Update with Mitigation – Detailed Schedule After  
Occurrence of Delay Events





**HSE** | CPM SCHEDULING CONSULTANTS  
New York • Florida • California • Texas • Washington • Massachusetts



Activity ID	Activity Name	Original Duration	Start	Finish	2021												2022												2023												2024																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
					Mar	Apr	M	Jun	Jul	Aug	S	Oct	N	Dec	Jan	F	Mar	Apr	M	Jun	Jul	Aug	S	Oct	N	Dec	Jan	F	Mar	Apr	M	Jun	Jul	Aug	S	Oct	N	D	Jan	Feb																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
A2430	TPO	90	29-Apr-22	29-Jul-22																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												</

Activity ID	Activity Name	Original Duration	Start	Finish	2021												2022												2023												2024																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
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<div></div>	A2310	Hardscape	17	07-Dec-22	09-Jan-23																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														

Appendix (N): March 2022 Schedule Update with Mitigation – Longest Path After  
Occurrence of Delay Events

Activity ID		Activity Name		Original Duration	Start	Finish	2022												2023												2024	
							Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb		
PNNL GSL March Update (after adding delays) with Mitigation				648	01-Jul-21 A	24-Jan-24																										
Key Dates & Milestones				30	22-Dec-23	24-Jan-24																										
A1800	Beneficial Occupancy with Mitigation			0		22-Dec-23*																					◆ Beneficial Oc					
A1810	Final Completion			0		24-Jan-24*																					◆ Final					
Delay Fragnets				618	01-Jul-21 A	22-Dec-23																										
Switchgear Delivery				618	01-Jul-21 A	22-Dec-23																										
A2480	Additional Duration for Switchgear Delivery			121	15-Feb-23	16-Jun-23																										
A2490	Delay in Release of Switchgear for Delivery			347	01-Jul-21 A	12-Jun-22																										
A2510	Additional Duration for Commissioning			65	17-Oct-23	22-Dec-23																										
Procurement				240	13-Jun-22	14-Feb-23																										
Delivery				240	13-Jun-22	14-Feb-23																										
A00989	Electrical Switchgear			240	13-Jun-22	14-Feb-23																										
Building				36	20-Jun-23	22-Aug-23																										
Interior Lab Buildout				36	20-Jun-23	22-Aug-23																										
A1470	[Lab] Set & Terminate Switch Boards			30	20-Jun-23	10-Aug-23																										
A1500	[Lab] Final Inspections			6	14-Aug-23	22-Aug-23																										
Closeout				90	14-Aug-23	24-Jan-24																										
A00714	Final Documentation			16	27-Dec-23	24-Jan-24																										
A1440	Startup and Commissioning Wet			30	14-Aug-23	04-Oct-23																										
A2440	Startup and Commissioning Electrical			30	23-Aug-23	16-Oct-23																										