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May 5, 2023

Ms. Sallie Tanner
Executive Secretary
Georgia Public Service Commission
244 Washington Street, S.W.
Atlanta, Georgia 30334

RE: Review of Expenditures Pursuant to Georgia Power Company's Certificate of Public Convenience and Necessity for Plant Vogtle Units 3 and 4, Twenty-eighth Semi-annual Construction Monitoring Report; Docket No. 29849

Dear Mr. McAlister:

Enclosed for filing in support of Georgia Power Company's Twenty-eighth Semi-Annual Vogtle Construction Monitoring Report, please find the Direct Testimony of the Panel of John B. Williams and Jeremiah Haswell.

Please call me at 404-885-3475 if you have any questions regarding this filing.

Sincerely,

Steven J. Hewitson

Enclosures

DIRECT TESTIMONY OF
JOHN B. WILLIAMS AND JEREMIAH HASWELL
IN SUPPORT OF GEORGIA POWER COMPANY'S
TWENTY-EIGHTH SEMI-ANNUAL VOGTLE CONSTRUCTION MONITORING REPORT

DOCKET NO. 29849

I. INTRODUCTION

Q. PLEASE STATE YOUR NAMES, TITLES, AND BUSINESS ADDRESSES.

A. My name is John B. Williams. I am the Southern Nuclear Operating Company Vice President of Business Operations for Plant Vogtle Units 3 and 4 (the "Project"). My business address is 7825 River Road, Waynesboro, Georgia 30830.

My name is Jeremiah C. Haswell. I am the Project Oversight Director at Georgia Power Company ("Georgia Power" or the "Company"). My business address is 241 Ralph McGill Boulevard, N.E., Atlanta, Georgia 30308.

Q. MR. WILLIAMS, PLEASE SUMMARIZE YOUR EDUCATION AND PROFESSIONAL EXPERIENCE.

A. I graduated from the Georgia Institute of Technology with a bachelor's degree in nuclear and radiological engineering. I am currently the Vice President of Business Operations for Southern Nuclear Plant Vogtle 3 and 4. I joined Southern Nuclear in 2005 and have more than 20 years of engineering and nuclear fuel experience and have served in several leadership positions throughout the Southern Nuclear organization, including Plant Hatch Engineering Director, Nuclear Fuels and Analysis Director, and Interim Engineering Vice President.

I have represented Southern Nuclear on the Department of Energy Industry Advisory Boards for the Advance Fuels Campaign and the Nuclear Energy Advance Modeling and

Simulation ("NEAMS") program. I have also served as the utility lead for the NEI's Accident Tolerant Fuel Working Group's ("ATFWG") Licensing and Safety Benefits Task Force, leading the team that introduced the first Accident Tolerant Fuel into a commercial reactor at Plant Hatch in 2018 and Plant Vogtle in 2019.

Q. MR. WILLIAMS, HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE COMMISSION?

A. Yes. I testified in this docket regarding the Twenty-sixth and Twenty-seventh Semi-annual Reports.

Q. MR. HASWELL, PLEASE SUMMARIZE YOUR EDUCATION AND PROFESSIONAL EXPERIENCE.

A. I graduated from the University of Alabama at Birmingham with a Bachelor of Science degree in Mechanical Engineering and a Master of Science degree in Civil Engineering (Construction Management focus). I completed a Master of Business Administration at Augusta University and am a licensed Professional Engineer. I joined Southern Company as an Engineer in Southern Company Services Research and Technology Management focusing on new technology deployment in the existing operating fleet. I held multiple Team Leader roles in the areas of Maintenance, Engineering, and Compliance at Alabama Power Company's Plant Gorgas. In 2012, I moved to Plant Vogtle Units 3 and 4 in the Construction Compliance organization and later to the role of Construction Compliance Supervisor for the Turbine Island and Balance of Plant. I am currently the Project Oversight Director with responsibility for regulatory filings for the Project, compliance with Georgia Power's loan guarantee with the DOE, Project oversight, risk management, and lead interface with the Commission Staff, Construction Monitor, and the other Project Owners (Oglethorpe Power Corporation, the Municipal Electric Authority of Georgia, and Dalton Utilities, through the Board of Water, Light and Sinking Fund Commissioners of the City of Dalton) (collectively, the "Owners").

Q. MR. HASWELL, HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE COMMISSION?

A. Yes. I testified in this docket regarding the Thirteenth, Fourteenth, Fifteenth, Seventeenth, Eighteenth, Nineteenth, Twentieth/Twenty-first, Twenty-second, Twenty-third, Twenty-fourth, Twenty-fifth, Twenty-sixth and Twenty-seventh Semi-annual VCM Reports.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of our testimony is to support the Twenty-eighth Semi-annual Vogtle Construction Monitoring Report ("VCM 28 Report"), which presents $461 million in capital expenditures invested between July 1, 2022, and December 31, 2022 (the "Reporting Period") for Commission review.

Our testimony will demonstrate Georgia Power's commitment to bringing this 60 to 80-year, carbon- and emission-free generation technology online. We will also provide an update on current Project status as well as the current Project cost and schedule.

Q. WHAT PERIOD DOES THE TWENTY-EIGHTH VCM REPORT COVER?

A. The VCM 28 Report, incorporated herein by reference, covers the period between July 1, 2022, and December 31, 2022.

II. PROJECT COST

Q. WHAT IS THE CURRENT STATUS OF THE PROJECT'S ESTIMATED COST?

A. The Company's projected share of the total Project cost forecast is $10.2 billion, the same as reported in the VCM 28 Report. Georgia Power invested $461 million of capital expenditures during the Reporting Period, bringing Georgia Power's cumulative capital investment in the Project through the close of the Reporting Period to approximately $9.4 billion, after accounting for Georgia Power's portion of the Toshiba Parent Guaranty (less the costs associated with securing the Parent Guaranty payment and the customer refunds

totaling approximately $188 million). Georgia Power's investment in the Project has been prudently incurred and complies with the Certificate.

Q. PLEASE ELABORATE ON GEORGIA POWER'S ACTUAL EXPENDITURES DURING THE REPORTING PERIOD.

A. The following table identifies the breakdown of Georgia Power's $461 million of actual expenditures during the Reporting Period.

Construction & Capital Cost	VCM 28 (in millions)
Original EPC	$ -
Interim Payments & Liens	0
Site Construction Management	
Engineering Contractor	48
Procurement	57
Contract Construction	181
Construction Support & Project Management	95
Total Site Construction Management	**381**
Owners Costs	55
Ad Valorem	24
Transmission Interconnection	0
Test Fuel Offsets	-
Total Construction & Capital Cost	**$ 461**

Q. WHAT IS THE COMPANY REQUESTING OF THE COMMISSION REGARDING THE $461 MILLION?

A. The Company is presenting the $461 million to the Commission for review only and is not requesting verification and approval of the expenditures at this time.

Q. **WILL THE COMPANY REQUEST VERIFICATION AND APPROVAL OF THIS AMOUNT AT A FUTURE DATE?**

A. As stated in the stipulation adopted by the Commission in its VCM 24 Order, the Company may request verification and approval of these costs at a later date, but not prior to the prudency review contemplated by the VCM 17 Order. That decision has not yet been made and will not be made until closer to that time.

III. PROJECT STATUS

Q. WHAT IS THE CURRENT STATUS OF THE PROJECT?

A. As discussed in the VCM 28 Report, the Project team continues its work promoting a safety-first culture. Since experiencing a Lost Time Accident in February 2023, the continued focus on safety has trended the Total Recordable Incident Rate back below the Project's target rate, which remains well below the heavy construction industry average. Site leadership continues to emphasize the importance of safety onsite.

Since the filing of the VCM 28 Report, the Project Team has made significant progress in the start-up testing of Unit 3. At the time the VCM 28 Report was filed, the Unit was in Mode 3, with preparations being made to progress into Mode 2 and Initial Criticality. Initial Criticality was achieved on March 6, 2023. Safely achieving Initial Criticality represents a significant milestone for the Operations Team, as the nuclear chain reaction in the reactor was both initiated and became self-sustaining. Initial criticality represents a major step in the Unit's start-up process and is required to generate sufficient heat and steam to produce electricity. Unit 3 continues its progression through Power Ascension testing, during which

the Unit will be put through several power plateaus. On April 1, 2023, the Project team successfully synchronized the Unit 3 generator to the power grid and generated electricity for the first time. Unit 3 has completed testing at 25% and 50% reactor power levels and, as of the end of April generated approximately 125,000 gross megawatts of electricity. Currently, the Unit is in the Power Ascension testing plateau at 75% power.

The final major milestone for Unit 3 will be Commercial Operation, which is projected in June 2023. The steps to achieving Commercial Operation are summarized later in this testimony.

For Unit 4, the Project team started Hot Functional Testing ("HFT") on March 20, 2023. During HFT, Unit 4 progressed through testing at various temperature and pressure plateaus to ensure the Unit performed according to design, without fuel in the reactor. Unit 4 completed HFT on May 1, 2023, within the established 46-day testing schedule. This level of success can be attributed to the lessons learned and experience gained by the Project Team during Unit 3 HFT.

IV. STATUS OF PROJECT SCHEDULE

Q. WHAT IS THE CURRENT PROJECTED IN-SERVICE DATE FOR UNIT 3?

A. Unit 3's projected in-service date is during June 2023, consistent with the timing in the VCM 28 Report. Achieving Unit 3's schedule primarily depends on the progression of final Start-up testing, which may be impacted by further equipment, component, and/or other operational issues and challenges.

Q. HOW HAS UNIT 4 PROGRESSED SINCE THE VCM 28 REPORT?

A. Unit 4's projected in-service date during late fourth quarter 2023 or the first quarter 2024 has not changed since the VCM 28 Report was filed. The Project team continues to work towards a more aggressive site work plan that currently targets a fourth quarter 2023 in-service date. Unit 4's projected in-service date primarily depends on potential impacts

arising from Unit 4 testing activities overlapping with Unit 3 start-up and commissioning; maintaining overall construction productivity and production levels, particularly in subcontractor scopes of work; and maintaining appropriate levels of craft laborers.

Project leadership continues to believe that working toward an aggressive schedule is the best strategy to maintain the focus and drive of the Project, identify and mitigate risks early, and ultimately support the Project's objective of safely and successfully reaching Commercial Operation.

The table below shows a comparison of milestone dates between the current Unit 4 site work plan and the projected timing of milestones included in the Risk Adjusted Schedule.

Unit 4 Comparison to Risk Adjusted Schedule		
Unit 4 Major Milestone	**April 2023 Site Work Plan**	**December 2023 / March 2024 Risk Adjusted Schedule**
Cold Hydro Testing	December 2022 (Actual)	
Hot Functional Testing Start	March 2023 (Actual)	
Fuel Load Start	July 2023	July 2023 - October 2023
Commercial Operation Date	November 2023	December 2023 - March 2024

V. CONSTRUCTION AND TESTING PROGRESS

Q. HOW IS CONSTRUCTION PROGRESSING AT THE SITE?

A. As of the end of March 2023, total construction on the Project is approximately 99% complete after including site-specific Balance of Plant ("BOP") structures. BOP scope is largely complete, and Unit 3 direct construction, consisting of Bechtel's current scope of work, is 100% complete. Remaining work on Unit 3 is managed by the Southern Nuclear maintenance organization and their subcontractors. This remaining work includes post

Start-up testing adjustments to system line-ups, as well as support to troubleshoot and correct testing deficiencies. Unit 4 direct construction is approximately 99% complete, with electrical commodity installation and subcontract scopes remaining as the primary areas of focus.

Q. WHAT IS THE STATUS OF UNIT 3 START-UP?

A. Since the filing of the VCM 28 Report, the Project team has made progress with the start-up testing of Unit 3. At the time the Report was filed, the Unit was in Mode 3, with preparations being made to progress into Mode 2 and Initial Criticality. Initial Criticality was achieved on March 6, 2023. Unit 3 is progressing through Power Ascension testing, during which the Unit successfully synchronized to the grid and generated electricity for the first time, and additionally completed 25% power level testing, Load swing testing, and 50% power level testing. Unit 3 is going through testing at the 75% power level.

The next major milestone for Unit 3 will be Commercial Operation, which is projected in June 2023.

Q. PLEASE DESCRIBE THE CHALLENGES FACED DURING UNIT 3 START-UP AND COMMISSIONING.

A. As Unit 3 entered start-up testing, Operators utilized general operating procedures for the first time to transition the plant from cold shutdown to initial criticality, synchronize the Unit to the grid, and achieve Power Ascension through multiple steps, ultimately raising power to 75%.

During the Power Ascension testing, Unit 3 encountered three challenges that resulted in unplanned reactor trips. The first reactor trip occurred on March 15, 2023. While Unit 3 was in Mode 1 at roughly 18% power and was preparing to sync to the grid, the reactor safety systems engaged and automatically shut down the reactor due to the loss of two of the four reactor coolant pumps. The loss of the reactor coolant pumps was triggered by a

relay failure on the electrical bus supplying power to the two pumps to switch power from the Unit Auxiliary Transformers ("UAT") to the Reserve Auxiliary Transformers ("RATs"). The Operations team, utilizing their training and procedures, successfully responded to the event and stabilized the plant. Through a site investigation, it was determined that the current transformers for the excitation transformer needed modifications and the Project team took action to correct the issue. The Plant was successfully returned to Mode 1 and synchronized to the grid for the first time on April 1, 2023.

A second reactor trip occurred on April 10, 2023, shortly after Unit 3 completed the 25% power level testing that included a planned plant shutdown and cooldown from the remote shutdown room, which was completed successfully. Following the test, Unit 3 was restarted and in the process of reconnecting to the grid. With Unit 3 in Mode 1 at 18% power and connected to the grid, a switchyard breaker was opened to disconnect the plant from the grid and place the unit in "Island Mode". Island Mode is a unique feature of the AP1000 that allows the plant to continue to operate and supply power to the unit while disconnected from the electric grid. Upon entering Island Mode, the turbine control valves started actions that lowered the speed of the turbine and subsequently lowered the voltage on the plant's electrical system. These actions ultimately resulted in reducing RCP speeds and lowered reactor coolant flow in the reactor. Upon detecting the lowering reactor coolant flow, the Reactor Protection System safely shutdown the reactor. Upon investigation, it was found that the turbine control valves settings for Island Mode caused a lowering of steam flow and needed to be adjusted. This was the first time that Island Mode had ever been initiated with this turbine control system for a Toshiba turbine. The Project team implemented several adjustments prior to bringing Unit 3 back to Mode 1.

A third reactor trip occurred on May 2, 2023, when a loss of two feedwater heater strings caused an automatic turbine trip, then a subsequent manual reactor trip occurred due to loss of feedwater suction pressure. As of the time of this filing, this reactor trip is still under investigation.

Unit 3 is currently testing at the 75% power plateau to continue to ensure both primary and secondary systems are fully tested and ready for reliable dispatch prior to declaring Commercial Operation.

As stated previously, while not expected, it is possible the Project will experience unanticipated challenges that could impact the forecasted in-service dates due to the first of a kind technology.

Q. WHAT IS THE PROCESS FOR DECLARING COMMERCIAL OPERATIONS FOR UNIT 3?

A. Commercial Operation for Unit 3 will not be declared for rate recovery purposes unless and until Unit 3 completes all appropriate preoperational tests and power ascension testing and completes any necessary remediation required for safe and reliable operation. Once these requirements are met, Southern Nuclear will notify the Company that the unit is available for dispatch. The Company will then notify this Commission that the unit is Commercially Operational.

Once Unit 3 has completed testing and is fully dispatchable at the stated net electrical output of 1,102 megawatts, no further action or proceeding will be required for the Company to adjust rates pursuant to the Final Order in the Unit 3 Rate Adjustment Application.

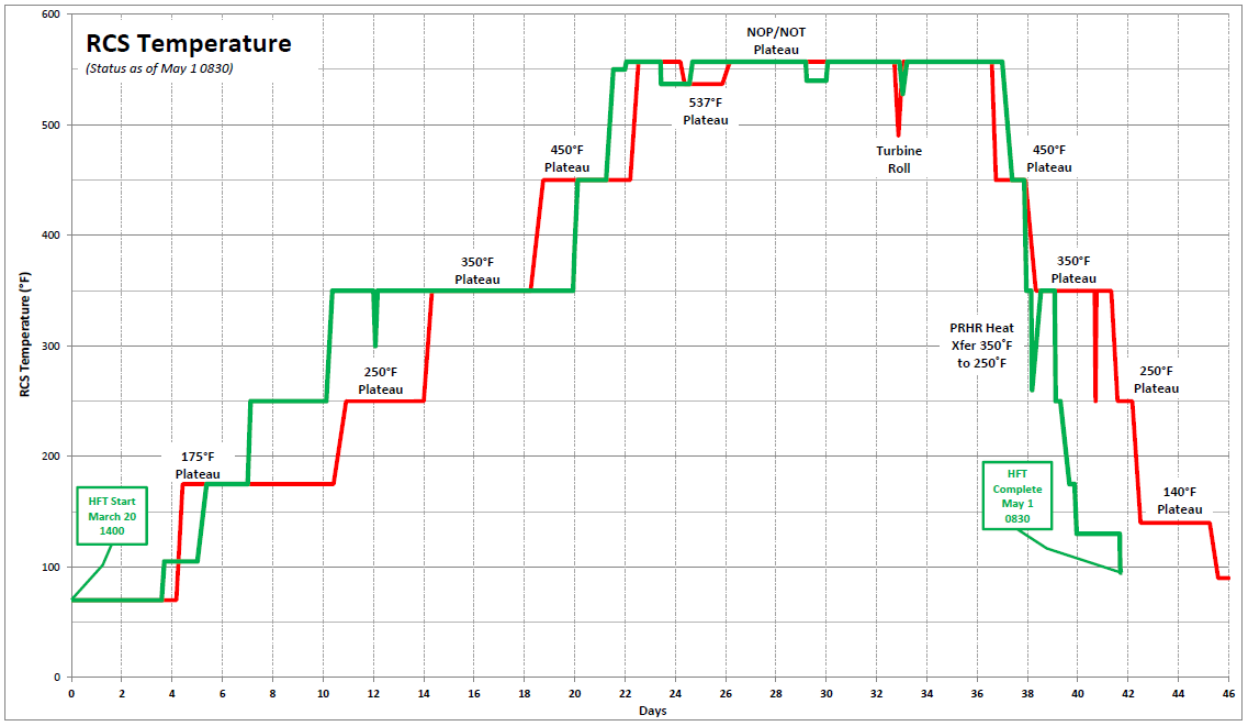
Q. PLEASE DISCUSS THE PROGRESS OF SYSTEM TURNOVERS AND TESTING FOR UNIT 4.

A. Unit 4 is outpacing Unit 3 at a similar point with both system turnovers and testing. All systems identified to be subject to Hot Functional Testing activities have been turned over and as of the end of April, six systems remain to be turned over for Unit 4. The pace of room and area turnover continues to increase. Since the six-month reporting period and

through the end of April, a total of 108 rooms and areas were turned over to Operations. Additionally, the transition of systems to Operations has started with one system being transitioned to Operations. The pace of system, area and room turnovers is expected to continue to increase as Unit 4 progresses toward Fuel Load. Fuel receipt on Unit 4 started on May 3, 2023.

Q. WHAT IS THE STATUS OF HOT FUNCTIONAL TESTING ON UNIT 4?

A. The Project team started HFT on March 20, 2023. The Unit 4 Operations team was successful in progressing through the testing at various temperature and pressure plateaus in line with the Project's 46-day testing plan. The success of Unit 4 HFT is directly attributable to the lessons learned during Unit 3 HFT and the experience gained by the Project team during that process. While expected, there have been a few challenges during the HFT process, the Project team has been able to efficiently resolve each of those identified challenges. HFT was completed on May 1, 2023.



Unit 4 Hot Functional Testing Profile

Q. PLEASE PROVIDE AN UPDATE ON THE STATUS OF THE UNIT 4 ITAAC SUBMITTALS.

A. All Unit 4 Uncompleted ITAAC Notifications ("UINs") have been submitted. As discussed in prior testimony, ITAAC Closure Notifications ("ICNs") for both units have been and will be submitted following satisfaction of the acceptance criteria in the ITAAC. Through April 30, 2023, 261 of 393 Unit 4 ICNs have been submitted. The pace of ICN submittals continues to be ahead of that experienced in Unit 3.

VI. PROJECT CHALLENGES

Q. WHAT ARE THE PRIMARY CHALLENGES FACING THE PROJECT TODAY?

A. Challenges on the Project continue to evolve as the Project moves toward completion. For

Unit 3, the Project team has worked through challenges in progressing through Power Ascension testing for a first of a kind power plant, and the plant started operating at 75% power for the first time on May 1, 2023. These challenges will continue as we progress further into testing, bring new systems into service at higher power levels, and conduct the significant dynamic tests that are scheduled for the end of commissioning. Despite these challenges, Unit 3 is performing well, has demonstrated that the unit's primary coolant systems and steam supply systems are operating well, and can produce electricity.

For Unit 4, completion of documentation continues to be a focus for the Project team with the review and closure of required documentation as related work is done. As Unit 4 prepares for Fuel Load, final construction associated with system area and room turnovers will require Project management attention, as will subcontractor scopes of work, especially in the areas of coatings and penetration seals. With major testing evolutions upcoming, continued implementation of the lessons learned on Unit 3 will benefit the Testing and Operations teams in coming months. The Project team continues to prioritize safety and quality ahead of schedule and is working closely with Bechtel and subcontractors to support their efforts to increase production in a safe and quality manner.

VII. CONCLUSION

Q. HOW WOULD YOU DESCRIBE THE PROGRESS DURING THE REPORTING PERIOD?

A. The Project team remains committed to safely bringing both Units online. We are excited that Unit 3 is projected to achieve Commercial Operation in the near future, which will benefit our customers and the citizens of Georgia by providing a clean, safe, and reliable source of power for the next 60 to 80 years. Project Leadership continues to focus on Unit 4 to implement lessons learned from Unit 3, which was best demonstrated by the completion of Unit 4 HFT in less than 42 days, more than four days ahead of the Project's 46-day schedule. Additionally, the Project remains focused on completion of documentation closure, final system turnovers, successful fuel receipt, completion of

electrical commodity installations, and submittal of remaining ITAACs; which will all support Fuel Load in the coming months.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.

CERTIFICATE OF SERVICE

I hereby certify that I have this day served a copy of the within and foregoing DIRECT TESTIMONY OF JOHN B. WILLIAMS AND JEREMIAH HASWELL ON BEHALF OF GEORGIA POWER COMPANY IN DOCKET NO. 29849 upon all parties listed below via electronic service or by hand delivery and addressed as follows:

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This 5th day of May 2023.

Steven J. Hewitson
Attorney for Georgia Power Company

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