

**BEFORE THE
GEORGIA PUBLIC SERVICE COMMISSION**

**IN THE MATTER OF GEORGIA POWER
COMPANY'S TWENTY-SECOND SEMI-ANNUAL
VOGTLE CONSTRUCTION MONITORING REPORT**

DOCKET NO. 29849

**DIRECT TESTIMONY
AND EXHIBITS
OF
STEVEN D. ROETGER
WILLIAM R. JACOBS, JR., PhD.**

**ON BEHALF OF THE
GEORGIA PUBLIC SERVICE COMMISSION
PUBLIC INTEREST ADVOCACY STAFF**

JUNE 5, 2020

1

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11 **Exhibits:**

12 STF-SDR-1 Resume of Steven D. Roetger

13 STF-WRJ-1 Resume of William R. Jacobs, Jr., Ph.D.

14

I. INTRODUCTION

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

A. My name is Steven D. Roetger. I am the lead analyst for the Georgia Public Service Commission (“Commission”) Staff Public Interest Advocacy Team for the Vogtle Construction Monitoring Docket 29849. My business address is 244 Washington Street, S.W., Atlanta, Georgia, 30334. My name is William R. Jacobs, Jr., Ph.D. I am an executive consultant with GDS Associates, Inc. My business address is 1850 Parkway Place, Suite 800, Marietta, Georgia, 30067.

Q. MR. ROETGER, PLEASE SUMMARIZE YOUR EDUCATIONAL BACKGROUND AND EXPERIENCE.

A. I hold a Bachelor of Business Administration degree from Georgia State University. I have been employed by the Georgia Public Service Commission since September of 2008, primarily in the capacity as the Staff team leader for monitoring the Plant Vogtle Unit 3 and 4 Project under Docket 29849. Also, I was a member of the Public Interest Advocacy Staff team for the Plant Vogtle Unit 3 and 4 Certification (Docket 27800), and a Commissioner Advisory Staff team member for various other proceedings. Prior to joining the Commission, I held various positions in either an accounting or finance capacity for firms in different industries. My resume is included in Exhibit STF-SDR-1.

1 **Q. DR. JACOBS, PLEASE SUMMARIZE YOUR EDUCATIONAL**
2 **BACKGROUND AND EXPERIENCE.**

3 **A.** I received a Bachelor of Mechanical Engineering in 1968, a Master of Science in
4 Nuclear Engineering in 1969 and a Ph.D. in Nuclear Engineering in 1971, all from
5 the Georgia Institute of Technology. I am a registered Professional Engineer and a
6 member of the American Nuclear Society. I have more than forty years of
7 experience in the electric power industry including more than twelve years of
8 nuclear power plant construction and start-up experience. I have participated in the
9 construction and start-up of seven nuclear power plants in this country and
10 overseas in management positions including start-up manager and site manager.
11 As a loaned employee to the Institute of Nuclear Power Operations (“INPO”), I
12 participated in the Construction Project Evaluation Program, performed operating
13 plant evaluations and assisted in development of the Outage Management
14 Evaluation Program. Since joining GDS Associates, Inc. in 1986, I have
15 participated in rate case and litigation support activities related to power plant
16 construction, operation and decommissioning. I have evaluated nuclear power
17 plant outages at numerous nuclear plants throughout the United States. I served on
18 the management committee during construction of Plum Point Unit 1, a 650
19 Megawatts Electric (“MWe”) coal fired power plant. As a member of the
20 management committee, I assisted in providing oversight of the Engineering,
21 Procurement and Construction (“EPC”) contractor for this Project. I have assisted
22 the Georgia Public Service Commission as the Independent Construction Monitor

1 in providing oversight of the Vogtle 3 and 4 Project since August 2009. My
2 resume is included in Exhibit STF-WRJ-1.

3
4 **Q. WHOM ARE YOU REPRESENTING IN THIS PROCEEDING?**

5 **A.** We are representing the Commission's Public Interest Advocacy Staff ("Staff")
6 team in this matter.

7
8 **Q. MR. ROETGER, WHAT IS YOUR INVOLVEMENT WITH THE VOGTLE**
9 **3 AND 4 PROJECT?**

10 **A.** Since Docket No. 27800, I have been directly involved in the oversight of the Plant
11 Vogtle Unit 3 and 4 Project ("Project") as lead analyst of the Staff Team. I have
12 closely monitored the Project with Dr. Jacobs since certification. Among other
13 oversight, along with Dr. Jacobs, I monitor the Project areas that either have
14 realized schedule delays or show a risk of potentially experiencing delay or
15 increased Project cost. I have testified in the Eighth through the Twentieth/Twenty
16 First Semi-Annual Vogtle Construction Monitoring ("VCM") proceedings.

17
18 **Q. DR. JACOBS, WHAT IS YOUR INVOLVEMENT WITH THE VOGTLE 3**
19 **AND 4 PROJECT?**

20 **A.** I am the Commission's Independent Construction Monitor ("CM") for the Project.
21 My duties are to assist the Staff Team in its regulatory oversight of all aspects of
22 the Project and to keep the Commission informed of significant Project issues or
23 changes in the Project forecast Cost and Schedule as they occur. In addition, I

1 keep the Commission informed of significant challenges to the Project that could
2 impact the Project forecast Cost and/or Schedule. I have presented testimony in
3 the Plant Vogtle Unit 3 and 4 Certification (Docket 27800) and the First through
4 the Twentieth/Twenty-First Semi-Annual VCM ("20/21 VCM") proceedings
5 describing the construction monitoring activities, the status of the Project and any
6 concerns or significant issues.

7
8 **Q. WHAT IS YOUR ASSIGNMENT IN THIS PROCEEDING?**

9 **A.** Our assignment is to present the results of the Staff's oversight from certification
10 of the Project to the present with emphasis on the time period covered by the
11 Twenty-Second Semi-annual VCM Report ("22 VCM"), July 1, 2019 to December
12 31, 2019. In this testimony, we present our analysis of the current status of the
13 Project and discuss at a high level the status of the most recent forecast Schedule
14 and Cost provided by the Company and identify risks and areas of concern for the
15 Project. Details of the schedule and cost analyses are provided in the testimony of
16 Mr. Donald Grace. Finally, we make a recommendation regarding Georgia Power
17 Company's ("Company") request for verification and approval of costs incurred
18 during the Twenty-Second Semi-annual VCM Report period in the amount of \$674
19 million.

20
21 **Q. PLEASE DESCRIBE THE CONSTRUCTION MONITORING PROGRAM**
22 **THAT THE STAFF TEAM HAS IMPLEMENTED TO MONITOR THE**
23 **CONSTRUCTION OF THE VOGTLE 3 AND 4 PROJECT.**

1 **A.** As described in prior VCM testimonies, the Staff Team continues to actively
2 monitor the Project. Monitoring activities include monthly meetings between Staff
3 and Company personnel to discuss Project status and regular trips to the Vogtle
4 Project site to observe the Monthly Project Review (“MPR”) meeting and to
5 witness firsthand construction activities’ progress. We review the Company’s
6 Weekly Metrics reports, Monthly Update Reports including addenda, and submit
7 data requests to the Company for additional information. The Team has continued
8 its review of the Company’s process for handling Project invoices from WEC¹ and
9 Bechtel², and other Company contractors. This includes review of the Project cost
10 control procedures and sampling of processed invoices. Please refer to the
11 Shemetha Q. Jones testimony for further details. Other activities conducted by the
12 Staff Vogtle Construction Monitoring Team include:

- 13 • Review of Monthly status reports issued by Bechtel and Westinghouse;
- 14 • Review of the Company’s Semi-Annual VCM Reports;
- 15 • Preparation of discovery requests for additional information as needed
16 following review of the monthly status reports, semi-annual
17 construction monitoring reports or meetings with the Company;
- 18 • Monitoring of daily Plan of the Day meetings via teleconference;
- 19 • Attendance at management briefings by the Vogtle Construction
20 Review Board;

¹ Westinghouse provides the engineering, design, and applicable analyses for the Design Certification Document (“DCD”).

² Bechtel is the construction contractor.

- Participation in Nuclear Regulatory Commission (“NRC”) public meetings in person and via conference call as appropriate;
- Review of public correspondence between the Company and the NRC;
- Review of correspondence between the Contractor and the Company;
- Review of trade articles and journals related to new nuclear power plant development;
- Witnessing significant construction activities.

In addition, as described in our testimony in the Twentieth-Twenty First VCM , the Vogtle Project monitoring activities by Staff and the Construction Monitor have been augmented by the addition of the Vogtle Monitoring Group (“VMG”) personnel to the Staff team. VMG activities include a full-time experienced construction manager stationed at the Vogtle site and detailed schedule and cost analyses as presented in Mr. Grace’s testimony.

Q. WHAT TIME PERIOD BEYOND DECEMBER 2019 DOES YOUR TESTIMONY COVER AND WHY?

A. The results of our monitoring includes the January through mid-March, 2020 time period. Staff typically provides analyses through the most recent available data points, however due to the ongoing COVID-19 virus situation which began impacting the Project in mid-March of 2020, and the tremendous uncertainty the virus brings, Staff *has excluded any impacts of the virus* in our analyses.

Q. TO BE CLEAR, IS IT CORRECT THAT ALL YOUR CONCLUSIONS THEREFORE EXCLUDE ANY IMPACTS OF THE COVID-19 VIRUS?

1 **A.** That is correct.

2

3 **Q. HAS STAFF’S STANDARD FOR EVALUATING THE PERFORMANCE**
4 **OF SNC AND GEORGIA POWER COMPANY CHANGED AS A RESULT**
5 **OF COVID-19?**

6 **A.** No. Under all circumstance Staff uses the reasonableness and prudence standards
7 as dictated by statute.

8 **II. PROJECT STATUS**

9 **Q. PLEASE DESCRIBE THE CURRENT STATUS OF THE PROJECT.**

10 **A.** Construction continues on the Vogtle Project with SNC’s emphasis being focused
11 on completion of systems for turnover to the Initial Test Program (“ITP”) Group.
12 Through March 2020, the total Project is reported to be 85.7% complete based on a
13 weighted average of the Project components as shown below:

<u>Project Phase</u> (Weight)	<u>March 2020</u>
Engineering	99.9%
Procurement	98.9%
Construction <i>Bechtel Direct Scope</i> <i>Direct Subcontracts</i>	<i>81.2%</i> <i>Direct:79.7%</i> <i>Subs:84.1%</i>
I&C/Cyber Security Design	99.6%

Initial Test Program	20.4%
Total Project	85.7%

1 Note that when planned values were last reported in January 2020, Actual Total
2 Project percent complete was 2.2% less than the Plan (Plan at 85.7% vs Actual at
3 83.5%). Plan percentages are not presented in the above table because they were
4 not provided by SNC in the months of February and March, 2020 due to the fact
5 that the February 2020 Refinement (schedule) was still ongoing.

6
7 **Q. HAS THE PROJECT ACCOMPLISHED MAJOR CONSTRUCTION**
8 **MILESTONES DURING THE 22nd VCM PERIOD?**

9 **A.** Yes, several significant construction milestones have been accomplished during
10 the 22nd VCM period. These milestones include:

- 11 • Set Unit 3 Conical Roof structure on top of the Shield Building;
- 12 • Unit 3 Main Control Room declared to be ready to support testing;
- 13 • Installed Reactor Coolant Pump Variable Frequency Drive Units;
- 14 • Set Unit 4 third Containment Vessel Ring;
- 15 • Installed Unit 4 Passive Residual Heat Exchanger;
- 16 • Set and placed Unit 4 Shield Building concrete in courses 7 and 8.

17 However, in spite of achieving these construction milestones, construction
18 progress on the Project continued to fall behind the production needed to achieve
19 the April 2019 Baseline with a Unit 3 COD of May 23, 2021. We continue to have
20 many concerns with the SNC's ability to meet the required production for both the

1 aggressive site plan of May 21/22 and the November 21/22 regulatory cost and
2 schedule while using a highly focused system completion and turnover strategy.
3 As discussed in the next section of this testimony, the schedule challenges to
4 construction production and system turnover necessitated the development of a
5 new baseline schedule in early 2020 referred to as the February 2020 Refinement.
6

7 **Q. DOES SNC USE MAJOR MILESTONES TO ASSESS AND**
8 **COMMUNICATE PROGRESS ON THE PROJECT?**

9 **A.** Yes. At the end of each year SNC develops a series of major quarterly milestones
10 that are to be met the following year.
11

12 **Q. DOES STAFF CONTINUE TO HAVE ANY CONCERNS WITH THE USE**
13 **OF “START” MILESTONES AS A PRIMARY MEANS OF**
14 **DETERMINING THE STATUS OF WORK COMPLETED ON THE**
15 **PROJECT?**

16 **A.** Yes. As we discussed in our VCM 20/21 testimony, Staff continues to believe that
17 a “start” milestone is not a reliable indicator of the status of the Project. In our
18 testimony in VCM 20/21 we discussed the ‘Start of Integrated Flush’ as a Major
19 Milestone to be accomplished in the third quarter of 2019. SNC did meet this
20 Major Start Milestone in August 2019. However, completion of Integrated Flush
21 with the exception of Flush Path 7 was planned for mid-October 2019. At this
22 time, some six months later, Integrated Flush with the exception of Flush Path 7 is
23 still not complete as of the date of this testimony. This is just one example that

1 demonstrates Staff's position that a milestone based on the start of a critical
2 activity rather than the completion of that activity does not provide an accurate
3 status of the Project.

4
5 Other Major Unit 3 Start Milestones used by SNC that did not provide sufficient
6 data to assess construction progress are as follows:

- 7 • Start Initial Energization
- 8 • Start Open Vessel Testing
- 9 • Start Main Control Room
- 10 • Conduct First Pre-Operational Test

11
12 **Q. WHAT DOES STAFF RECOMMEND AS BETTER INDICATORS OF**
13 **PROJECT STATUS?**

14 A. No single indicator can completely describe the status of the Vogtle Project. The
15 best indicators depend to some degree on the stage of the Project. For example,
16 during bulk construction the best indicators are the amount of a given commodity
17 installed compared to the planned installation curve. While milestone start and
18 completion dates provide a very high-level indicator of status, at the current stage
19 of Vogtle Unit 3, Staff believes that the status of planned system turnovers
20 compared to actual system turnovers is a better indicator of overall Project status.
21 For example, the first draft the February 2020 Refinement showed 43 system and
22 partial system turnovers on Unit 3 planned in April, 2020. The turnover forecast
23 provided to Staff in the Vogtle Project Management Board slides dated April 30,

2020 indicated a forecast of 16 system turnovers in April, 2020 and 38 system turnovers in May, 2020. The actual number of systems turned over in April was only 3. This clearly shows the continuing delays in completing construction of systems for turnover to ITP. As the Project moves forward, the planned completion of preoperational tests to actual completion of preoperational tests will also be a good indicator of Project status.

Q. IS IT CORRECT THAT SNC IMPLEMENTED A PROJECT-WIDE COMPLETION STRATEGY PRIMARILY FOCUSED ON THE TURNOVER OF SYSTEMS FOR THE ITP GROUP IN EARLY 2019?

A. That is correct. This strategy continues to this day.

Q. WHAT DOES STAFF BELIEVE IS SNC'S RATIONALE FOR THIS STRATEGY?

A. It is Staff's understanding that SNC's strategy for managing completion of the Project appears to be based on two fundamental principles:

1. Working to a very aggressive (in Staff's view unachievable) schedule provides margin to completing the Project by the regulatory November 2021 COD.
2. It is better to "fail early." That is, the Company believes it is better to identify any significant problems as early as possible to provide time to resolve them.

While these principles have some merit, when taken to the extreme as on the Vogtle Project, they have a significant negative impact on the efficiency of

1 construction and, in fact, result in the exact opposite of their intended result – later
2 Project completion. We discuss the impacts of working to a very aggressive
3 schedule later in our testimony. From a high level, adopting the aggressive
4 schedule in effect determines the dates for the major milestones of CHT, HFT and
5 Fuel Load. To meet these early milestone dates, the entire Project must focus on
6 a narrow scope of work which only supports these milestone dates. Rather than
7 staying in bulk construction which would be more efficient, this work is done
8 piecemeal as needed to make the milestones. Cables are pulled individually
9 rather than in bulk. Construction efforts are interrupted and redirected frequently
10 to meet the needs of ITP. System ownership is transferred back and forth
11 between Construction and ITP to allow Construction to finish the work. Systems
12 are broken down into smaller and smaller partial turnover packages. The net
13 result of these actions by SNC is the actual CODs are later than what would have
14 occurred absent the adoption of the very aggressive schedule and at a significantly
15 higher cost due to the inherent inefficiencies described above.

16
17 **Q. WHAT IS THE PRIMARY DRIVER FOR THE CONSTRUCTION**
18 **SCHEDULE?**

19 **A.** The primary driver of the construction schedule continues to be Construction
20 meeting the required system turnovers to ITP.

21
22 **Q. HOW HAS THIS FOCUS ON SYSTEM TURNOVERS IMPACTED THE**
23 **PROJECT?**

A. The construction focus on system turnovers continues to negatively impact the SNC's ability to meet the required earned hours to support the Project Schedule. As discussed in 20/21 VCM, work related to system completion is tedious and typically results in fewer earned hours. The most efficient approach to earning hours is in bulk construction where, for example, all the electrical cables needed in a given *area* are pulled at the same time rather than pulling just a few cables needed for a specific system turnover.

Q. DOES STAFF GENERALLY BELIEVE THIS TO BE A SUCCESSFUL STRATEGY?

A. No. As an example, please refer to the Table 1. On average, the five critical milestones for Open Vessel Testing ("OVT") were 5.5 months late relative the April 2019 Baseline.

TABLE 1

PARTIAL SYSTEM	TURNOVER DATES PER APRIL 2019 BASELINE	ACTUAL TURNOVER DATE	DAYS LATE
Reactor Coolant System-1 Alpha: RCS-1A	11/6/2019	3/16/2020	131
Compressed Air System-1: CAS-1	10/14/2019	3/19/2020	157
Chemical and Volume Control System-1: CVS-1	10/29/2019	3/24/2020	147
Plant Control System-4: PLS-4	10/26/2019	3/26/2020	152
Passive Core Cooling System-1: PXS-1	8/5/2019	3/28/2020	236

One other partial system, the Steam Generator Blow Down System-1 ("BDS-1"), was scheduled to be turned over on January 9, 2020 but was actually turned over on March 19, 2020, or just over 2 months late.

1

2 **Q. HAS SNC RECOGNIZED THE INEFFICIENCIES OF ITS ITP DRIVEN**
3 **CONSTRUCTION STRATEGY?**

4 **A.** Yes. In SNC's September, 2019 MPR meeting slides SNC states "System focus
5 and drive has led to *more* [emphasis added] construction inefficiency than initially
6 expected" and "Production over the past 3-4 months has created a backlog to the
7 Baseline".

8

9 **Q. PLEASE UPDATE THE TABLE FROM YOUR PREVIOUS VCM**
10 **TESTIMONY TITLED "HOURS AHEAD (BEHIND) PLAN vs.**
11 **MILESTONES MET".**

12 **A.** Yes. Please refer to Table 2³. Please note the quarters are cumulative.

³ This table presented in the 20th/21st VCM excluded data for the month of November and December, 2019.

TABLE 2

Bechtel Direct Scope

Hours Ahead (Behind) Plan vs. Milestones Met

	1st Qtr	2nd Qtr ⁽¹⁾	3rd Qtr	4th Qtr ⁽²⁾
Number of Milestones	4	3	3	5
Met Milestones	4	3	3	4
Cumulative Unit 3 Plan vs. Actual ⁽³⁾	(988,000)	(141,896)	(533,242)	(885,155)
Cumulative Unit 4 Plan vs. Actual	(289,901)	84,610	137,415	(102,764)
Cumulative BOP ⁽⁴⁾ Plan vs. Actual	(28,331)	12,440	88,536	108,199
Total deficit hours	(1,306,232)	(44,846)	(307,291)	(879,720)
Source: Scorecard	3/31/19	6/30/19	9/29/19	1/5/20

⁽¹⁾ April 2019 Baseline; pushed deficit hours to the future; shifted CODs from April to May 2021 and 2022.

⁽²⁾ Cumulative hours through 12/31/2019. Previous testimony included through October 2019 hours.

⁽³⁾ Plan hours; ahead of Plan positive number; behind Plan negative number

⁽⁴⁾ Balance of Plant

As shown on Table 2, all Major Milestones selected by SNC were achieved as of December 31, 2019. However, the backlog of Bechtel Direct hours to complete the Project since the second quarter of 2019 have steadily increased through the end of the year.

Q. WHY DOES THE DEFICIT IN HOURS DECREASE IN THE SECOND QUARTER?

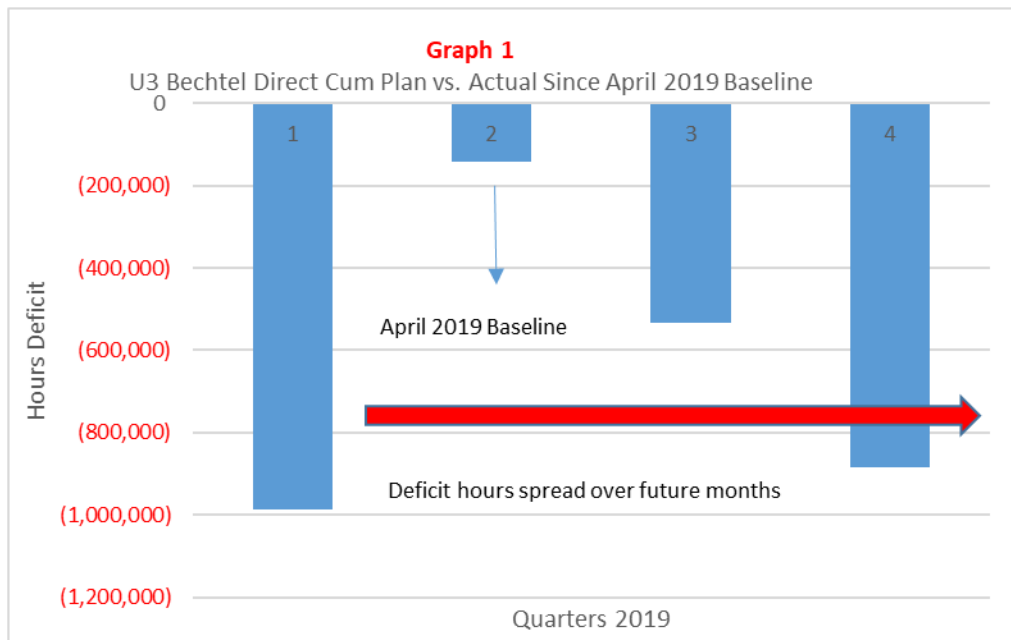
A. This is due to the April 2019 Baseline. The deficit hours prior to the April 2019 Baseline were re-distributed to future months.

1 **Q. DOES STAFF BELIEVE THIS DEFICIT IN EARNED HOURS TO BE**
2 **ACCURATE?**

3 **A.** No. As is shown in the Don Grace VCM 22 testimony, the assumed unit rates in
4 the 2019 Baseline are, for many commodities, understated. If actual experienced
5 unit rates are substituted for the unit rates assumed by SNC, the deficit would be
6 larger. Actual experienced unit rates by commodity are discussed in more detail in
7 the Donald Grace VCM 20/21 testimony. In addition, SNC reports there are over
8 250,000 hours earned against commodities reporting over 100% of the plan,
9 indicating overstated progress.

11 **Q. HOW HAS SNC DEALT WITH PRIOR BACKLOGS AS SHOWN IN**
12 **TABLE 2?**

13 **A.** SNC has dealt with prior backlogs by performing a rebaseline of the work to go
14 that indicates in the management tools that the work can be completed according to
15 the plan. Graph 1 below shows the backlog of hours from the June 2018 Baseline
16 (first quarter) being zeroed out and re-distributed to future months in the April
17 2019 Baseline.



1

2 **Q. WHAT WAS THE BACKLOG IN HOURS FOR SNC AND BECHTEL**
3 **MANAGED SUB-CONTRACTORS AT THE END OF VCM 22?**

4 **A.** Please refer to Table 3. Please note the quarters are cumulative.

TABLE 3

SNC & Bechtel Managed Sub-contractors

	1st Qtr	2nd Qtr ⁽¹⁾	3rd Qtr	4th Qtr ⁽²⁾
Cumulative Unit 3 Plan vs. Actual ⁽³⁾	n/a	(13,205)	(42,517)	(286,336)
Cumulative Unit 4 Plan vs. Actual	n/a	9,032	13,756	(35,474)
Cumulative BOP Plan vs. Actual	n/a	(9,400)	(31,171)	(44,546)
Total deficit hours	0	(13,573)	(59,932)	(366,356)
Source	3/31/19	6/30/19	9/29/19	1/5/20

⁽¹⁾ April 2019 Baseline; pushed deficit hours to the future; shifted CODs from April to May 2021 and 2022.

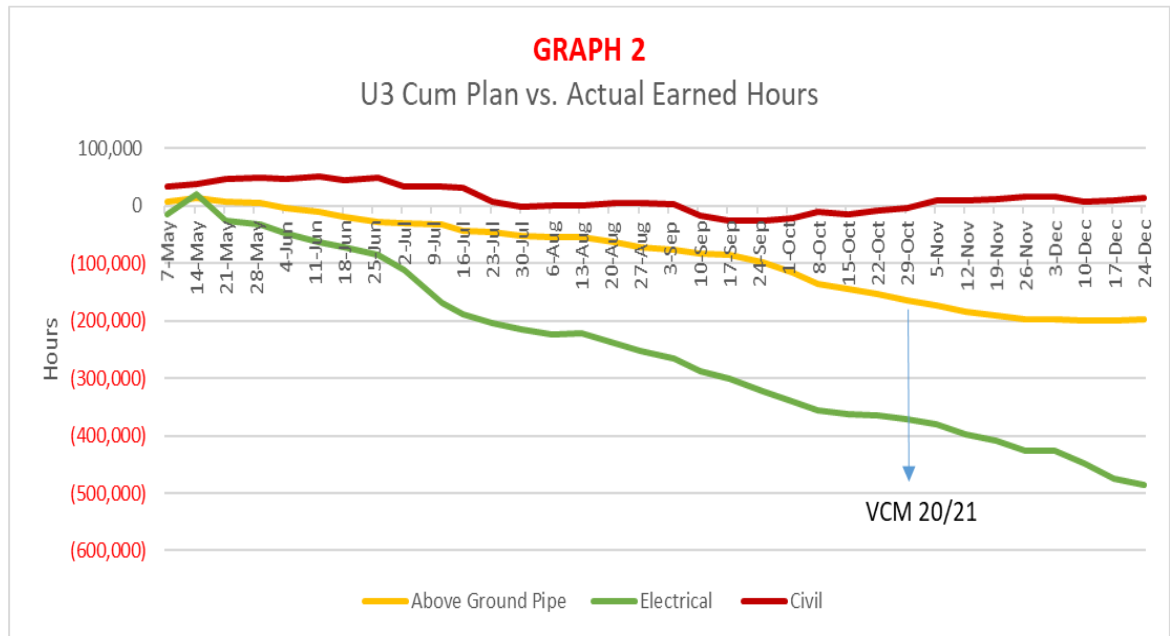
⁽²⁾ Cumulative hours through 12/31/2019. Previous testimony included through October 2019 hours.

⁽³⁾ Plan hours; ahead of Plan positive number; behind Plan negative number

The backlog of SNC and Bechtel managed Sub-contractor hours to complete the Project since the second quarter have steadily increased during 2019 through the end of the year to (366,356) craft hours. By December 31st, 2019 the total deficit hours for both Bechtel direct work and sub-contractor direct work was (1,246,076) hours, which is the sum of the deficit hours in Tables 2 and 3.

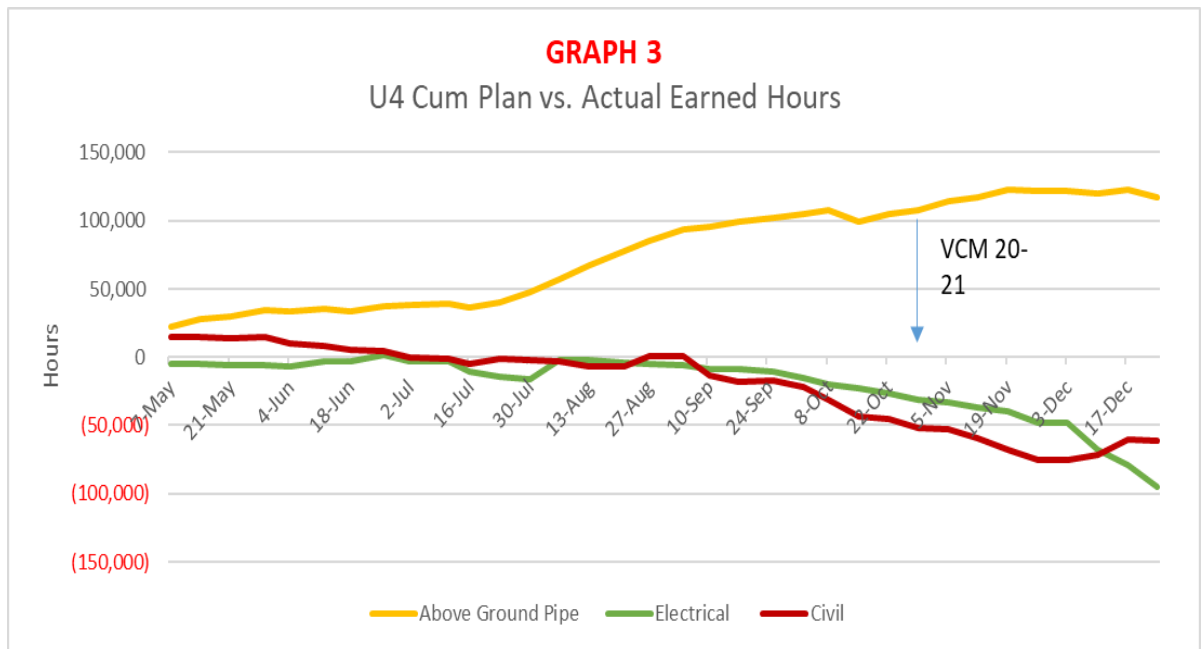
Q. HOW LARGE DID THE DEFICIT FOR UNIT 3 ELECTRICAL, ABOVE GROUND PIPE, AND CIVIL COMMODITIES GROW THROUGH DECEMBER 31ST, 2019 RELATIVE TO THE APRIL 2019 BASELINE?

A. Please see the Graph 2 below. Electrical hours fell approximately 500,000 hours behind, Above Ground Pipe (“AGP”) fell approximately 200,000 hours behind, and Civil met the April 2019 baseline.



Q. HOW LARGE DID THE DEFICIT FOR UNIT 4 ELECTRICAL, ABOVE GROUND PIPE, AND CIVIL COMMODITIES GROW THROUGH DECEMBER 31ST, 2019 RELATIVE THE APRIL 2019 BASELINE?

A. Please see the Graph 3 below. Electrical hours fell approximately 100,000 hours behind, AGP was ahead by approximately 120,000 hours, and Civil was minimally shy of the April 2019 baseline.



Q. BASED ON THE DATA PROVIDED ABOVE DOES SNC’S STRATEGY APPEAR TO BE WORKING?

A. No. Construction turnovers to ITP are significantly late and deferred construction hours continue to grow.

Q. ARE THERE ADDITIONAL DETRIMENTS TO THE PROJECT?

A. Yes. As the Grace testimony shows there is a significant financial cost of this strategy.

III. THE 2020 SCHEDULE REFINEMENT

Q. WHY WAS A NEW SCHEDULE BASELINE NEEDED IN 2020?

1 **A.** As Staff stated in the 20/21 VCM testimony, and has continually stated since the
2 Sixth VCM, and as affirmed in INPO Principle for Excellence in Nuclear
3 Construction No. 4, *schedules must be realistic and understood*. A realistic
4 schedule drives many critical elements of project management including
5 construction priorities, procurement needs and staffing requirements. In addition,
6 comparison of the Project status to a realistic schedule allows SNC to identify
7 problem areas and develop potential proactive mitigation strategies. Without a
8 realistic, achievable schedule, SNC struggles to support all the disciplines needed
9 for the Project. SNC often finds itself fighting fires because long range planning is
10 not effective to identify upcoming problems with sufficient time and resources to
11 take proper corrective actions. By late 2019, it was clear that the Project Schedule
12 was once again not realistic or achievable and thus was not a viable management
13 tool. In addition, Staff believes another consequence of not having a realistic
14 schedule is the difficulty for stakeholders to determine the true completion status
15 of work and the work that remains.

16
17 **Q. WAS THE 2020 SCHEDULE REFINEMENT COMPLETED IN A TIMELY**
18 **MANNER?**

19 **A.** No. At the November 18, 2019 Monthly Project Review Meeting, the Company
20 stated that the 2020 Refinement would be completed in mid-January, 2020.
21 However, the results of the 2020 Refinement were not incorporated in all of the
22 management tools needed to manage the Project until late April, 2020. This led to
23 a confusing situation in that some metrics were reported against the prior April

1 2019 Baseline schedule while others were reported against the 2020 Refinement.

2 All management tools including the Quantity Unit Rate Report⁴ and Scorecard
3 reports did not fully reflect the February 2020 Refinement until late April, 2020.

4
5 **Q. PLEASE DESCRIBE THE RESULTS OF THE 2020 SCHEDULE**
6 **REFINEMENT.**

7 **A.** The 2020 Schedule Refinement maintained the Unit 3 fuel load date of November
8 23, 2020 and the COD of May 23, 2021. The Unit 3 Cold Hydro start date slipped
9 45 days from April 16, 2020 to May 31, 2020 and the Hot Functional Test start
10 date slipped 43 days from June 13, 2020 to July 26, 2020. The significant result of
11 the February 2020 Refinement was to move a large body of work later in the
12 Schedule; it further divided the systems into additional partial turnovers which
13 were then scheduled for completion at a later date (30 partial systems were
14 scheduled for completion post HFT)⁵; and moving approximately 390,000 hours of
15 electrical work to after the start of the Hot Functional Test.

16
17 **Q. IN ITS JULY 30, 2019 REPORT TO THE COMMISSION, STAFF**
18 **IDENTIFIED SEVERAL CONCERNS WITH THE APRIL 2019**

⁴ This report details the planned hours and actual hours to the account level.

⁵ 02-2020 Monthly Project Review package page 39.

1 **BASELINE. HAVE YOU IDENTIFIED SIMILAR CONCERNS WITH THE**
2 **2020 SCHEDULE REFINEMENT?**

3 **A.** Yes. Only four months after issuance of the April 2019 Baseline, Staff was
4 concerned that the April 2019 Baseline was no longer relevant to the Project.
5 Similarly, Staff believes that the February 2020 Refinement will most likely
6 become obsolete in a matter of a few months.

7
8 **Q.** **WHY WAS ACTUAL CONSTRUCTION PROGRESS SIGNIFICANTLY**
9 **BEHIND THE APRIL 2019 BASELINE ONLY FIVE MONTHS AFTER**
10 **THE BASELINE WAS ISSUED?**

11 **A.** In our opinion, the primary reason that construction progress was far behind the
12 April 2019 Baseline is that the schedule assumptions were too aggressive. Unit
13 rates, which determine activity durations, were from the outset not based on actual,
14 observable historical unit rates which therefore made the April 2019 Baseline
15 unrealistic and unachievable.

16
17 **Q.** **PLEASE EXPLAIN THE TERM UNIT RATE AND WHY IT IS**
18 **RELEVANT TO THIS DISCUSSION.**

19 **A.** A unit rate is the estimate of the number of hours required to complete installation
20 of a unit of commodity such as feet of pipe or cable. For the April 2019 Baseline,
21 with a few minor exceptions, the unit rates were based on those established by
22 Fluor and Westinghouse in 2017 and incorporated in the Bechtel contract which, as
23 shown in Mr. Grace's testimony, are much lower than the actual experienced unit

1 rates ever achieved on the Project. The use of unrealistically low unit rates results
2 in fewer man-hours and implies shorter activity durations than are realistic or
3 achievable. This usually leads to delays in system turnovers because ITP is
4 dependent on construction completing those activities as planned.

5
6 **Q. DOES STAFF ANTICIPATE ANOTHER RE-BASELINE IN THE NEAR**
7 **FUTURE?**

8 **A.** Yes, once the impact of COVID-19 has been determined, another re-baseline will
9 most likely be required.

10
11 **Q. WOULD STAFF'S CONCERNS REGARDING THE FEBRUARY 2020**
12 **SCHEDULE REFINEMENT HAVE BEEN REALIZED?**

13 **A.** Staff is of the opinion that yes, the February 2020 Schedule Refinement would be
14 quickly obsolete. Staff was concerned that the February 2020 Schedule
15 Refinement would again be overly aggressive and result in small, incremental
16 delays to the forecast CODs of both Units. In fact, the CODs were unchanged,
17 notwithstanding the significant delays in system turnovers and the failure to meet
18 the required production levels. In addition, Staff's concern that the 2020 Schedule
19 Refinement would again be unrealistic and therefore become irrelevant within a
20 short period of time after issuance was also realized.

21
22 **Q. IS THERE A SIMILARITY THAT STAFF HAS IDENTIFIED WITH SNC**
23 **PERFORMANCE AS COMPARED WITH EACH IPS BASELINE?**

1 **A.** Yes. The immediate few months after each revised baseline show lower planned
2 performance when compared to the subsequent months. The low planned
3 production in the first months is then met by SNC. However, when the ramp-up in
4 planned production occurs, SNC is unable to sustain actual production to meet this
5 ramp-up and as a result the overall Project falls behind the plan.

6
7 **Q. WAS THERE A SIMILAR PATTERN IN THE FEBRUARY 2020**
8 **REFINEMENT?**

9 **A.** Yes. This IPS issue is also discussed in the Don Grace testimony.

10
11 **Q. WERE HARD CONSTRAINTS USED ON MAJOR MILESTONES IN THE**
12 **FEBRUARY 2020 REFINEMENT?**

13 **A.** Yes. In the Unit 3 IPS there were 141 hard constraints. The use of hard
14 constraints typically results in large numbers of activities that show negative float.
15 The Unit 3 IPS showed 1,099⁶ activities with negative float. Unmitigated forecast
16 negative float can result in activity completion delays.

⁶ March 26, 2020 Schedule Review Package page 22.

IV. CONSTRUCTION STATUS

Q. PLEASE PROVIDE THIS COMMISSION AN UPDATE ON THE CONSTRUCTION STATUS OF THE VOGTLE PROJECT.

A. As of March 2020, SNC states that construction was 81.2% complete. While the February 2020 Schedule Refinement maintained the May, 2021 and May, 2022 CODs, a large amount of work was pushed into the future after Hot Functional Testing. Staff is of the opinion that because SNC is significantly behind the schedule established in the April 2019 Baseline and because many more hours than planned are being required to complete construction activities, the percent may not accurately represent the balance of work needed to attain the May, 2021, and 2022, CODs.

Q. BASED ON STAFF'S KNOWLEDGE CAN STAFF PREDICT WITH ANY CERTAINTY WHEN THE CODS WILL BE ACHIEVED?

A. Without an IPS based on realistic and achievable unit rates and without realistic schedule durations and unconstrained logic, an estimate of Project completion remains simply an educated guess. Rather than utilizing achievable unit rates to estimate the duration of construction activities, the February 2020 Schedule Refinement continued to base the duration of activities on unit rates that generally have not been achieved. Thus, the duration of construction activities in the IPS are not realistic.

1 **Q. HAVE THE MITIGATION EFFORTS IMPLEMENTED TO IMPROVE**
2 **PRODUCTION AND EFFICIENCY BEEN EFFECTIVE?**

3 **A.** Generally, not. SNC has implemented Improvement Plans since taking control of
4 the Project in 2017. Typically, there has been a short-lived improvement but
5 sustained improvement has not been achieved with the exception of increasing
6 direct craft earned hours but at a very high cost i.e. high CPIs. Please note certain
7 craft disciplines and subcontractors have performed much better than others.
8 Below lists a series of improvement plans that were initiated to improve
9 production and productivity:

- 10 • December 2017 Construction Recovery Plan⁷
- 11 • January 2018 Productivity Study Findings⁸
- 12 • April 2018 Efficiency – Shift Culture, Remove Barriers; Construction
13 Improvements; Production Enhancements⁹
- 14 • July 2018 Project Re-Set¹⁰
- 15 • September 2018 Transitioning from broad actions in productivity
16 improvement plan to focused efforts to improve individual work groups¹¹

⁷ 01-18 MPR Meeting Slides pages 10-11

⁸ 02-2018 MPR Meeting Slides page 12

⁹ 05-2018 MPR Meeting Slides pages 7-9

¹⁰ 08-2018 MPR Meeting Slides pages 4-6

¹¹ 10-2018 MPR Meeting slides page 9

- 1 • January 2019 Productivity and Earned Hour Improvements¹²
- 2 • March 2019 Efforts To Increase Production¹³
- 3 • September 2019 U3 Near-Term Productivity Improvement Plan¹⁴
- 4 • December 2019 Electrical Installation Improvement Initiatives¹⁵
- 5 • February 2020 Unit 3 Electrical Action Plan¹⁶

6

7 **Q. SNC HAS STATED THAT IT WILL UTILIZE “MANAGEMENT TIME”**
8 **TO MAINTAIN THE CURRENT SCHEDULE. WHAT IS THE CURRENT**
9 **STATUS OF MANAGEMENT TIME?**

10 **A. In the September 2019 Monthly Project Review meeting SNC identified some**
11 periods in the April 2019 Baseline in which they believe that less time will be
12 required during that period to complete the scheduled activities than what is shown
13 in the schedule. This is called “management time” on the Vogtle Project. At that
14 time, SNC estimated that 29 to 52 days of management time was available in the
15 Unit 3 Schedule between OVT and Fuel Load. The management time between
16 OVT and Fuel Load is essentially gone with the 43-day delay of Fuel Load shown

¹² 02-2019 MPR Meeting Presentation page 9

¹³ 04-2019 MPR Meeting Presentation page 10

¹⁴ 10-2019 MPR Meeting Presentation page 13

¹⁵ 01-2020 MPR Meeting Presentation page 11

¹⁶ 03-2020 MPR Meeting Presentation page 5

1 in the February 2020 Schedule Refinement. In the September 2019 Monthly
2 Project Review meeting SNC also identified an additional 72 days of management
3 time between Fuel Load and COD based on startup testing experience in China.
4 This management time will likely also be gone soon as Project milestones continue
5 to slip.

6
7 **Q. IN YOUR TESTIMONY IN VCM 20/21 YOU DISCUSSED PROBLEMS**
8 **THAT ITP HAD ENCOUNTERED DURING THE EARLY TESTING**
9 **ACTIVITIES. PLEASE PROVIDE AN UPDATE ON ITP'S EXPERIENCE**
10 **WITH COMPONENT TESTING.**

11 A. Due to the high failure rate during initial testing of individual components such as
12 valves, pumps and instrumentation, SNC decided to conduct a Common Cause
13 Analysis. SNC conducted a search of the Condition Report¹⁷ ("CR") data base and
14 identified 371 CRs that have been issued in January through April, 2020 related to
15 failures such as valve issues (87), instrumentation issues (81) and electrical
16 equipment issues (201). In identifying a need for the Common Cause Analysis,
17 SNC determined that the current component test failure rate was an astounding
18 80%. That means that 80% of the components tested did not initially function
19 properly and required some corrective action(s) to function as designed.

20

¹⁷ A Condition Report is used to report equipment, construction and other problems on the Project.

1 **Q. WHAT WAS THE SNC’S RESPONSE TO DETERMINING THAT THE**
2 **PROJECT WAS EXPERIENCING AN 80% FAILURE RATE ON INITIAL**
3 **COMPONENT TESTING?**

4 A. SNC’s response was to establish a Component Look Ahead Team. This team
5 would precede the Component Test Team to ensure that the components are ready
6 to test, that construction installation is per design and that quality adheres to
7 standards. The goal of the Component Look Ahead Team is to reduce the initial
8 component failure rate from 80% to 10%.

10 **Q. WHAT WAS STAFF’S REACTION TO LEARNING THAT THE FAILURE**
11 **RATE OF INITIAL CONSTRUCTION TESTS WAS 80%?**

12 A. Staff was shocked to learn that the failure rate was 80%. Staff was aware that the
13 ITP group was encountering problems during initial component testing from
14 Staff’s access to monitoring plan of the day meetings and various metrics reports.
15 However, an 80% failure rate is far above what would normally be expected.

17 **Q. SHOULD A COMPONENT LOOKAHEAD TEAM BE NEEDED TO**
18 **PROVIDE REASONABLE SUCCESS IN INITIAL TESTING OF**
19 **COMPONENTS?**

20 A. No, it should not. Components should be installed by construction in accordance
21 with the design and the installation should be verified as correct by quality control
22 (“QC”). In fact, prior to initial testing the components were walked down by
23 construction and ITP personnel to ensure that they were ready for initial

1 component testing. Some problems are expected during this phase but a failure
2 rate of 80% indicates that construction, quality control and ITP in their normal
3 daily functions are not doing an adequate job to verify that the components are
4 ready for testing.

5
6 **Q. IN YOUR VCM 20/21 TESTIMONY YOU STATED THAT THE PROJECT**
7 **HAS NOT ENCOUNTERED AN ABNORMAL AMOUNT OF PROBLEMS**
8 **DURING INITIAL TESTING. WHAT HAS CHANGED YOUR OPINION?**

9 A. In Staff's testimony in 20/21 VCM, we stated that the level of problems
10 encountered appeared to be normal to date. This situation has clearly changed as
11 indicated by the 80% failure rate of initial component tests identified by SNC. The
12 very aggressive Project schedule has resulted in a large increase in the amount of
13 equipment being tested and less time for construction, QC and ITP to ensure that
14 the components are installed per the design and ready to be tested. In addition, ITP
15 is under additional schedule pressure to accept the equipment for testing to meet
16 the near-term milestones. Staff believes that the schedule pressure and push to
17 turn components over to ITP for testing due to the overly aggressive schedule has
18 contributed to the abnormally high failure rate.

19
20 **V. IMPACTS OF OVERLY AGGRESSIVE SCHEDULE**

21 **Q. DOES STAFF BELIEVE THERE ARE RISKS ASSOCIATED WITH THE**
22 **USE OF AN OVERLY AGGRESSIVE SCHEDULE?**

1 **A.** Yes. As stated in our testimony in 20/21 VCM, Staff agrees with SNC that the IPS
2 should be challenging to ensure that all parties involved in the completion of the
3 Project are pushed to perform to their utmost efficiency. However, Staff is of the
4 opinion that the Target CODs of May, 2021 and 2022, are even more aggressive
5 now than in the April 2019 baseline and given the recent schedule slippage are not
6 reasonable. The primary reason for this belief is discussed in the Grace
7 Testimony.

8
9 **Q. WHAT IS THE PRIMARY RISK THAT STAFF SEES WITH AN OVERLY**
10 **AGGRESSIVE SCHEDULE?**

11 **A.** Lack of accountability for completion of activities. The IPS is one of the critical
12 tools by which SNC can hold Bechtel and all other sub-contractors accountable for
13 work production. Staff believes that it is essential for activity durations to be
14 reasonable and achievable. With the absence of these two qualities for activity
15 durations, completion dates begin to shift to the right (they are delayed) without
16 much questioning from line management.

17
18 **Q. ARE THERE OTHER POTENTIAL NEGATIVE IMPACTS THAT CAN**
19 **DEVELOP AS A RESULT OF AN OVERLY AGGRESSIVE SCHEDULE?**

20 **A.** Yes. Staff has observed evidence of these negative impacts at the site. In addition,
21 we believe that the high rate of component test failures is another impact of an
22 overly aggressive schedule. The following negative impacts are identified in our
23 VCM 20/21 testimony:

- Low staff morale;
- Staff attrition;
- High absenteeism;
- The need for accelerated procurement;
- Construction and Engineering's inability to close work packages;
- Growing backlog of work that must be completed in an ever-shrinking time-frame.

Q. WHAT IS THE CONSEQUENCE OF THE LAST BULLETED ITEM ABOVE?

A. More work must be completed in a shorter time period. Evidence of this impact is the rescheduling of large amounts of work to after Hot Functional Testing in the February 2020 Schedule Refinement.

Q. WITH THE TURNOVER OF SYSTEMS APPROXIMATELY THREE MONTHS BEHIND SCHEDULE, HOW HAS SNC CONTINUED WITH ITP ACTIVITIES AND MET MAJOR MILESTONES SUCH AS START INTEGRATED FLUSH?

A. The Project uses a process called Partial Release for Test ("PRT"). The PRT process allows jurisdictional control of a portion of a system to be transferred to ITP to conduct testing activities prior to final turnover of that system. Once the testing activities are complete, ITP returns jurisdictional control to Construction to complete the system. This process allows ITP to conduct flushing, hydro and component testing activities prior to turnover of a complete or partial system.

1 **Q. IS THE PRT PROCESS A REASONABLE APPROACH TO CONDUCT ITP**
2 **ACTIVITIES?**

3 **A.** It is reasonable to use the PRT process to conduct some testing activities prior to
4 turnover. The question is a matter of to what degree it should be used. On the
5 Project, a large portion of the testing activities to date have been conducted using
6 the PRT process rather than on systems that have been turned over to ITP as
7 originally contemplated. SNC has stated that they are using the PRT process to
8 mitigate the impact of the late system turnovers. For example, the Project met the
9 major milestone of 'Start Integrated Flush' by using the PRT process to turnover a
10 small portion of piping for flushing and have used the process to continue with
11 Integrated Flushing activities. Use of the PRT allows some testing to be done
12 sooner than could otherwise be accomplished due to the late system turnovers from
13 Construction. However, meeting major milestones using this process can give a
14 false impression of the status of the Project. In addition, extensive use of the PRT
15 process greatly complicates and impedes Construction due to the change in
16 jurisdictional control to ITP and then back to Construction. Construction is often
17 left waiting to get back into a system to complete it while ITP performs its testing
18 activities. It would be much more efficient to fully complete a system and then
19 turn the system over to ITP for testing rather than changing jurisdictional control
20 multiple times between construction and ITP by using the PRT process.

1 **Q. IN ADDITION TO THE NEGATIVE IMPACT ON CONSTRUCTION**
2 **EFFICIENCY AND PRODUCTION, WHAT OTHER CONCERNS DO YOU**
3 **HAVE ABOUT THE EXCESSIVE USE OF THE PRT PROCESS?**

4 **A.** Conducting testing in locations in which construction is also underway requires
5 close coordination and control of equipment to ensure that construction and/or
6 operating personnel are not in danger. The more the PRT process is used and
7 construction personnel are working in close proximity to testing activities, the
8 more likely these types of events are to occur.

9
10 **Q. PLEASE PUT THE STATUS OF THE VOGTLE PROJECT IN CONTEXT**
11 **FOR THIS COMMISSION.**

12 **A.** This testimony was filed on June 5, 2020. SNC has scheduled Fuel Load for
13 November 23, 2020, which is 5 ½ months from the filing date. In the next 5 1/2
14 months SNC must complete Cold Hydro, complete the structural integrity and
15 integrated leak rate tests (“SIT” /”ILRT”)¹⁸ of the Containment Building, complete
16 Hot Functional Testing, finish construction of the plant, complete and turnover to
17 ITP all remaining plant systems, turn the entire plant over to the operations group
18 and complete and submit over 200 Inspections Tests And Acceptance Criteria

¹⁸ The Structural Integrity Test (SIT) and Integrated Leak Rate Test (ILRT) demonstrate that the Containment Building can withstand the peak pressure in the Containment Building following an accident and that the Containment Building and associated penetrations are leak tight to so that radioactive material is not released to the environment.

1 (“ITAAC”) completion notices to the NRC. It is our strongly held opinion that all
2 of these activities will not be completed by November 23, 2020.

3
4 **Q. WHAT WERE THE PLANNED SYSTEM/ PARTIAL SYSTEM**
5 **TURNOVERS FORECAST IN THE NOVEMBER 2019 IPS?**

6 **A.** All systems or partial systems were planned to be tested and turned over to
7 operations except for 11 by HFT, or June of 2020. The peak turnover months were
8 from December, 2019 to March, 2020 with planned turnovers of 24, 19, 23, and 25
9 each month respectively.¹⁹ This equates to 91 turnovers.

10
11 **Q. WHAT ARE THE PLANNED SYSTEM/ PARTIAL SYSTEM TURNOVERS**
12 **FORECAST IN THE FEBRUARY 2020 REFINEMENT?**

13 **A.** All systems or partial systems were planned to be tested and turned over to
14 operations except for 30 by HFT, or July of 2020. The peak turnover months were
15 from March, 2020 to June, 2020 with planned turnovers of 13, 44, 25, and 17 each
16 month respectively.²⁰ This equates to 99 turnovers. However, in March, 2020
17 SNC managed to turnover only 5 systems or partial systems, the highest number of
18 any month to date. The February 2020 Refinement forecast of turnover dates lacks
19 credibility *and*, as stated above, 30 partials were re-scheduled post HFT.

¹⁹ Unit_3_Skyline_11x17_DD__20191116 data date November 19, 2019.

²⁰ Copy of 2020 Snap U34 Turnover Dates

1
2 **Q. WHAT WERE THE PLANNED SUBMITTALS TO NRC FOR ITAAC**
3 **COMPLETION NOTICES FORECAST IN THE 2020 REFINEMENT?**

4 **A.** For the months of April through August, 2020 the planned ITAAC Completion
5 Notice submittals by month were 11, 27, 65, 60, and 72, respectively²¹. This is a
6 very aggressive plan and assumes those systems, structures, and components
7 required for ITAAC verification and closure *will all be complete and tested* as
8 forecast. The significance of ITAAC closure is that all ITAAC must be approved
9 by NRC Staff prior to SNC receiving the 103(g) Letter. The 103(g) Letter permits
10 SNC to begin fuel load.
11

12 **VI. RECOMMENDATIONS**

13
14 **Q. WHAT IS STAFF'S RECOMMENDATION WITH REGARD TO THE**
15 **AMOUNT REQUESTED BY THE COMPANY TO BE VERIFIED AND**
16 **APPROVED?**

17 **A.** Staff recommends that the expenditures of \$674 million incurred during the
18 Twenty-Second VCM period be verified and approved. As Staff has previously
19 explained, "verification and approval" of costs means a determination that such

²¹ 02-2020 MPR page 19.

1 costs have actually been spent on the Project and does not preclude a subsequent
2 disallowance by the Commission.

3

4 **Q. DOES THIS CONCLUDE YOUR TESTIMONY?**

5 **A.** Yes, it does.

EXHIBIT STF-SDR-1

Resume Of Steven D. Roetger

Steven D. Roetger

244 Washington Street, S.W.

Atlanta, GA 30334

Professional Experience

Georgia Public Service Commission Atlanta, Georgia 2008-Present

Analyst Primary responsibilities include monitoring the Vogtle expansion of Units 3 and 4, attending site visits on a regular basis, participate with the Commission and Company interface, and assist in the preparation of testimony.

Key achievements

Manage the Vogtle Construction monitoring process including engineering, procurement, and construction; economic analysis of the value of the Project; and financial accounting review for the Project's costs.

Write and review direct pre-filed testimony of the status of the Project for a semi-annual hearings.

BCD Travel Atlanta, Georgia 2007-2008

Finance Manager Primary responsibilities were to manage financial analysts, generate and review variance analyses, analyze departmental financials, and facilitate the coordination between our group and various internal departments.

Key achievements

Elevated team's performance to improve consistency, accuracy, and timeliness of service

Identified client missed revenue opportunities and communicated to Operations for recapture and/or inclusion with future invoicing

Key Requirements

Train, motivate, and develop 3 financial analysts to achieve an outstanding level of service and performance

Direct work flow to maintain efficiency and productivity without compromising standards

Analyze departmental financials to maximize profitability by reviewing contracts, perform variance analyses, and ensure complete transaction billing

Review complex contracts and interpret for finance reconciliation and billing procedures

Prepare client budgets and forecasts

Marine Bank of Florida Marathon, Florida 2003-2005

Accounting Operations Manager/Bank Officer Primary responsibilities were to manage the Bank's Accounting Department and, as directed by the COO, Deposit Operations' functions.

Key achievements

Identified high-risk, time sensitive accounts for dedicated review to significantly reduce financial risk to the Bank

In partnership with the CFO reduced audit management exceptions from 13 to zero year over year

Launched new wire department procedures to decrease response time, increase capacity, and improve customer service without increasing staff

Resume of Steven D. Roetger

In partnership with the COO implemented the Bank's new ACH operations to enhance existing customer relations, attract new business, and respond in a timely manner to ACH adjustments/returns

Key Requirements

Comprehensive G/L management including reconciliations, adjusting entries, and monthly/annual close

Manage and review the activities of 3 accounting and 2 deposit operations personnel responsible for accounts payable, wires, ACH operations, VISA check card operations, branch settlements, electronic funds transfers, and check clearing.

Establish and refine departmental policies and procedures to improve accuracy and timeliness of reporting, facilitate employee transition, and meet audit requirements

Oversaw Federal Reserve, FHLB, and IBB correspondent accounts

Supported the CFO to meet external audit requirements

Oversaw the Bank's daily cash position to minimize overnight net interest expense

Support branch operations by assisting branch managers maintain acceptable internal controls, provide training on Bank reporting procedures, and process exceptions

B. Terfloth & Co. USA) Inc. Atlanta, Georgia 1998-2000

Accounting Manager Primary responsibilities were to manage the Branch's Accounting Department with an emphasis on controlling expenses and manage the yearly audit process.

Key achievements

Re-established accurate and timely monthly reporting to the Corporate Office

Developed a cash flow forecasting model to assess the Branch's financing needs and negotiated under the President's supervision a working capital credit line to meet those needs

Key requirements

Comprehensive G/L management including reconciliations, adjusting entries, and monthly/annual close

Manage the annual audit process

Accounts payable and accounts receivable

Payroll and annual bonus calculations

Bridgetown Grill Restaurants Inc. Atlanta, Georgia 1996-1997

Interim Controller Primary responsibilities were to re-establish a reliable Accounting process and once established facilitate the transition to a new Controller.

Key achievements

Established internal controls to better manage purchases, inventories, and reduce cash variances

Developed Accounting procedures for Unit Managers and trained the management staff on those procedures

Assisted the Owner in evaluating an outside purchase offer

Key requirements

Comprehensive G/L management including reconciliations, adjusting entries, and monthly close procedures

Coordinate the annual audit process

Manage accounts payable and payroll processing

Manage credit card transaction procedures to reduce charge backs

Turner Broadcasting System Inc. Atlanta, Georgia 1991-1996

Staff Accountant Primary responsibility was to support the Managers with accurate and timely completion of assigned tasks.

Key achievements

Partnered with Management to streamline the procedure for The Statement of Cash Flows

Corrected the EPS calculation

Streamlined governmental reporting and incorporated detailed procedures for each report

Provided a Companywide vacation and sick time accrual analysis

Key requirements

Worked, as part of a team, on the Consolidated Financial Statements of TBS, Inc.

Develop various footnotes to the Financial Statements

Provide analysis of accounts for actual to budget and actual to rolling 12 month forecast variances

Provide analysis of, and recommendations for, lease capitalizations

Coordinate with 72 Operating Unit Controllers for the content and timely receipt of Unit financial data

Prepare debt covenant calculations for 4 issues and provide forecasts with sensitivity analysis

Prepare all U.S. Department of Commerce and U.S. Treasury Department statistical reports

Software

PeopleSoft/nVision reporting, Kirchman/Bankway and IPS Sendero banking software, MSA accounting software, Excel, Outlook, and Word

Education

BBA Georgia State University in Finance with an equivalent in Accounting

Completed 70 percent of course work toward an MBA in Finance from Georgia State University

EXHIBIT STF- WRJ-1

Resume Of William R. Jacobs, Ph.D.

EDUCATION: Ph.D., Nuclear Engineering, Georgia Tech 1971
MS, Nuclear Engineering, Georgia Tech 1969
BS, Mechanical Engineering, Georgia Tech 1968

ENGINEERING REGISTRATION: Registered Professional Engineer

PROFESSIONAL MEMBERSHIP: American Nuclear Society

EXPERIENCE:

Dr. Jacobs has over thirty-five years of experience in a wide range of activities in the electric power generation industry. He has extensive experience in the construction, startup and operation of nuclear power plants. While at the Institute of Nuclear Power Operation (INPO), Dr. Jacobs assisted in development of INPO's outage management evaluation group. He has provided expert testimony related to nuclear plant operation and outages in Texas, Louisiana, South Carolina, Florida, Wisconsin, Indiana, Georgia and Arizona. He currently provides nuclear plant operational monitoring services for GDS clients. Dr. Jacobs was a witness in nuclear plant certification hearings in Georgia for the Plant Vogtle 3 and 4 project on behalf of the Georgia Public Service Commission and in South Carolina for the V.C. Summer 2 and 3 projects on behalf of the South Carolina Office of Regulatory Staff. His areas of expertise include evaluation of reactor technology, EPC contracting, risk management and mitigation, project cost and schedule. He is assisting the Florida Office of Public Counsel in monitoring the development of four new nuclear units in the State of Florida, Levy County Units 1 and 2 and Turkey Point Units 6 and 7. He also evaluated extended power uprates on five nuclear units for the Florida Office of Public Counsel. He has been selected by the Georgia Public Service Commission as the Independent Construction Monitor for Georgia Power Company's new AP1000 nuclear power plants, Plant Vogtle Units 3 and 4. He has assisted the Georgia Public Service Commission staff in development of energy policy issues related to supply-side resources and in evaluation of applications for certification of power generation projects and assists the staff in monitoring the construction of these projects. He has also assisted in providing regulatory oversight related to an electric utility's evaluation of responses to an RFP for a supply-side resource and subsequent negotiations with short-listed bidders. He has provided technical litigation support and expert testimony support in several complex law suits involving power generation facilities. He monitors power plant operations for GDS clients and has provided testimony on power plant operations and decommissioning in several jurisdictions. Dr. Jacobs represents a GDS client on the management committee of a large coal-fired power plant currently under construction. Dr. Jacobs has provided testimony before the Georgia Public Service Commission, the Public Utility Commission of Texas, the North Carolina Utilities Commission, the South Carolina Public Service Commission, the Iowa State Utilities Board, the Louisiana Public Service Commission, the Florida Public Service Commission, the Indiana Regulatory Commission, the Wisconsin Public Service Commission, the Arizona Corporation Commission and the FERC.

A list of Dr. Jacobs' testimony is available upon request.

1986-Present GDS Associates, Inc.

As Executive Consultant, Dr. Jacobs assists clients in evaluation of management and technical issues related to power plant construction, operation and design. He has evaluated and testified on combustion turbine projects in certification hearings and has assisted the Georgia PSC in monitoring the construction of the combustion turbine projects. Dr. Jacobs has evaluated nuclear plant operations and provided testimony in the areas of nuclear plant operation, construction prudence and decommissioning in nine states. He has provided litigation support in complex law suits concerning the construction of nuclear power facilities. Dr. Jacobs is the Georgia PSC's Independent Construction Monitor for the Plant Vogtle 3 and 4 nuclear project.

1985-1986 Institute of Nuclear Power Operations (INPO)

Dr. Jacobs performed evaluations of operating nuclear power plants and nuclear power plant construction projects. He developed INPO Performance Objectives and Criteria for the INPO Outage Management Department. Dr. Jacobs performed Outage Management Evaluations at the following nuclear power plants:

- Connecticut Yankee - Connecticut Yankee Atomic Power Co.
- Callaway Unit I - Union Electric Co.
- Surry Unit I - Virginia Power Co.
- Ft. Calhoun - Omaha Public Power District
- Beaver Valley Unit 1 - Duquesne Light Co.

During these outage evaluations, he provided recommendations to senior utility management on techniques to improve outage performance and outage management effectiveness.

1979-1985 Westinghouse Electric Corporation

As site manager at Philippine Nuclear Power Plant Unit No. 1, a 655 MWe PWR located in Bataan, Philippines, Dr. Jacobs was responsible for all site activities during completion phase of the project. He had overall management responsibility for startup, site engineering, and plant completion departments. He managed workforce of approximately 50 expatriates and 1700 subcontractor personnel. Dr. Jacobs provided day-to-day direction of all site activities to ensure establishment of correct work priorities, prompt resolution of technical problems and on schedule plant completion.

Prior to being site manager, Dr. Jacobs was startup manager responsible for all startup activities including test procedure preparation, test performance and review and acceptance of test results. He established the system turnover program, resulting in a timely turnover of systems for startup testing.

As startup manager at the KRSKO Nuclear Power Plant, a 632 MWE PWR near Krsko, Yugoslavia, Dr. Jacobs' duties included development and review of startup test procedures, planning and coordination of all startup test activities, evaluation of test results and customer assistance with regulatory questions. He had overall responsibility for all startup testing from Hot Functional Testing through full power operation.

1973 - 1979 NUS Corporation

As Startup and Operations and Maintenance Advisor to Korea Electric Company during startup and commercial operation of Ko-Ri Unit 1, a 595 MWE PWR near Pusan, South Korea, Dr. Jacobs advised KECO on all phases of startup testing and plant operations and maintenance through the first year of commercial operation. He assisted in establishment of administrative procedures for plant operation.

As Shift Test Director at Crystal River Unit 3, an 825 MWE PWR, Dr. Jacobs directed and performed many systems and integrated plant tests during startup of Crystal River Unit 3. He acted as data analysis engineer and shift test director during core loading, low power physics testing and power escalation program.

As Startup engineer at Kewaunee Nuclear Power Plant and Beaver Valley, Unit 1, Dr. Jacobs developed and performed preoperational tests and surveillance test procedures.

1971 - 1973 Southern Nuclear Engineering, Inc.

Dr. Jacobs performed engineering studies including analysis of the emergency core cooling system for an early PWR, analysis of pressure drop through a redesigned reactor core support structure and developed a computer model to determine tritium build up throughout the operating life of a large PWR.

SIGNIFICANT CONSULTING ASSIGNMENTS:

Georgia Public Service Commission – Selected as the Independent Construction Monitor to assist the GPSC staff in monitoring all aspects of the design, licensing and construction of Plant Vogtle Units 3 and 4, two AP1000 nuclear power plants.

Georgia Public Service Commission – Assisted the Georgia Public Service Commission Staff and provided testimony related to the evaluation of Georgia Power Company's request for certification to construct two AP1000 nuclear power plants at the Plant Vogtle site.

South Carolina Office of Regulatory Staff – Assisted the South Carolina Office of Regulatory Staff in evaluation of South Carolina Electric and Gas’ request for certification of two AP1000 nuclear power plants at the V.C. Summer site.

Florida Office of Public Counsel – Assists the Florida Office of Public Counsel in monitoring the development of four new nuclear power plants and extended power uprates on five nuclear units in Florida including providing testimony on the prudence of expenditures.

East Texas Electric Cooperative – Represented ETEC on the management committee of the Plum Point Unit 1 a 650 Mw coal-fired plant under construction in Osceola, Arkansas and represents ETEC on the management committee of the Harrison County Power Project, a 525 Mw combined cycle power plant located near Marshall, Texas.

Arizona Corporation Commission – Evaluated operation of the Palo Verde Nuclear Generating Station during the year 2005. Included evaluation of 11 outages and providing written and oral testimony before the Arizona Corporation Commission.

Citizens Utility Board of Wisconsin – Evaluated Spring 2005 outage at the Kewaunee Nuclear Power Plant and provided direct and surrebuttal testimony before the Wisconsin Public Service Commission.

Georgia Public Service Commission - Assisted the Georgia PSC staff in evaluation of Integrated Resource Plans presented by two investor owned utilities. Review included analysis of purchase power agreements, analysis of supply-side resource mix and review of a proposed green power program.

State of Hawaii, Department of Business, Economic Development and Tourism – Assisted the State of Hawaii in development and analysis of a Renewable Portfolio Standard to increase the amount of renewable energy resources developed to meet growing electricity demand. Presented the results of this work in testimony before the State of Hawaii, House of Representatives.

Georgia Public Service Commission - Assisted the Georgia PSC staff in providing oversight to the bid evaluation process concerning an electric utility’s evaluation of responses to a Request for Proposals for supply-side resources. Projects evaluated include simple cycle combustion turbine projects, combined cycle combustion turbine projects and co-generation projects.

Millstone 3 Nuclear Plant Non-operating Owners – Evaluated the lengthy outage at Millstone 3 and provided analysis of outage schedule and cost on behalf of the non-operating owners of Millstone 3. Direct testimony provided an analysis of additional post-outage O&M costs that would result due to the outage. Rebuttal testimony dealt with analysis of the outage schedule.

H.C. Price Company – Evaluated project management of the Healy Clean Coal Project on behalf of the General Contractor, H.C. Price Company. The Healy Clean Coal Project is a 50 megawatt coal burning power plant funded in part by the DOE to demonstrate advanced clean coal technologies. This project involved analysis of the project schedule and evaluation of the impact of the owner's project management performance on costs incurred by our client.

Steel Dynamics, Inc. – Evaluated a lengthy outage at the D.C. Cook nuclear plant and presented testimony to the Indiana Utility Regulatory Commission in a fuel factor adjustment case Docket No. 38702-FAC40-S1.

Florida Office of Public Counsel - Evaluated lengthy outage at Crystal River Unit 3 Nuclear Plant. Submitted expert testimony to the Florida Public Service Commission in Docket No. 970261-EI.

United States Trade and Development Agency - Assisted the government of the Republic of Mauritius in development of a Request for Proposal for a 30 MW power plant to be built on a Build, Own, Operate (BOO) basis and assisted in evaluation of Bids.

Louisiana Public Service Commission Staff - Evaluated management and operation of the River Bend Nuclear Plant. Submitted expert testimony before the LPSC in Docket No. U-19904.

U.S. Department of Justice - Provided expert testimony concerning the in-service date of the Harris Nuclear Plant on behalf of the Department of Justice U.S. District Court.

City of Houston - Conducted evaluation of a lengthy NRC required shutdown of the South Texas Project Nuclear Generating Station.

Georgia Public Service Commission Staff - Evaluated and provided testimony on Georgia Power Company's application for certification of the Intercession City Combustion Turbine Project - Docket No. 4895-U.

Seminole Electric Cooperative, Inc. - Evaluated and provided testimony on nuclear decommissioning and fossil plant dismantlement costs - FERC Docket Nos. ER93-465-000, et al.

Georgia Public Service Commission Staff - Evaluated and prepared testimony on application for certification of the Robins Combustion Turbine Project by Georgia Power Company - Docket No. 4311-U.

North Carolina Electric Membership Corporation - Conducted a detailed evaluation of Duke Power Company's plans and cost estimate for replacement of the Catawba Unit 1 Steam Generators.

Georgia Public Service Commission Staff - Evaluated and prepared testimony on application for certification of the McIntosh Combustion Turbine Project by Georgia Power Company and Savannah Electric Power Company - Docket No. 4133-U and 4136-U.

New Jersey Rate Counsel - Review of Public Service Electric & Gas Company nuclear and fossil capital additions in PSE&G general rate case.

Corn Belt Electric Cooperative/Central Iowa Power Electric Cooperative - Directs an operational monitoring program of the Duane Arnold Energy Center (565 Mwe BWR) on behalf of the non-operating owners.

Cities of Calvert and Kosse - Evaluated and submitted testimony of outages of the River Bend Nuclear Station - PUCT Docket No. 10894.

Iowa Office of Consumer Advocate - Evaluated and submitted testimony on the estimated decommissioning costs for the Cooper Nuclear Station - IUB Docket No. RPU-92-2.

Georgia Public Service Commission/Hicks, Maloof & Campbell - Prepared testimony related to Vogtle and Hatch plant decommissioning costs in 1991 Georgia Power rate case - Docket No. 4007-U.

City of El Paso - Testified before the Public Utility Commission of Texas regarding Palo Verde Unit 3 construction prudence - Docket No. 9945.

City of Houston - Testified before Texas Public Utility Commission regarding South Texas Project nuclear plant outages - Docket No. 9850.

NUCOR Steel Company - Evaluated and submitted testimony on outages of Carolina Power and Light nuclear power facilities - SCPSC Docket No. 90-4-E.

Georgia Public Service Commission/Hicks, Maloof & Campbell - Assisted Georgia Public Service Commission staff and attorneys in many aspects of Georgia Power Company's 1989 rate case including nuclear operation and maintenance costs, nuclear performance incentive plan for Georgia and provided expert testimony on construction prudence of Vogtle Unit 2 and decommissioning costs of Vogtle and Hatch nuclear units - Docket No. 3840-U.

Swidler & Berlin/Niagara Mohawk - Provided technical litigation support to Swidler & Berlin in law suit concerning construction mismanagement of the Nine Mile 2 Nuclear Plant.

Long Island Lighting Company/Shea & Gould - Assisted in preparation of expert testimony on nuclear plant construction.

North Carolina Electric Membership Corporation - Prepared testimony concerning prudence of construction of Carolina Power & Light Company's Shearon Harris Station - NCUC Docket No. E-2, Sub537.

City of Austin, Texas - Prepared estimates of the final cost and schedule of the South Texas Project in support of litigation.

Tex-La Electric Cooperative/Brazos Electric Cooperative - Participated in performance of a construction and operational monitoring program for minority owners of Comanche Peak Nuclear Station.

Tex-La Electric Cooperative/Brazos Electric Cooperative/Texas Municipal Power Authority (Attorneys - Burchette & Associates, Spiegel & McDiarmid, and Fulbright & Jaworski) - Assisted GDS personnel as consulting experts and litigation managers in all aspects of the lawsuit brought by Texas Utilities against the minority owners of Comanche Peak Nuclear Station.