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TECO's Responses to OPC's Third Set of Interrogatories, Nos. 39-51.

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39. Please provide a timeline and list of the maintenance and inspection history on the Polk 1 turbine and generator, and please identify all documents used in preparation of the timeline.

A. Polk Unit 1 went into service in 1995, meaning there are nearly thirty years of maintenance and inspection history on this unit. Per agreement with the Office of Public Counsel, Tampa Electric will provide the requested timeline going back ten years.

For a timeline and a list of the maintenance and inspection history on Polk Unit 1 turbine and generator, please see attached. Additionally, please see Tampa Electric's Response to OPC's Third Request for Production of Documents, Request No. 11.

For a General Timeline, please see below.

- 2009, GE report, generator field removal
- 2012, GE report, minor repairs to dusting in endturn area, passed all tests
- 2015, GE report, MAGIC inspection, passed all tests, no significant findings
- 2016, GE Report, gas turbine inspection, repairs were made based on inspection results
- 2018, GE Report, test and inspection, repairs were made based on inspection results
- 2021, GE rewind of generator rotor and stator after discovery of loose stator core iron

Unit 1 CT and Generator Outage Report List

2009 Major with Generator Field Removal	20090202 209436 Polk 1 Major Inspection.pdf
2012 HGP Prior 3rd Stage Bucket Liberation Generator Minor	20120524 - Polk 1 Forced Outage.pdf TECO Polk 1 RCA Report 9-27-12.pdf 20120117 - Polk 1 CT Generator Minor.pdf
2015 Electrical Testing and Magic Inspection	337X011_2015-03-10_GARY HUMFLEET_18.pdf
2016 Combustion Inspection with S1N and S3B replacement	296436_2016-04-29 SERGEY POLYAKOV.pdf
2018 Major HGP with CT Rotor Replacement	2018 Unit 1 Rotor Outage Report.pdf
2021 Generator Stator and 3rd Stage Bucket Liberation	2021 3rd Stage bucket liberation.pdf TECO_POLK_UNIT_1_GENERATOR_RESTACK___REWIND.pdf

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40. Did GE ever issue any technical notices regarding the potential problems with this generator?

A. No, GE did not issue any technical notices regarding potential problems with this generator.

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41. Has TECO participated in GE F7A combustion turbine User Group Meetings or correspondence prior to the discovery of the stator damage?

a. Were the problems with this vintage GE generator ever discussed at the User Group Meetings or in any User Group correspondence?

b. Identify all documents from GE F7A combustion turbine User Group that discuss problems with the generator on GE 7FA combustion turbine.

A. a. Yes, Tampa Electric has received communication from GE regarding the GE F7A CT; however, the issue with loose stator core iron was presented as an exclusive issue with MELCO (Mitsubishi, 3rd party subcontractor to GE) CT's built at MELCO facilities. The Unit 1 CT was built by GE at its Schenectady, NY facility.

b. Please see the GE Technical Information Letter (TIL) TIL226031 attached.

CONFIDENTIAL MATERIAL REDACTED

BATES STAMPED PAGES 5 - 9

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42. Was the June 2021 event the first time the rotor had been removed since the unit was built? If the rotor was removed for inspection, maintenance, and/or repairs prior to the 2021 event, please identify all inspection, maintenance, and/or repair reports for the rotor and stator.

A. No, the June 2021 event was not the first time the rotor was removed. The rotor was also pulled in 2009 and 2012 after inspections indicated that repairs were needed. Repairs were made based on inspection results. Additionally, please see Tampa Electric's response to OPC's Third Set of Interrogatories, No. 39, above.

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43. Was there any loss of output noted from the generator prior to the outage?

A. No.

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44. Were there any rotor or stator temperature control issues noted prior to the outage?

A. No.

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45. In reference to the Root Cause page of the Generator Stator Core Discovery report (BS page 42), what impact did the defective core compression process acknowledged by GE have on the Polk 1 outage in June 2021?

A. The original scheduled outage was approximately 14 days. The discovery of compression issues of the stator core iron extended the outage to make repairs.

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46. Do TECO or GE have any concerns about this unit going forward?

A. After rewinding the generator, neither Tampa Electric nor GE have any concerns at this time.

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47. Regarding the confidential pages of TECO's answers to Citizen's First Request for Production of Documents (Nos. 1-8) (Bates pages 278-286), did TECO enter into a contract related to the contents of those pages? If yes, please identify all documents, including any reports, which TECO received as a result of that contract. If no, please explain why TECO did not enter into a contract related to the contents of those pages.

A. The cited pages involved contract negotiations between Tampa Electric and GE related to performance of a RCA for the outage. Tampa Electric ultimately did not enter into a contract with GE because the company determined that support from GE was not needed to perform the RCA. Tampa Electric has internal subject matter experts capable in this function and therefore performed the RCA internally.

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In reference to the Root Cause Analysis report provided in the supplementary response to OPC Interrogatory No. 23:

48. It is stated on Page 2 (BS Sup_24-d) that "A maintenance specialist recalled a similar 2012 incident when Polk CT1 tripped on high vibrations due to the presence of water in the syngas header."

a. Please provide a description of this 2012 incident.

b. Please provide information on how water entered the syngas header during the 2012 incident.

c. Please identify all inspection reports, root cause analysis reports, and any other documentation related to the 2012 incident.

A. a. The 2012 incident was a water intrusion event. Additionally, please see Tampa Electric's response to OPC's Third Set of Interrogatories, No. 39, above.

b. The unit was operating on dual fuel with liquid fuel. During a shutdown, the atomizing air cooler associated with liquid fuel operations had an unknown leak. The water entered the fuel nozzle causing the syngas header to fill with water. When the unit was attempting to start at Full Speed No Load ("FSNL") operation water entered into the turbine and caused bucket failures. This system is no longer in operation and has since been removed.

c. Please see Tampa Electric's response to OPC's Third Set of Interrogatories, No. 39, above.

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49. It is stated in the Possible Solutions table (BS Sup_24-I) that one possible solution would be to "Add a Prestart walkdown or procedure for operators to visually look for water."

a. If a similar incident occurred in 2012 and water was found in the syngas header, why was this walkdown or procedure not already in place?

A. The water intrusion event in 2012 was caused by the dual fuel system. This system was removed in 2013. As a result, the water intrusion source that caused the 2012 event is no longer in place. The November 2021 event was the result of water intrusion from a different system; the steam injection system for NO_x control.

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50. It is stated in the Observations section (BS Sup_24-d) that water wash valve WW-23 was found closed.

a. Was this valve supposed to be opened or closed at the time of the incident on November 29th?

b. When was it discovered that the valve color deviated from the typical labeling associated with water wash practice?

A. a. In normal operation, this valve is supposed to be open.

b. The valve color deviation issue was discovered after the event occurred. As noted in the RCA, the labeling of the valve had been burned off, over time, from the heat in the compartment. As a result, the valve color deviated from the labeling associated with normal water wash practice (blue; normally closed, red; normally open).

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51. Please provide the calculations used to derive the replacement power costs for the outage time period.

a. Provide the basis for all assumptions used in the calculations.

b. Provide sources of replacement generation and fuel costs for those sources.

A.

a. As stated in Tampa Electric's responses to OPC's First Set of Interrogatories, Nos. 5 and 24 and OPC's Second Set of Interrogatories, No. 30, the Planning & Risk ("PaR") production cost model includes unit heat rates, variable O&M, start costs and any operational parameters that impact the economic commitment and dispatch of the company's generating units. Actual fuel prices, power market pricing, load, solar generation, reserves, purchased power agreements and forced and planned outages were utilized as PaR inputs to best estimate replacement power costs from Polk Unit 1 not being available to run.

b. The generation in MWh and the associated fuel costs used in the PaR production cost model base and change case runs used for Tampa Electric's responses to OPC's First Set of Interrogatories, Nos. 5 and 24 and OPC's Second Set of Interrogatories, No. 30, is included in the following attachment:

"(BS_21) Polk 1 Outage Replacement Generation and Fuel Costs.xlsx."

The PaR production cost model solves for the lowest economic production cost over a period of months. The model commits and dispatches all available generation for the base and change cases.

In most summer months, the change case for a loss of Polk Unit 1 is replacing that unit (an average 8.3 MMBtu/MWh gross heat rate unit in 2021), with a combination of higher heat rate units like Big Bend Unit 3 and aero-derivative simple-cycle combustion turbines (average 10.0-11.0 MMBtu/MWh gross heat rate units in 2021) and lower heat rate units like Bayside and Polk combined cycle (average 7.0-7.3 MMBtu/MWh heat rate units in 2021). In addition, forced outage rates for units other than Polk Unit 1 were very low in the relevant period, resulting in high system availability to provide replacement power for Polk Unit 1. In hours where available

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Tampa Electric generation could not meet load and reserves, the model will purchase power. For this evaluation, the price of the purchased power is the weighted average of Tampa Electric power purchases filed monthly in A-schedules on Schedule A7.

The model often leaves Polk Unit 1 uncommitted in the months of December through February, especially in periods with mild weather. Last winter was mild in Tampa and peak loads were 3,000 MW or less compared to the summer at 4,000 – 4,500 MW. Bayside and Polk combined cycle units in conjunction with solar provide much of the company's generation needs on most winter days. Furthermore, Big Bend Unit 4 is a "must commit" unit for environmental reasons during the winter as its needed to keep minimum outlet discharge temperatures to heat the water for the manatees. Big Bend Unit 3 was committed on a few cooler mornings as its capacity is more than 50 percent higher than Polk Unit 1.

AFFIDAVIT

STATE OF FLORIDA)
)
COUNTY OF HILLSBOROUGH)

Before me the undersigned authority personally appeared M. Ashley Sizemore who deposed and said that she is Manager, Regulatory Rates, Tampa Electric Company, and in Tampa Electric Company's response to OPC's Third Set of Interrogatories, (Nos. 39-51), she prepared or assisted with the responses to these interrogatories to the best of her information and belief.

Dated at Tampa, Florida this 9th day of August, 2022.

M. Ashley Sizemore

Sworn to and subscribed before me this 9th day of August, 2022.

Dashira Silvestre

Notary Public State of Florida
Dashira Silvestre
My Commission
HH 270259
Exp. 6/1/2026

My Commission expires