

Tampa Electric Company IGCC Project

Quarterly Report

April 1 - June 30, 1996

RECEIVED
MAR 03 1997
OSTI

Work Performed Under Contract No.: DE-FC21-91MC27363

For
U.S. Department of Energy
Office of Fossil Energy
Morgantown Energy Technology Center
P.O. Box 880
Morgantown, West Virginia 26507-0880

By
TECO Power Services Corporation
P. O. Box 111
Tampa, Florida 33601-0111

MASTER

DISTRIBUTION OF THIS DOCUMENT IS UNLIMITED



August 29, 1996

Mr. Nelson F. Rekos, Jr.
Project Manager
Clean Coal Branch
U.S. Department of Energy
Morgantown Energy Technology Center
3610 Collins Ferry Road
Morgantown, WV 26505

Re: Tampa Electric Company IGCC Project *27363*
Quarterly Technical Report - Second Quarter 1996

96 SEP 12 AM 9:54

Dear Nelson,

From April 1996 through June 1996, the Polk Power Station continued efforts to complete construction and start-up. As of June 1996, construction was 98.2% complete compared to the January 1996 scheduled 98.6%. Construction will shift its efforts to support Start-up while completing the remaining 1.8%.

Project milestones of **First Fire Combustion Turbine (CT) on oil** was accomplished on April 20 (one day behind schedule), **Steam Blow Completion** was on May 11 (11 days behind schedule), and **Roll Steam Turbine** was complete May 31 (on schedule).

Construction completed the second million safe work hours in April 1996.

The excessive vibration in the Air Separation Unit (ASU) Main Air Compressor motor was improved by removing the motor for foundation modifications and subsequent rebalancing.

Problems with the magnetic bearing feedwater pump and with the CT atomizing air compressor motors delayed the 4 hour full speed no-load test to a June completion date. The completion of the CT test on distillate exceeded the guaranteed output by 6 MW.

During this period, construction completed turnovers of all systems to Start-Up. Start-Up began turnovers to Operations.

Mr. Nelson Rekos
August 29, 1996

Other significant construction accomplishments during this period included:

- ▶ Completed RSC refractory installation with final curing by June 16.
- ▶ The Aux Boiler CEMS Certification was completed.
- ▶ The CT first power to the grid was on May 4, 1996.
- ▶ Synchronized the gas and steam turbine by June 1.
- ▶ Placed the steam turbine on turning gear.
- ▶ Started the second HRSG Bellows replacement outage for the "B" and "C" bellows.
- ▶ Completed initial RSC/Gasifier gas path pressure test.

THE ENTIRE PROJECT REMAINS FOCUSED ON JULY 17 (First Syngas).

TAMPA ELECTRIC ACTIVITIES

Tampa Electric conducted the Department of Energy (DOE) 90% construction review.

TECO continued Simulator Training for Gasification and Integration modules.

CONSTRUCTION MANAGEMENT ACTIVITIES

Construction Management (CM) aided the project in achieving the milestone First Fire CT (on oil) on April 20. In order to achieve the milestone the assembly of the Steam Turbine and the steam turbine lube oil flush was completed.

Additional activities in April included reaching full load in the Auxiliary (Aux) Boiler on April 14. The Continuous Emission Monitor (CEM) for the Aux Boiler passed RATA upon reaching full load. This initiated the 7 day drift test that began April 29. The Aux Boiler CEM certification was completed in May.

The Combustion Turbine's first power to the grid was on May 4, 1996. The 90 day limit to complete CEM Certification CT on distillate began when Polk Power came on line.

Major accomplishments for the month of June included synchronization of the steam turbine,

Mr. Nelson Rekos
August 29, 1996

successful completion of the CT performance test on distillate (exceeding the guarantee by about 6 MW), completion of the loading of the coal silos and settlement survey tests (no problems), and completion of the initial pressure test for the syngas piping system. Also the Refractory cure was completed in the Gasifier. CM supported H. B. Zachary in the installation of "B" and "C" bellows on the Heat Recovery Steam Generator (HGCU).

CONTRACTOR STATUS

The contractors have been destaffing from a total site population of 910 in April to 650 in June. The OSHA recordable rate through June 1996 was 1.88. This is below the project goal of 2.0. To date only 2 loss time incidents have been charged to the Polk Power Project.

Contractors have been focusing on completing their work and closing out their contracts during this quarter. CP-001 (Johnson Bros.), Z-000 (EMCON), and CP-012 (H. B. Zachary) have demobilized from the site at 100% complete. At the end of June, CP-011 (TIC at the gasification and coal handling), CP-011A (TIC at the gasification waste process), CP-014 (Bulger Contracting Company), and CP-022 (Johnson Bros. west of SR 37 reclamation) are currently ahead of schedule.

The following outlines the contractor's activities:

CP-001 - Johnson Brothers - Site Development

By June the wetland planting was completed. This contract is being closed out. All warranty and punchlist items have been completed. This was a very successful contract for the project.

CP-011 - TIC - Gasification and Coal Handling Mechanical/Electrical

In May the Radiant Syngas Cooler (RSC) and Gasifier refractory installation was complete. Upon completion of the RSC installation, the refractory was dried-out for testing. By June the initial RSC and Gasifier gas path pressure test was completed. Mechanical piping and electrical work is substantially complete in anticipation of the July 17, 1996 first syngas date.

CP-011A - TIC - Gasification Waste Processing

TIC completed installation and final set of major Hot Gas Clean-Up (HGCU) equipment while continuing installation of pipe. Electrical work is on schedule and system turnovers to startup continue as planned.

Mr. Nelson Rekos
August 29, 1996

CP-012 - H. B. Zachary - Power Block and Plant Utilities

H. B. Zachary commenced demobilization after they replaced the "B" and "C" bellows on the Heat Recovery Steam Generator. The project will be closing out the CP-012 contract next quarter. All punchlist items have been completed. Administrative activities to close the contract are all that remain.

CP-022 - Johnson Brothers - West of SR 37 Reclamation

After seeding area P-1, completing earthwork and contouring in A-2 and P-1, and finishing the reclamation west of State Route (SR) 37 Johnson Brothers began demobilization. State environmental inspections have been done and any minor concerns have been resolved.

Z-000 - EMCON - Slag Storage Area

EMCON was 100% complete as of May 26, 1996. Contract closeout and final state inspections and releases are expected during the 3rd quarter.

STARTUP ACTIVITIES

The Start-up schedule was revised during the month of May to incorporate work-arounds primarily due to the curing of the Gasifier refractory and to levelize/reschedule the remaining work. The revised work plan supported the milestones for Rolling the Steam Turbine and First Syngas.

As of June 23, Start-up was 89% complete with system electrical checkout versus a scheduled 91%. Start-up turned over 58 of the 147 system packages to Operations in this period. Of the 58 systems, 38 systems have been accepted with the remaining 20 systems pending acceptance.

The following details some of the critical systems including progress and operational impacts:

ASU - Air Separation Unit

- ▶ Completed the balance of work on the Main Air Compressor and tested. Performance test and punchlist still remain to be completed.

CEMS - Continuous Emissions Monitoring

- ▶ In May completed the CEMS drift test for the auxiliary boiler. The state certification has been received and the compliance program is in place.

Mr. Nelson Rekos
August 29, 1996

CWB - Burner Cooling Water

- ▶ Completed flush of all pipe. Functional checkout of the equipment continues.

FCU - Coal Unloading

- ▶ Installed remaining idler and retested coal unloading system.
- ▶ Unloaded 6 trucks of coal and achieved the first coal milestone on March 29.
- ▶ Coal silo loading and initial settlement readings have been approved by American Marietta. The silos have been released to use in operations.

GTG - Gas Turbine

- ▶ In April completed the Gas Turbine Fuel Oil flush.
- ▶ Completed the GE performance test on the gas turbine using fuel oil on June 18.
- ▶ Synchronized the Gas Turbine.
- ▶ Started outage work on June 22.
- ▶ Instrumented liners and other required syngas modifications are complete.

HGCU - Hot Gas Clean Up

- ▶ Flushed HGCU lines from the secondary cyclone using condensate header pressure.
- ▶ Received delivery of the sorbent in June.
- ▶ First functional test of the HGCU system is expected next (3rd) quarter of 1996.

LOS - Steam Turbine Lube Oil

- ▶ Complete Steam Turbine Lube flush and restored system in April.

PRO - Propane System

- ▶ Commissioned propane tank in June, and place the system in service to support first syngas on July 17.

Mr. Nelson Rekos
August 29, 1996

RSY - Flare System

- ▶ Tested flare in June.

SAP - Sulfuric Acid Plant

- ▶ Leonard Construction re-mobilized on June 3 to complete preparation activities and begin preparation for first Syngas. It is expected all work activities will be completed in the 3rd quarter.

SHP - High Pressure Steam Distribution

- ▶ Completed Steam Blows of High Pressure Steam pipe on May 11.

SLA/SLB - Coal Slurry Grinding A and B

- ▶ Loaded 2", 2 ½", and 3" rods into coal grinding mill "A" and "B".
- ▶ Aligned and coupled and tested rod mill "A" and "B".
- ▶ High vibration problems on the rod mills forced design changes to be made to the foundations. Results of these changes will be made available in the 3rd quarter.

SLR - Slurry Feed System

- ▶ The slurry transfer pump was test operated in June.
- ▶ The slurry lines were water tested using the GEHO pump.

SMS - Main Steam

- ▶ Completed main steam and hot/cold reheat steam blows on May 11.

TME - Steam Turbine

- ▶ Completed electrical checkout of Mark V and DCS.
- ▶ Placed steam turbine on turning gear.
- ▶ Performed initial steam turbine roll to 1000 RPM on May 31.
- ▶ Performed initial steam turbine synchronization to power grid on June 1.

Mr. Nelson Rekos
August 29, 1996

- ▶ Performed over speed trip test of the steam turbine.

ZAC - Combustion Turbine (CT) Generator

- ▶ Completed air test of the CT generator in April.
- ▶ Filled CT generator with hydrogen.

ZAS - Steam Turbine Generator

- ▶ Pressurized Steam Turbine generator with hydrogen in May.

OTHER PROJECT PARTICIPANTS

GENERAL ELECTRIC

During early CT operation in the last week of April, bearings on both combustion turbine atomizing air blower motors failed. Bearings were replaced with modified clearances and the motors were reinstalled.

GE performed their performance test for the combined cycle on distillate fuel. Preliminary results are: (1) it bettered the guarantee output by 6 MW and (2) heat rate by 166 Btu/kWh.

Also the water injection to control the NO_x emissions was tuned to meet the permit requirements (42 ppm).

GE began repair of the fourteen combustion can end covers. The internal components of the original covers were improperly brazed.

GEESI

GEESI technical representatives were on site the first week of April to complete walkdown verification of equipment arrangement and preparation of training classes. The training classes for Tampa Electric Process Specialists started April 15, 1996.

GEESI conducted a mechanical walkdown of the Hot Gas Clean-Up (HGCU) structure to confirm installed design criteria throughout the month of May.

Definition of the operating sorbent recommendation continues to be behind schedule and could impact initial operation of the HGCU system.

PROJECT SCHEDULE

The project milestone of STEAM BLOWS COMPLETION scheduled for April 30, 1996 was completed on May 11, 1996. Following this milestone, the project completed critical steam pipe restoration, Heat Recovery Steam Generator (HRSG) bellows replacement work, and final Steam Turbine checkout to meet the next milestone.

The Construction Percent Complete Curve shows the actual progress is tracking closely to the Scheduled Curve issued in January 1996.

The 4-hour full speed no-load General Electric (GE) test and synchronization of the Combustion Turbine was delayed until first week in May. Bearing problems on the atomizing air motors, magnetic bearing problems on the boiler feedwater pumps, and the GE modifications to the EHC Piping caused the delays. Although this delayed the start and completion of Steam Blows, it did not effect the milestone for ROLL STEAM TURBINE.

Synchronization of the Steam Turbine was completed ahead of schedule on June 1, 1996. Performance tests of the turbines were completed June 20, 1996 utilizing fuel oil.

The CP-22 contract for restoration west of State Route (SR) 37 is proceeding ahead of schedule.

FORECAST ACTIVITIES

Complete erection of Waste Transfer Building, close circuit TV installation at the gates, and process/propane burner modification for fit up to Gasifier.

Resolve the vibration problem on the coal grinding rod mills.

Conclude approval cycle to place the potable water system in service. Permission from the Polk County HRS must be obtained prior to commissioning the system.

Complete the remaining checkout and testing of the fire suppression and detection systems.

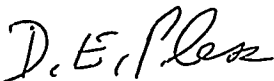
Mr. Nelson Rekos
August 29, 1996

SUMMARY

From an overall standpoint, the Project continues to track well. The completion of construction system turnovers to Start-up is encouraging. Start-up will accept responsibility of the plant until turnover to operations.

The major focus continues to be on the production of first Syngas, scheduled for July 17. All construction, engineering, and start-up activities are in support of Syngas production. Key activities toward this goal include final checkout and startup of remaining gasification systems, completion of punch list items required for first syngas, finalization of operating procedures, preparation of site and area access control plans, site-wide safety training, and other Process Safety management (PSM) requirements.

Very truly yours,



D.E. Pless
Project Management

DEP:jm:h\doe\aprmayr2.qtr

cc: C.R. Black
R.N. Howell
TRIMCO