IM Monthly Report





Mississippi Public Service Commission Kemper IGCC Project

July, 2016



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Executive Summary

URS Corporation (URS), later acquired by AECOM, was requested by the Mississippi Public Service Commission (MPSC) to provide Independent Monitoring services for the Kemper Integrated Gasification Combined Cycle (IGCC) Project located in Kemper County, MS. The scope of services includes monthly reporting by URS (AECOM) and its subcontractors, the Independent Monitor (IM), of the status and prudency of the on-going engineering, procurement, construction and startup activities performed by Mississippi Power Company (MPC or the Company), its parent Southern Company and subsidiary Southern Company Services (SCS), and its subcontractors on the project. This IM Monthly Report provides the results of this assessment for the reporting period of July, 2016, and review of the project status reported by MPC for the period from May, 2016 to July, 2016 (EPC Status Production Meeting Reports June 23 and July 20, 2016, May and June 2016 PSC Reports, and Kemper County IGCC Weekly Executive Summary, Metrics and Control Meeting Reports through July 26, 2016).

During this reporting period, the IM has conducted weekly status review meetings with MPSC staff. Several meetings, teleconferences and reviews were also conducted with MPC and SCS staff, as described below (refer to other Report Sections where referenced for more details):

- July, 2016 Accounting audit of financial records from end of April, 2016 through end of May, 2016 held at MPC offices in Gulfport, MS (Appendix C).
- July, 2016 Daily monitoring of on-going site construction and startup activities at the jobsite (Appendix E).
- Week of July 11, 2016 Review of gasifier startup activities held at the jobsite (Section 1.10).
- July 11 and 12, 2016 Review of project EPC status held at the jobsite (Appendix D).
- July 27, 2016 Teleconference with MPC and SCS to discuss status of open RFI's (Appendix B).

Project Status through June, 2016 (Unless Noted Otherwise)

Engineering - The gasification island design performed by KBR, and the SCS design of the combined cycle island and the balance of plant (BOP) work, remained at 99% complete. All major Revision 0 design packages have been issued for construction. Remaining effort will be focused on resource pool and scope addition activities, including:

- Resource pool activities.
- Support to construction on key contracts emergency notification, heat tracing, and fire protection systems.
- E&CS and MPC Management of Change (MOC) process implementation and training.
- Design revisions from PHA, support requests, updated vendor information, and scope additions.
- Supporting Startup in turnover package checkouts.
- Addressing PSSR functional turnover punchlist items.



Procurement - All major equipment and commodity orders have been placed. Major equipment deliveries are complete. Remaining effort will be focused on final construction and startup needs including procurement of miscellaneous items as identified (scope additions). During July, four new awards were issued for Chemical Products Lab inline duct heaters, fans, inlet filter silencer assembly with hood, and centrifugal blower; and four vendor recommendations were accepted for Vendor TFA Startup Support for TDL Analyzers, Gasifier Island Air Gas Consignment Nitrogen Trailers, Miscellaneous Elevator Repair/Maintenance/Inspection Services, and Refractory Sealant Testing.

Construction (through July 24, 2016) – Plant construction is complete for the combined cycle unit, nitrogen plant, water plant, water storage pond, ash storage, buildings, lignite delivery facilities, piling and caissons, underground utilities, mass grading, concrete, structural steel, equipment, piping, instrumentation, cable tray, cable, terminations, conduit, tubing, and heat tracing. Plant work in progress includes equipment insulation (98% complete, about 15,000 SF remaining), and pipe insulation (98% complete, about 20,000 LF remaining), plus ongoing punchlist and scope addition activities. Overall plant construction remained at 99% complete (through June, 2016).

Transmission – Right of way acquisition and construction is complete for all 11 line segments and all 8 substations. MPC will continue to monitor transmission right of ways for any needed restoration and maintenance.

Pipelines – Right of way acquisition and construction is complete for all 3 pipelines. Long term sales or supply contracts have been signed with the City of Meridian (water supply), Tennessee Gas Pipeline (NG supply), Denbury Resources (CO2 sales), Air Liquide (nitrogen supply from onsite Air Separation Unit), and Martin Product Sales (sulfuric acid and ammonia sales by truck). The CO2 contract provides for termination by Denbury at its discretion if CO2 deliveries do not occur by July 1, 2017.

Liberty Mine - Current land control is 100% complete for the initial five year permit area. Construction activities are complete. Mine is operating and stockpiling lignite. Total actual spending for the mine development through June, 2016, including mine Allowance for Funds Used during Construction (AFUDC), was unchanged at \$232.2M, which is the forecast final cost.

Mississippi Economic Impact

IM has reported for each contract and purchase order whether MS bidders were involved, and if so, status and basis of the award decision (refer to Appendix F). Through June, 2016, contracts totaling \$2.051 billion have been awarded to MS companies, and total MS spending is \$2.036 billion (about 30% of the total, including uncapped costs). MS workforce contributed 391 construction jobs and 348 plant/mine jobs in June. A total of 560 MS Companies have provided construction, equipment, material or professional services for the Project.

Key Concerns



The following Project Execution related concerns have been reported with associated resolution status:

- Differential settlement and/or slope movement during initial loading of lignite stockpile in the storage dome - Survey benchmarks will be monitored for settlement and slope stability during initial stockpile placement. IM suggests MPC consider development of mitigation plans in the event excessive settlements and/or slope movements are discovered, and staging of the initial placement of the lignite stockpile.
- System testing has discovered numerous pressure leaks due primarily to inadequate installation, quality control, and quality assurance of flanged and welded connections (bolt torqueing, gaskets, seals, pipe alignment, missing or inadequate welds) – MPC is repairing the leaks when identified. Key concerns are noted below:
 - Extraction Air Compressor leaks trim cooler gaskets on EAC-1 were replaced; commissioning is complete.
 - Syngas cooler leaks leak repairs and hydrotest completed on both Trains; IM
 has concerns with future leaks under operating conditions.
 - Pump seal leaks seals on all the being replaced; seals on the selexol solvent pumps in the 140 and 210 areas are selexol solvent pumps in the 130 and 230 areas are being replaced.
- Train 2 venturi scrubber pumps cavitation issues continue to be evaluated during the lignite feed tests.
- Venturi scrubber solids carryover issues new duplex strainers will be installed on all 6
 trains to allow the system to run while one strainer is in operation and the other strainer
 is back flushing (piping complete for 3 of 6 trains; strainers will be installed after all
 piping is complete).
- Recovered water filters plugging testing the new set of filter elements in the 3 Recovered Water Candle Filters from is being monitored during the limited lignite runs; plugging and extended back flushing durations continue.
- Gasifier refractory repairs refractory repairs and dry out is complete in both Gasifier A and B; Gasifier A still requires cure out scheduled for August.
- Plugging issues at the roll crushers and inlet rotary air locks continue to plague Trains
 4, 5, and 6 the gear boxes in all three trains have been sent off for cleaning and
 repairs; new sealed bearing will replace the existing bearing in the gear boxes to see if
 this fixes the problem.
- Ash moisturizer system issues with all 4 Ash Moisturizers continue with matching the
 feed rate with the coal/ash and water mixture; modifications in progress for all 4 trains,
 including new baffles, larger rotary feed motors, new pneumatic slide gate valves, and
 new rotary feeders on the discharge chutes.
- Lignite dryer solids accumulation material testing and evaluation in progress.
- Bridging in the coal feed lock vessels on Trains 4, 5, and 6 has required piping modifications (piping extensions) on all B lock vessels on train B Gasifier (4B, 5B, and 6B) and logic modifications on all A lock vessels on train B Gasifier (4A, 5A, and 6A).
- Particulate Control Devices leakage of low amounts of particulate coal fines (1 to 2 lb's/hr) was detected in the upper section of one of the two PCD's in train B. This will be monitored during ongoing gasifier runs.



- Additional gasifier thermal stresses due to changes in thermal refractory used in repair of Gasifier A and recognition of higher operating delta T for both gasifiers during startup – under investigation; new structural supports being added on Gasifier A.
- Gasifier feed rates and pressure Due to bridging in the lock vessels and plugging at the roll crushers and inlet rotary air locks, Gasifier B is experiencing low feed rates of between 20 and 90,000 lb's/hr at pressures well below design values.
- AGR Compressors investigating blockage on 'A' flash gas compressor; replaced bull gear on 'B' flash gas compressor; investigating possible damage to CO2 recycle compressor which may require replacement of the thrust bearing.
- Gas Cleanup Gasket Failures gaskets on Train 1 and 2 shift feed recuperators failed and were replaced; root cause analysis should be conducted to determine if this is a systemic problem.

Contractor Hotline

MPC has established a toll free telephone number for contractors or others to provide observations of any concerns with improper activities associated with the project. Comments are collected by a third party and reported to MPC for follow up investigation and action. The IM is copied on all correspondence and will report status of all cases. There was one new concern filed this reporting period (July, 2016) regarding inappropriate remarks by a contractor employee, which was closed the next day after the submitter reported a satisfactory resolution to his concern.

A summary of the twenty six (26) claims received to date and their status, including corrective actions taken, is included in Appendix I.

Project Document Status

The overall status of the project document reviews are summarized in Appendix B to this monthly report. Most of the RFI's have been posted, reviewed and closed (21 open items remaining). Primary concerns noted by the engineering disciplines are summarized below:

- Scope Additions MPC has posted updated list through May, 2016 for approved items (\$123 Million) and through July 12, 2016 for pending items (20 items); weekly updates are being provided to the IM Site Team for all FCR's, OCR's and Resource Pool Listings.
- Process and Technology five new RFI's were submitted in July (refer to Section 1.10 and Appendix B).

Project Cost and Schedule

In the June 2016 PSC Report, MPC reported no change in forecast completion date of September 30, 2016, and an increase in forecast capped cost of \$9.0 million to \$5.385 billion, including a decrease in base contingency of \$8.1 million to \$28.0 million and no change in Schedule Risk at \$35 million. Forecast uncapped costs were unchanged in June at \$1.376 billion.



Total capped spending for the plant through May, 2016, with deduction for Department of Energy (DOE) funding, was \$5.216 billion. Overall plant EPC remained at 99% complete. Uncapped spending through June was \$1.298 billion. Refer to Appendix G for the PSC Report Summary.

As of July 24, 2016, the current working schedule indicates TOD of 9/10/16, which is a 304 day slip from the November 2014 rebaseline date, and a 15 day slip from the 6/26/16 report. The critical path to Reliable/Clean Syngas Available - Train 'B' is through completing First Coal Feed test 1, First Coal Feed test 2, and Reliable/Clean Syngas – Train 'B', which is currently scheduled to be achieved by August 05.

The critical path to TOD is now through Gasifier 'A' pressure tests, Refractory Cure, First Coal Feed Test - Gasifier 'A', Reliable/Clean Syngas Gasifier 'A', Testing and Tuning of CTs on Syngas, and TOD currently scheduled to be achieved by September 10.

Key drivers on secondary path include:

Clean/Reliable Syngas Available - Train 'B'

- Sour Water System Readiness (1 day off top path), driven by pump seal replacements, heat exchanger addition, and test package completion, currently scheduled for August 04.
- WSA System Readiness (1 day off top path), driven by completion of test package activities; with WSA at Hot Standby July 29.
- LP Vent Gas Compressor Commissioning (2 days off top path), driven by leak checks and test package completion, currently scheduled for July 28.

TOD

- Six dryers ready to support TOD (5 days off critical path), driven by commissioning of Dryer #3 to complete September 05.
- Gasifier steel reinforcement (9 days off critical path), driven by installation of connection plates and hardware, to complete by July 27.

Overall project execution status was reviewed on July 12, 2016 at the jobsite. Refer to Appendix D for detailed meeting notes. Primary concern is additional schedule slippage and associated cost increases, and unknown startup and technology risks.

Additional schedule slippage – MPC has reported a delay in COD to September 30, 2016. MPC will continue to evaluate startup schedule and remaining risks, and has included \$35 million for schedule risk in the June cost forecast, equivalent to September 30, 2016 COD; however, recent trends in startup progress (1.1% per month over the last six months with 8% remaining) will have to improve to meet the forecasted COD. Schedule risks remain for completion of punchlists, scope additions, and on-going issues with the coal feed and ash removal systems have yet to be resolved. IM believes remaining process risks in gas cleanup are being under estimated, and results of the latest Quantitative Risk Assessment (QRA 11) indicate current COD of end of September is about 30% probable (P30 is 10/7/16). P90 date is early December. And



completion of performance testing on CTA will be required to obtain full capacity that is not included in the QRA dates.

- Associated cost increases While increases in the indirect project costs due to schedule delays are capped and therefore being absorbed by the MPC shareholders, the rate payers are also at risk for alternative power generation and AFUDC costs, to the extent these are allowed by the MPSC.
- Unknown startup and technology risks key concerns include premature equipment failures, coal feed, ash removal, refractory reliability, gas cleanup, overall plant process control integration, chemical product quality and off taker performance. Issues associated with several of these concerns (equipment failures, coal feed, ash removal, refractory reliability), have already been reported and are still being addressed.

Accounting

Topp McWhorter Harvey, PLLC (formerly known as Nicholson & Company, PLLC and hereinafter referred to as TMH) has completed the accounting audit of the special-purpose Historical Schedules of Capped and Uncapped Plant Costs of the Project for the historical project-to-date and month-to-date periods ended May 31, 2016, and the examination of specialpurpose Forecasted Schedules for the period beginning June 1, 2016, through the completion of the Project.

On July 26, 2016, the Company filed their June, 2016, monthly Form 8K with the SEC which increased its Capped Plant Cost Current View (forecast) for the Kemper IGCC Project to approximately \$5.385 billion, net of DOE grants and Cost Cap Exceptions. The Company's Monthly Status Report through June, 2016, did not change its Current View (forecast) of Total Exemptions and Exceptions (Non-Capped Cost) of approximately \$1.376 billion. The total Current View (forecast) for Capped Plant Cost and Total Exemptions and Exceptions (Non-Capped Cost) in the Company's Monthly Status Report through June 30, 2016, is \$6.761 billion.

The total estimated Kemper IGCC cost subject to the \$2.88 billion cost cap as of June 30, 2016, was approximately \$5.38 billion, net of the Initial DOE Grants and excluding the Cost Cap Exceptions. The Company does not intend to seek rate recovery for any costs related to the construction of the Kemper IGCC that exceed the \$2.88 billion cost cap, net of the Initial DOE Grants and excluding the Cost Cap Exceptions. As a result of this revised cost estimate, the Company recorded total pre-tax charges to income for the estimated probable losses on the Kemper IGCC of approximately \$38 million during the second quarter 2016.

The Company's analysis of the time needed to complete the start-up and commissioning activities for the Kemper IGCC will continue until the remaining Kemper IGCC assets are placed in service, which has been previously disclosed to occur by September 30, 2016. Significant testing activities, including those for coal feed and gasification systems, as well as the initial operation and testing of the facility's gas clean-up systems and production of clean syngas, and, ultimately the generation of electricity, are in process. These tests are scheduled to continue in the coming days. Based on the results of these tests, the Company will include any necessary schedule impact in the Quarterly Report on Form 10-Q for the guarter ended June 30, 2016. Further cost increases and/or extensions of the expected in-service date may result from factors including, but not limited to, difficulties integrating the systems required for sustained operations,



major equipment failure, unforeseen engineering or design problems including any repairs and/or modifications, and/or operational performance (including additional costs to satisfy any operational parameters ultimately adopted by the Commission). Any further changes in the estimated costs to complete construction and start-up of the Kemper IGCC subject to the \$2.88 billion cost cap, net of the Initial DOE Grants and excluding the Cost Cap Exceptions, will be reflected in the Company's statements of income and these changes could be material.

Any extension of the in-service date beyond September 30, 2016, is currently estimated to result in additional base costs of approximately \$25 million to \$35 million per month, which includes maintaining necessary levels of start-up labor, materials, and fuel, as well as operational resources required to execute start-up and commissioning activities. However, additional costs may be required for remediation of any further equipment and/or design issues identified. Any extension of the in-service date would also increase costs for the Cost Cap Exceptions, which are not subject to the \$2.88 billion cost cap established by the Commission. These costs include AFUDC, which is currently estimated to total approximately \$14 million per month, as well as carrying costs and operating expenses on Kemper IGCC assets placed in service and consulting and legal fees of approximately \$3 million per month.

The ultimate outcome of this matter cannot be determined at this time.

On June 3, 2016, the Company cancelled its contract with Treetop Midstream Services, LLC for the purchase of 30% of the CO2 to be captured at the Kemper IGCC plant. On that same day, the Company revised its contract with Denbury Resources, Inc. to provide for the purchase of 100% of the captured CO2. The revised contract provides for termination by Denbury at its discretion if CO2 deliveries do not occur by July 1, 2017.

On June 9, 2016, Treetop Midstream Services, LLC; Greenleaf CO2 Solutions, LLC; Tenrgys, LLC; Tellus Energy, LLC; WCOA, LLC; and Tellus Operating Group, LLC filed a Complaint against the Southern Company, Southern Company Services, Inc., and Mississippi Power Company in the State Court of Gwinnett County, Georgia. The Plaintiffs allege that the Southern Company Defendants concealed and misreported the Start Date of the Kemper Project, and that Treetop relied upon those misrepresentations while building a roughly \$100 million pipeline and conducting other work necessary to take CO2 from the Kemper Project. The Plaintiffs assert claims of fraudulent misrepresentation, fraudulent concealment, and civil conspiracy with respect to the Southern Company Defendants, and breach of contract with respect to MPC. The Plaintiffs seek compensatory damages and punitive damages as well as costs and interest. The Southern Company Defendants will vigorously defend the matter, and the final outcome of this matter cannot now be determined.

On February 25, 2016, Greenleaf C02 Solutions filed a notice of appeal in the Mississippi Supreme Court regarding the decision in Mississippi Public Service Commission docket 2015-UN-80. On February 29, 2016, the Company filed a Motion to intervene as a party in the appeal. On March 3, 2015, the Commission filed its Motion to Dismiss the Appeal. On May 5, 2016, the Mississippi Supreme Court granted the Mississippi Public Service Commission's Motion, dismissed Greenleaf's appeal, and assessed all costs to Greenleaf. As a result, the Commission's decision in docket 2015-UN-80 is final and no longer subject to appeal. Greenleaf requested En Banc reconsideration and this was denied on July 27, 2016. The matter has been finally determined unless appealed to the U.S. Supreme Court, which is unlikely.

As reported in the Form 10Q for the first quarter ended March 31, 2016, Mississippi Power Company disclosed that the Securities Exchange Commission (SEC) is conducting a formal investigation of Southern Company and Mississippi Power Company concerning the estimated costs and expected in-service date of the Kemper IGCC Project. Southern Company and Mississippi Power Company believe the investigation is focused primarily on periods subsequent to 2010 and on accounting matters, disclosure controls and procedures, and internal controls over financial reporting associated with the Kemper IGCC Project. As of the date of this report, July 29, 2016, Southern Company and Mississippi Power Company are still in the document production stage and continue to cooperate with the SEC. The ultimate outcome of this matter cannot be determined at this time; however, it is not expected to have a material impact on the financial statements of Mississippi Power Company.

Discipline Summaries

Environmental / Permitting

CCE has completed its review of additional environmental/permitting documentation provided by MPC since October 2015.

The IM's review of these documents has not identified any major concerns or issues. However, there will be additional monitoring reports (Mitigation Action Plan, Wetlands Mitigation and Water Quality and Macroinvertebrate Monitoring Reports) prepared by MPC and LF for the MDEQ and the Corps of Engineers. These documents and reports should be provided to and reviewed by the IM to insure that the permit requirements for the IGCC Plant Site and Linear Facilities and for the Liberty Mine continue to be met.

IM is monitoring status of approvals for the two (2) remaining plant permits:

- Title IV Acid Rain Permit Application was submitted 10/13/11; MDEQ issued draft permit on 2/11/14; Public comments have been received.
- Title V Operating Air Permit Modification Application was submitted on 8/22/14; MDEQ issued draft permit.

Process and Technology

Implementing site monitoring plan for gasifier startup by IM gasification technology specialist. Last site visit was conducted week of July 11 (see Section 1.10). Next visit will be conducted week of August 8. IM submitted five new RFI's in July (refer to Section 1.10 and Appendix B).

Lignite Delivery Facility

LDF construction is 100% complete. Coal silos 4, 5, and 6 are loaded with approximately 100 tons of coal to support lignite test runs later this week. Approximately 10,000 tons of coal is being maintained in the dome to support lignite testing. Mobile coal screening equipment continues to screen the coal at the coal storage pile before it is sent to the truck dump. Cleaning



the LDF sump continues this week with wet material being dammed up and stored in the LDF waiting environmental inspection before being disposed of in the Ash Pond.

Procurement

IM reviews of Procurement Activities are complete. Most known key Contracts and Purchase Orders, including construction and Liberty Mine facilities, have been included, totaling about 500 items (excluding O&M Service Contracts, MS Tier II contractors, and Transmission). Refer to Appendix F) for the final update of completed reviews.

Site Activities (Plant metrics through July 17, 2016)

The following activities are <u>ahead of or on schedule</u> – Steel, Pipe, Instruments, Cable Tray, Tubing, Cable, Terminations, Conduit, Process Heat Tracing, Freeze Protection Heat Tracing, Equipment Insulation, and Pipe Insulation. The following activities are <u>behind schedule</u> with the percentage behind; include Startup (8%).

Mechanical work has been proceeding in the following areas - Area 210 - Waste Water & Selexol Storage Area, Area 140 – Tankage Area, Area 150A/250A - Coal Prep Area, Area 120/220 – Gas Cleanup, Area 150/250 - Gasifier Area, Area 160 – Wet Sulfuric Acid Area, Area 230 – Selexol Area (North), Area 130 – Selexol Area (South), Area 105 – Train 1 Gas Clean Up Area, Area 110 – Compressor Area, Area 180 – CO_2 Compression and Dehydration Area, and Area 260 – Sulfuric Acid Recovery Area.

Electrical & Instrumentation work has been proceeding in the following areas - Area 105 – Train 1 Gas Clean Up Area, Area 110 – Compressor Area, Area 120/220 - Gas Cleanup Area, Area 130/230 – Selexol Area (South & North), Area 140 – Tankage Area, Area 150/250 - Gasifier 1 & 2, Area 150A/250B – Coal Feed 1 & 2, Area 160 – Wet Sulfuric Acid Area, Area 170 – Pipe rack, Area 180 – CO₂ Compression/Dehydration Area, Area 200 - Main Electrical Building, Area 210 - Waste Water Treament Area, and Area 260 – Sulfuric Acid Recovery Area.

Gas Clean - Up (Areas 105, 120, and 220) – Ash Moisturizer Booster Pump PU-6102A has been removed, relocated, and set northwest of Gasifier B and south of Pipe Rack "H" at the road crossing. Startup continues to ensure all punch list items on train A are complete in preparation for Gasifier A first syngas production. Train 1 Gas Clean Up area is now fenced off and sign-in and out is required. Train B was pressure tested with nitrogen all the way to the Micron Filter 2010. Operations will start heating up the system in preparation for TP- 2074. (Sulfide the water gas shift catalyst) Gasifier pressure will need to be around 450 psi before TP-2074 can be executed.

Process Air (Area 110) – Monday (7/25) the Extraction Air Compressor was run to check the safeties on Extraction Air Trim Cooler (HX-1019) which had lifted last month during testing, no issues were found. The Extraction Air Compressor 1 was fully commissioned Tuesday (7/26). Process Air Compressors 3 and 4 are being run to support Gasifier B.

Selexol (Areas 130 and 230) – Area 130, installing cathodic protection flange isolators on the vessel and equipment drains to the Closed Selexol Drum on train A is complete. Valve line up was completed to water rinse the system by circulating water using the



lean and semi- lean pumps. A rinse is required because this system been under a nitrogen cap due to the numerous punch list items being performed. This rinse is in advance of filling the system with Selexol which began Wednesday morning (7/20) and was completed Saturday (7/23). Pressure testing (625 to 650 psi) through the Syngas Scrubber CL-2007 was completed successfully. Crews have completed the erection of the green snow fence around the perimeter of the 130 and 230 areas which requires signing in and out of these units. Area 230, Selexol fill in train B began Tuesday (6/28) in the Regenerator and was completed on Friday (7/8) with 438,000 gallons of Selexol. Water issues have been resolved for heating up the water in the Regenerator reboiler to begin heating up the system. Flash Gas Compressor CO-2065 commissioning with representatives began Monday (7/18). On Tuesday (7/19) the compressor was run but tripped out 3 times. Additional issues were encountered on Thursday (7/21) during another attempt to run the compressor. An investigation is underway with on these issues. Testing continues in both areas on the safety shower fixing leaks in preparation for commissioning.

Tankage Area (Area 140) – Anhydrous Ammonia Rerun Pumps (PU-54A and B) and Anhydrous Ammonia Reflux Makeup Pumps (PU-59A and B) have been removed for seal leak repairs. These pumps are still out for repair. Final inspection was completed on the 50% Hydrogen Peroxide tank (TK-70) early this week with the tank being filled Tuesday (7/19).

Gasifier (Areas150 and 250) – The following activities are in progress or complete:

- Gasifier A Bolt Tech completed the dry out with the final hold for 12 hours at 1000 degrees Tuesday (6/28). The burners were turned off Tuesday night allowing the Gasifier to cool down naturally. The temperature as of Wednesday (6/29) was 200 degrees. Thorpe completed 4 minor repairs in the standpipe Monday (7/4) and hammer tested these areas Tuesday (7/5). Scaffolding was removed Wednesday (7/6) in the Standpipe down to the J-Leg and in the Riser down to the DDI valves. The remainder of the scaffolding was removed before installing inserts on Thursday (7/7). Restoration continues with blinds being removed for pressure testing at 50 psi Saturday (7/23).
- Gasifier B Restoration, installing inserts, and torqueing was completed with pressure/leak testing on Wednesday (6/29). The pressure on the Gasifier B was increased slowly to 450 psi and finally up to 650 psi through the Gasifier and Syngas Scrubber on Friday (7/1). Prior to Pressure testing the Steam Drum was rinsed several times Tuesday (7/5) before filling and circulating through the Syngas Coolers Wednesday (7/6). Stroking the DDI valves and lighting the pilots on the Start-up Burners was completed Wednesday (7/6). The burners were lit on Sunday (7/10) to ramp the temperature up in the Gasifier until the DDI valves were used on Monday (7/11) increasing the temperature at a rate of 50 degrees/hr until they reach 1800 degrees. When they reached 1800 degrees this temperature was held for 23 hours which was completed on Thursday (7/14). At 3:10 p.m. Thursday (7/14) lignite coal was fed to Gasifier B for the first time using two dryer trains, trains 4 and 5, with Syngas being produced and vented through the B HP Flare. Both trains 4 and 5 ran for 22 continuous hours with a feed rate of around 100,000 to 150,000 lb's/hr. Friday 2pm (7/15) both trains were down due to issues with the lock vessels which included bridging in the vessels. A second run of 14 hours between Friday and Saturday (7/16) night was



achieved while still experiencing bridging in the lock vessel as they tried to ramp up the pressure. It was decided Saturday night that operations would take a controlled shutdown of Gasifier B to work on these issues. Shortly after the controlled shutdown of Gasifier B was underway HRSG B tripped while HRSG A was being brought down for the partial instrumentation outage. Losing both HRSG at the same time and with Gasifier B still running the station load was exceeded causing loss of power. This loss of power to major pieces of equipment associated with Gasifier B caused an uncontrolled shutdown of Gasifier B. However the Gasifier was safely brought down. The Gasifier was down while resolving the bridging in the lock vessels. Early Friday (7/22) morning they began loading solids in Gasifier B and circulating the bed around 8:45 am. Operations are scheduled to light the burners during night shift Friday night and will evaluate conditions (Gasifier and lock vessels) before using the DDI valves to increase the temperature. This will put them feeding coal around 11 pm Saturday (7/23) night.

- Trains 5 and 6 Coal Feed Lock Vessels Bridging in the lock vessel can result in inconsistent and occasionally loss of coal feed to the gasifier. This can potentially result in an imbalance in the air/coal ratio in the gasifier and potentially temperature excursions that exceed the ash fusion temperature of the lignite resulting in ash that melts then hardens on the gasifier walls. Week ending 7/22/16 piping modifications on the lower 3 nitrogen rings of lock vessels 6B is being conducted along with offline testing of the modifications. Testing results have been mixed with bridging issues still continuing. The diffusers were removed from every other nozzle inside the vessel on these three rings. Pipe extensions were added in place of the diffusers to mitigate the bridging in the vessel. Reprograming the logic on lock vessel 5B is being tested as a mean to alleviate the bridging issues while modifications on 6B continue. Lock vessel 6B piping modifications should be complete by the end of the day Friday (7/22) which will allow them to begin PDAC testing starting Friday night (7/22). All piping modifications (piping extensions) will be on all 'B' lock vessels on train B Gasifier (4B, 5B, and 6B) and all logic modifications will be on all 'A' lock vessels on train B Gasifier (4A, 5A, and 6A).
- Train A and B PCD's Heating the cone sections of train B PCD's with steam and testing the back pulse system was completed on Thursday (7/7). During the first Gasifier run particulates (1 to 2 lb's/hr) were detected in the upper section of one of the two PCD's. SME's (subject matter experts) meet on Tuesday (7/19) and determined the amount detected could be handled by the Carbon Bed Filters in the Sour Water Area for now. The particulates will be tracked when the Gasifier comes back on line. In the event the amount increases then a scheduled PCD outage will be required to investigate the problem. Train A PCD's were closed after final inspection last week.
- Removing the manual slide gate valves off the deinventory lines of the Gasifier Coal Feed Storage Bins and replacing them with pneumatic orifice slide gate valves has not begun on trains 1, 2, and 3. These valves will be used to control the feed rate to the Ash Moisturizers by allowing the operators to control the position of the valves locally to increase or slow down the feed rate to the Ash Moisturizer. This is part of the next phase of modifications to ensure the operation of the Ash Moisturizers. (Trains 4, 5, and 6 are complete.)



 The discharge slide gate valves on Ash Moisturizers A and B were installed on Saturday (7/23).

Area 150A/250A - Coal Prep Area: The following activities are in progress or complete:

- Trains 4, 5, and 6 dryers At the beginning of the month plugging issued plagued all three dryers with some successful runs. Train 6 ran continuous for 12 hours at 130,000 lb's/hr on Sunday (7/3) with only minor plugging in the Inlet Rotary Air Lock. Train 5 was able to run continuous for 7 hours at 130,000 lb's/hr but did experience plugging issues in both the Inlet Rotary Air Lock and HP Discharge Rotary Air Lock. After the Gasifier was shut down on Saturday (7/16) all three dryer remained down until Wednesday night (7/20) when dryers 5 and 6 were run to fill/replace the coal in trains 5 and 6 lock vessels. During the lignite run the PRV off of train 6 dryer lifted and wouldn't reseat shutting down train 6 dryer. This PRV was changed out before the lignite run could resume. Train 5 dryer ran without any issues last night supplying coal for offline PDAC testing today (7/21). It was decided as a path forward to use train 5 as the primary dryer to continuously operate at a sustainable feed rate for Gasifier B. Trains 4 or 6 will run with train 5 depending on which is available.
- Trains 1, 2, and 3 dryers Restoring these dryers continues this month with train 1 being readied for lignite testing as early as Friday (7/22). Issues with PRV's may prevent these trains from running until another spare PRV is received.
- Due to plugging on Recovered Water Candle Filter B an inspection of the filter found a
 tear on one of the new filter elements that were installed. A new set of replacement
 elements have been ordered. Monitoring will continue on Recovered Water Candle Filter
 A during the lignite runs through week ending 7/22. The sludge pump for the Recovered
 Water Candle Filters went down and was replaced with a diaphragm pump until a
 replacement can be located.
- Pipe fabrication for the new Venturi Scrubber duplex strainers is on hold this week until resources are available. These new strainers will allow the system to run while one strainer is in operation and the other strainer is back flushing.

Ash Removal System (Area 150A/250A) – The following activities are in progress or complete:

- Ash Moisturizer C modifications were completed with testing Sunday (7/3) night resulting
 in the system being shut down. Improper mixing with coal and water produced a mixture
 that was too wet. Mix rates are being adjusted with successful runs Wednesday (7/6)
 and last night matching dryer feed rates of 125,000 lb's/hr without issues. A total of 25
 trucks were loaded and sent to the mine Wednesday (7/6) night shift.
- Ash Moisturizer B modifications are being completed to match the modifications that were made on Ash Moisturizer A.
- Crews have run two 6" HDPE pipes that will supply water from the Sedimentation pond to one of the 4 Ash Moisturizers. PCI has made the tie-in into the existing line from the



Sedimentation pond that is located northwest of the Gasifier and south of Pipe Rack "H" at the road crossing. Crews completed the new foundation for relocated Ash Moisturizing Booster Pump PU-6102A. The booster pump pipe, valve, and electrical terminations were completed. This pump is now running supplying water for testing on Ash Moisturizer C. The permit for supplying water to the Ash Moisturizers has been amended to allow Reclaim Sump water to be used as well as water from the Sedimentation Pond. Because of the modified permit two new Ash Moisturizer Booster pumps will be purchased and installed. This option of pumping water from the Sedimentation Pond will allow the pond level to be reduced during high water levels in the pond are present.

As part of the new dust suppression system in the Mill Alleyway a new containment system with spray nozzles has been installed under Ash Moisturizer C to suppress the coal/ash dust when dumping into the haul trucks.

Wet Acid (Area 160) - Catalyst loading was completed in all three beds of the SO₂ Converter by Sunday (7/3). The top catalyst cap on bed #1 was tested and found to be compromised and the replacement catalyst that was ordered arrived Saturday (7/9) and was loaded in the SO2 Converter. The 24" lined tee that was sent off for repair arrived Tuesday (6/28) and was installed along with three of the five new expansion joints for the Scrubber Water Pumps PU-73A through E. After the new expansion joints were installed the pumps were realigned. Wednesday (7/20) after final inspection the Acid Vessel (DR- 71) was filled with sulfuric acid. Fabricating, running natural gas lines, water lines, and steam lines for the two Wabash package boilers that were set west of the unit is complete and were turned over for boil out and steam blows on Friday (7/22) and completed Sunday (7/24). PCI then removed the temporary steam blow piping, installed blinds, and replaced the drum door gaskets. These package boilers will be used to supplement medium pressure steam (325#) for the upcoming Combustion Turbine B outage and later if one of the HRSG's goes down during syngas testing due to unreliable syngas to the turbine and the plant goes to One on One. These package boilers will supply medium pressure steam (325#) to the Gasifier, AGR, and Gas Clean Up areas in the event this happens.

Pipe Rack & BOP (Area 170) - Construction is complete.

CO₂ Compression / Dehydration (Areas 180 and 260) – Airgas was on site Friday (6/24) to begin the initial fill of the Ammonia Refrigeration system. Startup began by pulling a vacuum on the refrigeration system and broke the vacuum with the ammonia vapor during the day Friday (6/24). They began building pressure with ammonia vapor in the 180 area, once they have achieve the designated pressures in the 180 area they began pressuring up the ammonia systems in the 130 and 230 areas. Testing the Refrigeration Compressor A through H was completed successfully with only minor issues. Three of the eight Refrigeration Compressors are running for the B AGR unit this month. Some insulating continues in the Dehydration unit in area 260.

Flare (Area 190) - Train B HP Flare, LP Acid Gas Flare, and the Ammonia Flare are all operational. Water has been drained from train B HP Flare K.O. drum due to water being picked up during flow and putting out the pilots. Startup is working with the vendor to determine a fix.



Waste Water Treatment (Area 210) – All three towers, Hydrogen Sulfide Stripper (CL-0042), Wastewater Ammonia Stripper (CL-0044), and the Wastewater Ammonia Purifier (CL-0052) are in operation with the Aqueous Ammonia solution being circulated between these towers. All the ammonia has been recovered out of the water in the Wastewater tank (TK-42) with the level in the tank at 30%. Reducing the level in the tank by evaporating the water using the reboiler will continue until they reach 5% level in the tank. The new couplings for the Wastewater Ammonia Purifier Bottoms Pumps A and B was received and pump B motor was completed Friday (7/8) and A was completed Wednesday (7/13). The final connection for filling the Selexol tank was completed. A total of 70 trucks of Selexol were delivered and filling the Selexol tank was completed.

Acid Storage Tanks and Off Spec Acid Tank (Area 260) – Cleaning Acid Storage tank TK-072A and B is complete with final inspection to follow before bolting and torqueing the manways.

Nitrogen Plant (Area 260) – The nitrogen plant continues to support the plant and startup this month.

Combined Cycle HRSG's and CT's (Areas 510, 520, 530, and 540) – Power Block outage on train B began Friday (7/1) for a scheduled 14 days. Major items to be accomplished and that were completed during the outage are:

- HRSG B yearly inspection (Complete)
- Reinstall the 8 valves on train B Siemens fuel skid (nitrogen and syngas valves) that were removed during the last outage for the combustion turbine that were leaking. (Complete)
- Install limited instrumentation on CTB for Syngas testing. (Complete)

Power Block outage on train A began Wednesday (7/20) for a scheduled 10 days. Major items to be accomplished during the outage are the same as train B. The valves on the Fuel skid were stroked and tested Tuesday (7/26). The skid was air free with nitrogen Wednesday. HRSG A is scheduled to be turned over to fleet on Friday July 29.

Steam Turbine & Auxiliary Boiler Area (Area 550) – Construction is complete.

Water Treatment (Area 570) - Construction is complete.

Cooling Towers (Areas 580 and 590) - Construction is complete.

Main Gate Security (Area 700) – Construction is complete.

Sewer Plant and Ash Storage Pond (Area 800) – Cleaning the modular tanks 1 through 6 and installing the new liners in Modular tanks 7 and 8 continues this week. Installing the floating tops for tanks 7 and 8 will follow after the liner installation is complete. (These modular tanks (7 and 8) will be used to store demin water which will be produced by processing water from the north pond through the GE trailers. This



demin water is for the two temporary Wabash package boilers which will supply 325# steam for startup)

Process Water Reservoir (Area 900) – North Ash Pond road bed is complete and the haul trucks have started hauling the coal/ash to the pond.

Safety

<u>Project Safety Summary:</u> Since the beginning of the project, there have been 84 reportable incidents at the site with 39,631,697 man hours worked. This year, the site has worked 2,590,040 man hours with 2 reportable incidents. The project RIR stands at 0.15 for the year and 0.42 for the Project Total to Date.

Schedule

The construction schedules for remaining base scope, and the schedule for scope additions, all dated 7/24/16, are included in Appendix E.

Key construction metrics reported through July 24 are summarized below:

- Equipment insulation installation was 1% behind schedule overall. Work in the Gasifier area is complete. The remaining quantity is in Gas Cleanup and is scheduled to restart in July, subject to startup activity, and complete in September.
- Pipe insulation installation was on plan overall. Work in the Gas Cleanup area is complete. The remaining quantity is in the Gasifier area and is scheduled to restart and complete in September.
- Construction to Startup punchlist summary for base scope (excluding scope additions) shows no change in open items remaining at 374 from June 26 to July 24.
- Overall, turnover packages from construction to startup are on schedule as 966 are
 received out of a plan of 966 to date (99% complete, 2 of 968 packages remaining). The
 only remaining packages are Gasifier Structure Personnel Elevator that will be turned
 over on July 30 (delays are due to electrical issues and timing of inspections), and
 Potable Water (turn over date 8/19/16).

Startup

- At the end of June, total startup employee staffing was at 254, including 24 SCS startup employees, 223 supplemental, and 7 OPCO's staff; plus 355 startup supplemental craft support and 47 I&C field technicians (grand total of 656 – a decrease of 74 from end of May).
- Through July 24, startup progress was 92.1% complete overall (1.1% increase from June 26) vs. planned 100%.
 - 955 TOP's have been commissioned out of a total of 968 (98% complete). Of the 13 remaining, 6 are complete for commissioning with the exception of



- completing all I/O loop checks. 39% (377 of 968) have been turned over from startup to operations (mostly CC and associated BOP).
- Startup test packages are 72% complete (69 of 96 complete). Of the remaining
 27 test packages, 18 are currently in progress.
- Overall, I/O checks are 1% behind plan (99% complete, 279 of 31,850 remaining). New scope accounts for approximately 242 points of the 279 points that require testing. Scope additions will potentially continue to change the total point count over the coming weeks as loops are added or deleted. These changes will be incorporated into the plan. The majority of the remaining loops are not available to be checked due to needed design, construction, or release from clearance. There is no impact to test package execution or milestone completion.
- Startup to Operations punchlist summary for base scope (excluding scope additions) shows a decrease in remaining open items from 11,491 on June 26 to 9,853 on July 24 (277 of these are high priority).
- MPC reported the following startup achievements in July:
 - Completed Gasifier B 625 psi pressure test
 - Completed Train A and B selexol fill
 - Lignite dryers 5 and 6 ready for initial gasifier operations
 - Gasifier B PSSR signed off
 - Began circulation of ash/sand in Gasifier B
 - Began final ammonia purification test package
 - Completed WSA catalyst loading
 - Completed refrigeration compressor run-ins
 - Completed First Coal Feed/First Syngas Production Gasifier B
 - Syngas Cleanup B PSSR signed off
 - Completed turnover of LDF to Liberty Fuels
 - Completed 'A' Extraction Air Compressor run-in
 - Completed CO2 recycle compressor run-ins

Operations and Maintenance

Overall 275 of the planned 309 permanent employees are on staff (333 of 309 including contractors). Current supplemental contract staff will be considered for remaining 34 permanent positions.

Process Safety Management (PSM) program development:

- GT board operator training complete can provide trained operators to support any test package.
- Overall Risk Management Plan (RMP) is complete and will be filed with EPA prior to implementation – RMP for HRSG ammonia system was approved by EPA.



- There are 14 PSM elements 12 of the 14 are complete (ready for chemicals).
- Executing PSM consultants' recommendations for the remaining 2 elements Process Hazard Analyses and Pre Startup Safety Review.
 - 1. <u>Process Hazard Analysis</u> all eight PHA's requiring updates are complete, working through last few remaining recommendations (>99% complete).
 - Pre-Startup Safety Reviews Initial Equipment Walkdowns using PSSR checklist are complete for all 14 required systems (346 TOPs walked down out of 346, 100% complete). 10 of 14 PSSR's are complete.

Land

IM Review of Documents and Purchases from the Kemper County Courthouse,
Lauderdale County Courthouse and Update on the Lawsuit Concerning the Kemper IGCC
Power Plant Site and Liberty Mine, Kemper County, Mississippi

In the June 2016 report, the IM reported that there were four new purchases of mining land during the month in Kemper County, MS., no new land purchases in Lauderdale County, MS., and the status of the Kemper County lawsuit.

In the July 2016 report the IM will discuss land records searches for new purchases of mining land in Kemper and Lauderdale Counties in Mississippi, discuss land purchases of the Crogman W. Wooten Estate and review of documents concerning prior purchases of coal mining land, and developments in the Kemper County lawsuit.

The IM has reviewed updated information about the purchase of new mining land for the Kemper County IGCC Power Plant and Liberty Mine and the status of the Kemper lawsuit and determined the following:

- Mississippi Power Company (MPC) made no new purchases of coal mining land in Kemper County, MS. in the last month.
- MPC made no new purchases of coal mining land in Lauderdale County, MS. in the last month.
- In order to identify purchased land parcels that are difficult to locate on project maps the IM obtained copies of tax/land parcel plats in Kemper County, MS and used the maps to verify the locations of sixteen tracts that comprise the Crogman W. Wooten Estate. In eleven purchase transactions MPC has purchased a total of 32.96 net acres which is equal to 39.50% undivided interested in the 83.4 surface acres comprising the Crogman W. Wooten Estate.



- The IM is reviewing documents provided by MPC regarding prior purchases of coal mining land and will report on the purchases in the next few months.
- The parties to the Barham versus Mississippi Power Company lawsuit are waiting for a
 decision from the Judge dealing with the Summary Judgment Motions filed by both
 parties and argued at a court hearing held August 27, 2015 in the Chancery Court in
 Philadelphia, MS. The last filing in the case was August 15, 2015.