

IM Monthly Report



Mississippi Public Service Commission Kemper IGCC Project

December, 2016

URS

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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 prudence 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 December, 2016, and review of the project status reported by MPC for the period from October, 2016 to December, 2016 (EPC Status Production Meeting Reports November 21 and December 19, 2016, October and November, 2016 PSC Reports, and Kemper County IGCC Weekly Executive Summary, Metrics and Control Meeting Reports through January 10, 2017).

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):

- December, 2016 – Accounting audit of financial records from end of September, 2016 through end of October, 2016 held at MPC offices in Gulfport, MS (Appendix C).
- December, 2016 – Daily monitoring of on-going site construction and startup activities at the jobsite (Appendix E).
- Week of December 12, 2016 – Review of gasifier startup activities held at the jobsite (Section 1.10).
- December 12 and 13, 2016 – Review of project EPC status held at the jobsite (Appendix D).

Project Status through November, 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, is 100% complete for base scope. 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 support activities.
- Support to construction on heat trace contract.
- E&CS and MPC Management of Change (MOC) process implementation and training.
- Design revisions from PHA physical changes, support requests, updated vendor information, and scope additions/OCR's.
- Addressing PSSR functional turnover punch list items.
- Supporting operations closeout for punch list items and temp-mod conversions.
- Beginning activities to support Project Close-Out.

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 December, there were eight (8) new awards issued for 1) pH Analyzers for Sulfuric Acid Injection, 2) Static Mixer, 3) AGR 60 and 66 Pump Seal Retrofit, 4) Shell & Tube Heat Exchanger for Sour Water System, 5) Filter Press and Feed Pump Rental, 6) Mix Tank and Agitator Rental, 7) Filter, Reverse Osmosis and Deionization Filter System, and 8) Conical Bottom Settling Tank Rental. There were also two (2) new vendor recommendations approved for 1) Spare Ceramic Ferrules for WSA Waste Heat Steam Generator, and 2) Polymer for Candle Filter Operation.

Construction – Overall base plant construction is 100% complete (as of November 13, 2016). Remaining work includes ongoing punchlist and scope addition activities.

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 November, 2016, including mine Allowance for Funds Used during Construction (AFUDC), was unchanged at \$232.0M, 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 November, 2016, contracts totaling \$2.164 billion have been awarded to MS companies, and total MS spending is \$2.148 billion (about 30% of the total, including uncapped costs). MS workforce contributed 217 construction jobs and 382 plant/mine jobs in November. A total of 568 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.

- Train 2 venturi scrubber pumps cavitation issues – *continue to be evaluated during the lignite runs.*
- Venturi scrubber solids carryover issues – *new duplex strainers will be installed on all 6 trains; steel platforms and piping are complete; strainers will be installed when received.*
- Recovered water filters plugging – *testing the new set of filter elements in the 3 Recovered Water Candle Filters is being monitored during the lignite runs; better results but these three filters will not be able to handle the flow from 6 trains; engineering is looking into this.*
- Plugging issues at the roll crushers - *new sealed bearings have been installed in all six gear boxes; new 7 blade feeders will replace the existing 8 blade feeders in the roll crusher rotary inlet air locks (2 of 6 complete).*
- Ash moisturizer system – *modifications on all 4 ash moisturizers have improved operation; dust suppression still an issue at times during ash and coal loading for disposal; these systems continue to be monitored.*
- Lignite dryer solids accumulation – *material testing and evaluation in progress.*
- Gasifier A coal feed incident - *An incident in October allowed hot gas to back up into train 3 coal feed system, PDAC, Dispense Vessel, and into the Lock Vessel. RCA was completed; IM has requested status of RCA Action Items (RFI 2-887).*
- CFAD (Continuous Fine Ash Depressurization) – *ash leaks are causing piping erosion; pipe fittings are being replaced; PLD's will also be replaced with revised design.*
- Nitrogen Plant – *capacity is insufficient to support simultaneous startup of both gasifiers, requiring availability of recycle syngas and transport air on one train before starting the second train; supplemental nitrogen is being brought in by truck to support startup.*
- CO₂ Product Compressors – *commissioning is being hampered by low CO₂ pressure; commissioning is on hold pending availability of adequate quantities of CO₂ (post COD).*
- Sour Water System – *high pH balance is causing ammonia bicarbonate salt formation in the system; temporary acid injection system was installed in the unit with initial results being positive; tie-ins for permanent system in progress.*
- LP Acid Gas Flare blockage – *salt formation plugged the holes in the diffuser resulting in a pressure release on the waste water tank; flare line was steamed out to remove the blockage; continuous steam to flare is being considered long term.*
- AGR - *excessive foaming was detected in the Train B AGR; the foaming issue was hydrocarbon that was eliminated by raising the temperature in the Absorbers and changing foaming agents.*
- WSA - *issues with tubes plugging in the Waste Heat Steam Generator are being addressed with samples sent off for analysis, may be ash leaking into the system; burner nozzles were eroded and will be replaced.*

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 were no new concerns filed this reporting period (December, 2016).

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 (20 open items remaining). Primary concerns noted by the engineering disciplines are summarized below:

- Accounting – *New RFI issued in January, 2017 requesting MPC post In Service Date process for 1) categorization of on-going costs (capped or uncapped); and 2) accounting records showing how these costs are being booked, both for monthly IM review.*
- Scope Additions – *MPC has posted updated list through July, 2016 for approved items (\$127 Million) and through September 14, 2016 for pending items (21 items); update is pending; weekly updates are being provided to the IM Site Team for all FCR's, OCR's and Resource Pool Listings.*
- Process and Technology – *IM submitted questions regarding analysis of solids accumulating in the coal dryers in August, and additional questions relative to the Gasifier A coal feed system syngas backflow incident Root Cause Analysis in November; MPC response pending.*
- Operations and Maintenance – *IM submitted 3 additional RFI's relative to the RAM Analysis in September; MPC response pending.*

Project Cost and Schedule

In the November 2016 PSC Report, MPC reported no change in forecast completion date in January, 2017, and an increase in forecast capped cost of \$34.2 million now at \$5.556 billion, including a decrease in base contingency of \$4.2 million now at \$19.1 million and no change in Schedule Risk at \$25.0 million. Forecast capped cost increase was due primarily to increased Pre Commercial Operations and Post-in-Service costs (\$21.7 million) and EPC costs (\$11.1 million). Forecast uncapped costs increased in November by \$17.5 million now at \$1.459 billion, due primarily to increases in AFUDC costs (\$13.7 million).

Total capped spending for the plant through November, 2016, with deduction for Department of Energy (DOE) funding, was \$5.445 billion. Overall plant EPC remained at 99% complete. Uncapped spending through November was \$1.404 billion. Refer to Appendix G for the PSC Report Summary.

As of January 1, 2017, the current working schedule indicates TOD of 1/9/17, which is a 425 day slip from the November 2014 rebaseline date, and a 25 day slip from the 11/27/16 report. The critical path to TOD is currently through Train 'B' Syngas Produced Electricity followed by Syngas Operations in parallel with Train 'A' Syngas Operations. The critical path for Syngas

Produced Electricity Available Train 'A' is currently through Achieve First Coal Feed Test 2 Levels - Gasifier 'A', Produce On-Spec Syngas for CT - Gasifier 'A', Place Combustion Turbine in Service - Gasifier 'A', Start & Tune Recycle Syngas Compressor - Gasifier 'A', and Ready for Two Train Integrated Operations. Syngas Produced Electricity Available - Train 'A' is currently scheduled to be achieved by January 5.

Overall project execution status was reviewed on December 13, 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 January, 2017. MPC will continue to evaluate startup schedule and remaining risks, and has included \$25 million for schedule risk in the November cost forecast; however, recent trends in startup progress (<1% per month over the last six months with 4% remaining) will have to improve to meet the forecasted COD. Schedule risks remain for completion of punchlists, scope additions, and on-going issues noted under key Project Execution and Process and Technology concerns herein.
- 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 have already been reported and some 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 October 31, 2016, and the examination of special-purpose Forecasted Schedules for the period beginning November 1, 2016, through the completion of the Project.

On January 6, 2017, the Company filed their November 2016, monthly Form 8K with the SEC which increased its Capped Plant Cost Current View (forecast) for the Kemper IGCC Project to approximately \$5.556 billion, net of DOE grants and Cost Cap Exceptions. The Company's Monthly Status Report through November 2016, increased its Current View (forecast) of Total Exemptions and Exceptions (Non-Capped Cost) to approximately \$1.459 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 November 30, 2016, is \$7.015 billion.

In connection with the filing of its Kemper County Integrated Coal Gasification Combined Cycle Project Monthly Status Report through October 2016 (the "October PSC Report"), the Company disclosed that, while it remained possible to meet the previously-projected in-service date of December 31, 2016, it expected the Kemper IGCC to be placed in service during January 2017. Following the filing of the October Monthly Status Report, the Company experienced challenges with the gas clean-up systems for gasifier "B", which have delayed the integrated operation of both gasifiers; however, the Company continues to expect that the Kemper IGCC will be placed in service by January 31, 2017. The schedule reflects the time expected to complete the integration of all systems necessary for both combustion turbines to simultaneously generate electricity with syngas.

The Company has revised its previous cost estimate, which included projected costs through December 31, 2016, to include projected additional schedule costs through January 31, 2017. Accordingly, the November Monthly Status Report contains an increase in the cost estimate subject to the cost cap for the Kemper IGCC of approximately \$34 million, including an adjustment of approximately \$9 million for the month of November related primarily to modifications, improvements and maintenance for operational readiness and start-up, and approximately \$25 million related to the inclusion of projected schedule costs through January 31, 2017.

The next steps for the facility include the integrated operation of both gasifiers. Each gasifier previously has produced electricity using clean syngas. Sustaining adequate nitrogen supply, among other items, remains a risk to achieving integrated operation of both gasifiers. If integrated operation of both gasifiers does not occur by mid-January, the expected in-service date and related cost estimate for the Kemper IGCC may require further revision. 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, sustaining nitrogen supply, major equipment failure, unforeseen engineering or design problems including any repairs and/or modifications to systems, and/or operational performance (including additional costs to satisfy any operational parameters ultimately adopted by the Commission). The Company is also identifying potential improvement projects that ultimately may be completed subsequent to placing the remainder of the Kemper IGCC in service. If completed, such improvement projects would be expected to enhance plant performance, safety and/or operations. The related potential costs have yet to be fully evaluated and may be subject to the \$2.88 billion cost cap. Any further changes in the estimated costs 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 January 31, 2017, 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 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.

Through quarterly tax refunds as of September 30, 2016, the Company had received approximately \$250 million in tax benefits associated with bonus depreciation that are dependent upon placing the Kemper IGCC in service by December 31, 2016. In connection with the fourth quarter estimated tax payment, the Company will be required to repay this amount through Southern Company's intercompany tax allocation. Any Company cash need arising from this intercompany payment is expected to be provided through a loan from Southern Company. As a result of Southern Company's projected consolidated net operating loss for 2016, there is no cash payment required to the Internal Revenue Service.

On November 17, 2016, the Company submitted a supplemental filing to the October 3, 2016, compliance filing to present revised non-fuel operations and maintenance expense projections for the first year of commercial operation of the Kemper IGCC. This supplemental filing included approximately \$68 million in additional estimated operations and maintenance costs expected to be required to support the operations of the Kemper IGCC during that period. The Company will not seek recovery of these additional costs from customers if incurred.

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. On August 10, 2016, the Southern Company defendants filed motions to compel arbitration and dispositive motions for hearing if the case is not placed into arbitration. A hearing is set for January 13, 2017, in Georgia. The Southern Company Defendants will vigorously defend the matter, and the final outcome of this matter cannot now be determined.

As reported in the Form 10Q for the first quarter ended March 31, 2016, the second quarter ended June 30, 2016, and again in the Form 10Q for the third quarter ended September 30, 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. 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. 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. MPC posted 3Q16 effluent monitoring report on November 1 that will be reviewed by the IM (see Appendix B, RFI 2-698).

IM is monitoring status of approvals for the one (1) remaining plant permit:

- Title V Operating Air Permit Modification – Application was submitted on 8/18/14; MDEQ issued construction permit. The plant will operate under the current construction permit until the Title V Operating Permit is issued.

Process and Technology

Implementing site monitoring plan for gasifier startup by IM gasification technology specialist. Last site visit was conducted week of December 12 (see Section 1.10). Next visit will be conducted week of January 9. IM submitted additional questions relative to the Gasifier A coal feed system syngas backflow incident Root Cause Analysis in November; MPC response is still pending.

The following process and technology concerns are described in Section 1.10:

- The IM Team will continue to monitor the performance of the vibration reduction system, as reported by Plant Operations, during final startup / commissioning and initial normal operation of the Kemper IGCC facility.
- The long-term viability of the modified refractory system design in repaired areas and of the original refractory system design in remaining areas of both gasifiers.
- The root cause(s) of the temperature excursion event in Gasifier B in August and the recent trips of Gasifier A in late October due to high temperatures in the Lower Mix Zone need to be thoroughly investigated. Mitigation actions should be developed and implemented to prevent a recurrence of such events during subsequent commissioning activities and long-term operations.
- It is unclear to the IM Team that the minor reductions in gasifier operating and alarm set point temperatures will significantly reduce the risks of thermal excursions or long-term clinker formation.
- The single-point-of-failure trip of the Nitrogen Plant that occurred in early January 2017, which subsequently caused Gasifier B and its Recycle Gas Compressor to trip, needs to be resolved and eliminated
- Continuous, stable operation of the Airlocks/Rotary Valves upstream and immediately downstream of the Coal Dryers and of the Coal Dryers themselves for weeks/months at full design rates must be achieved before concluding that full functionality of the Coal Preparation System has been demonstrated.
- Trouble-free operation of the Venturi Scrubbers is required to enable the coal feed system for either gasifier train to operate continuously at full design coal feed rate.

Key Technical Milestones Not Yet Achieved

- Resume on-spec operation of WSA and stop flaring of acid gas to LP Acid Gas Flare. Note: plant environmental permit only allows the flaring of acid gas from a single gasifier; so, the WSA must be operational before both gasifiers can be operating with coal feed.
- Restart coal feed to Gasifier A with stable operation at full pressure and temperature.
- Achieve simultaneous operation of both Gasifier Trains A and B with clean syngas from AGR Trains A and B composing at least some fraction of the gas going to combustion turbines CTA and CTB with recycled syngas going back to Gasifiers A and B.
- Achieve the scheduled/targeted 4 days of continuous, simultaneous operation of both Gasifiers with 100% on-spec syngas going to both CTA and CTB at no less than the minimum rates required by combustion turbine vendor (Siemens).
- Successfully run both CTA and CTB turbines on at least partial syngas (co-firing with natural gas is acceptable) for a total of 500 hours (21 days) of operation on each turbine.
- Demonstrate the ability to export on-spec CO₂, ammonia, and wet sulfuric acid product streams as well as to be in overall compliance with regard to environmental emissions.
- Achieve and sustain full design coal feed rate to both Gasifiers while continuing to produce on-spec syngas, CO₂, ammonia and WSA products.
- Achieve full design power production of 580 MW based on 100% syngas flow to both CTA and CTB (no co-firing with natural gas) for a continuous period of at least 1 day.
- Demonstrate ability to operate both Gasifiers reliably over an extended period without:
 - Forming ash clinkers or fused ash on walls of the Gasifier, OR (Note: neither Gasifier has operated for longer than about six weeks without clinkers occurring.)
 - Experiencing difficulties continuously withdrawing ash from each Gasifier through its associated CCAD system and reliably discharging it from the Ash Moisturizers
- Demonstrate ability to reliably operate Venturi Scrubbers and Recovered Water Filters in both Trains A and B while continuously removing coal fines at target efficiency level and recovering design quantities of clean water needed for downstream operations.

Lignite Delivery Facility

LDF construction is 100% complete. The coal is being maintained in Crushed Coal Silos 4, 5, and 6 supporting Gasifier B. 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.

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 700 items (excluding O&M Service Contracts, MS Tier II contractors, and Transmission). Refer to the IM July 2016 Monthly Report (Appendix F), for the final update of completed reviews.

Site Activities (Plant metrics through November 20, 2016)

The following activity is **behind schedule** with the percentage behind, Startup (4%).

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 – CO₂ 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 Treatment Area, and Area 260 – Sulfuric Acid Recovery Area.

Gas Clean - Up (Areas 105, 120, and 220) – Area 105 and 120 are still bottled up after Gasifier A was shut down on November 3 with operation maintaining a nitrogen cap on the system. Nitrogen heat up and reestablishing circulation will begin after Gasifier B is back up and running. Area 220 operation began the nitrogen heat up and reestablishing circulation in the unit ahead of coal feed to Gasifier A. Syngas was once again sent through the unit Saturday (12/10) after coal feed to Gasifier B was reestablished. The syngas is being sent to the HP flare at the outlet of the unit.

Process Air (Area 110) – Testing train B Extraction Air Compressor (CO-2004) to integrate into the system was completed successfully the week of Thanksgiving. Testing on train A Extraction Air Compressor will be scheduled during syngas to Combustion Turbine A. Recycle Gas Compressor A (CO-1008) is still on stand-by while Recycle Gas Compressor B (CO-2008) is in service providing recycle gas to the fluidization valves on Gasifiers B. Process Air Compressors 3 and 4 have been supporting Gasifier B.

Selexol (Areas 130 and 230) – Both these units were down the first week of December. The level bridles on trains A & B Concentrators (CL-1064 and CL-2064) were flushed Wednesday (12/7) as a preventative measure after this shut Gasifier B down twice Friday (11/25). Operations began circulation on the LP Lean Solvent loop Wednesday (12/14) to check for foaming. No foaming was detected in the CO₂ Absorbers or Concentrator during circulation with the unit still down. In area 230, as a result of the flushing, residue was found in the sensing line to the level transmitter on the Concentrator on train B. The unit was back up and running without any foaming issues with pressures between 320 psig and 460 psig until plugging was detected in the outlet to the LP Acid Gas Flare Wednesday night (12/28). The unit was immediately shut down with operations getting ready to start steaming the flare line Thursday morning (12/29). It was noted that the quality of CO₂ was getting better as the pressure was increased with samples taken showing the CO₂ between 80% and 90%.

Tankage Area (Area 140) – No activity was observed this month in the area.

Gasifier (Areas 150 and 250) – The following activities are in progress or complete.

- Gasifier B – Monday (11/28) the feed to the Gasifier was suspended due to issues with the Wastewater Tank (TK-042) and the LP Acid Gas Flare. The temperature in the Gasifier is being maintained at 1600 degrees using the DDI valves at 25 psi. Coal feed was reestablished on Saturday (12/10) at low feed rates of between 150 and 200 kpph at 250 psig while trying to get syngas past the AGR unit. Several trips caused by excessive forming in the AGR and a wrong valve closure in the WGS unit resulted in the Gasifier being reduced to a coal feed rate of 90 kpph at 175 psig until Tuesday night (12/13) when coal feed was suspended. Coal feed was reestablished on Wednesday (12/21) at low feed rates of between 90 and 220 kpph at 200 psig while trying to get quality syngas to Combustion Turbine B. On Friday night (12/23) the Gasifier tripped due to poor quality syngas at the turbine but was brought back on line early Saturday morning (12/24) at low coal feed rates of around 195 kpph due to additional CFAD leaks. Monday night the feed rate was increased and maintained at 400 kpph at 510 psig for 90 minutes. The coal feed rate was reduced to 210 kpph at 350 psig and is being held at this rate to maintain a stable flow while Gasifier A is being readied for startup.
- Gasifier A – Pressuring the Gasifier to 300 psig on Wednesday morning (12/7) for calibrating the nuclear devices were completed. The Gasifier has been depressurized so the additional testing can be conducted Thursday (12/8). All leaks have been repaired with Gasifier A standing by for coal feed as soon as Gasifier B is fully operational. Operation completed balancing the fluidization valves Wednesday morning (12/28) and started the steam warm up loop later in the afternoon. Wednesday night (12/28) operation began loading solids (course ash) and establishing circulation in the Gasifier.
- Train A 3B PDAC, Lock Vessels, and Feed Piping – All repairs were completed on the Lock Vessel, Dispense Vessel and associated feed piping. PDAC 1B that was sent off for repair was received Monday (12/12) with installation and testing completed and ready for operation. Operation completed balancing the fluidization valves Wednesday morning (12/28) and started the steam warm up loop later in the afternoon. Wednesday night (12/28) operation began loading solids (course ash) and establishing circulation in the Gasifier.
- Train A&B PDAC System – Modifications are completed on train A&B with train A PDAC's allowing nitrogen to be used during startup at low feed rates and then introduce transport air, replacing the nitrogen, as the feed rate is increased during coal feed into the Gasifier. Feeder 5B operated on transport air for over 50 hours. The new valves and additional piping have been received and installed. Transport air was used for the first time instead of nitrogen during startup on train B PDAC's without any issues. Coal feed using PDAC's 4A, 6A, and 6B.
- Leak repairs were completed on both legs of train B CFAD system (FL-2120A & B) with elbows and crosses being replaced.
- Removal of the north tower crane was completed. The crane is in place to begin the removal of the south tower crane in January, weather permitting.

- The final repairs to the freight elevator are scheduled for December (12/29) with testing to follow. No change on the status of the personnel elevator.

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

- Train B Dryers – Train 5 dryer inlet feeder adapter plate repairs were completed and the dryer is back in service. Trains 4, 5, and 6 dryers are operating supplying coal for Gasifier B. Gasifier B coal feed was suspended Tuesday night (12/13).
- Train A Dryers – Modifications which included adding diffuser plates/grates at the bottom of the coal feed chute into the dryers was completed. An issue with train 2 dryer is requiring adjustments to the diffuser plates/grates Thursday (12/8). The remainder of train A dryers have been deinventoried, inspected, and cleaned/repared in preparation for the restart of Gasifier A.
- New internal Rotary Inlet Air Lock (7 blades) – The 7 blade internals that was installed on train 1 was removed and reinstalled on train 6 ahead of bringing train 6 dryer on line. The second 7 blade internal was received Wednesday (11/30) and will be installed on train 2 Thursday (12/1). The remaining 7 blade internals are on order and will be installed as the systems become available.
- Changing out the 3” discharge line from the north sump to the LDF to a 6” and to upgrade the pumps has not started yet. Material and new upgraded pumps have been ordered. All the coal/water mixture from the north and south sumps is being bypassed at the LDF to the modular tanks where it is being processed. Any water that is not being processed through the Recovered Water Candle Filters is also being diverted to the modular tanks.
- Platforms for the New Venturi Scrubber duplex strainers are complete. Crews have removed and replaced some of the existing strainers and cleaning others that are not damaged and reinstalling prior to startup. The new strainers will be installed at a later date when they are received.
- LP Vent Gas Compressor (CO-00040) – Commissioning activities were completed on the LP Vent Gas Compressor with only minor fine tuning remaining at which time the compressor will be available for service.

Ash Removal System (Area 150A/250A) – Ash removal through all 4 Ash Moisturizers continues with dust suppression continuing to be a challenge as deinventoring the silos continue.

Wet Acid (Area 160) – The unit has been down since Saturday (11/26) when a pipe fitting broke on the air line for the damper control on top of the Condenser. The damper closed which caused an over pressure situation resulting in the expansion joint failing. The new expansion joint was received Wednesday (11/30) and reinstalled. A restart and heat up of the unit began after the expansion joint was installed with the unit on hot stand-by. While on hot stand-by both Sulfuric Acid Offspec Tank Pumps (79A and B) were being worked on. During the restart of the unit an expansion joint at the inlet to the

Combustion Blower (BL-0071) failed. The expansion joint was repaired Tuesday (12/13) with some minor leaks in the system being addressed. Heat up and fan circulation resumed but issues at the Combustor (not being able to control the heat in the Combustor) over the weekend of (12/24 and 12/25) continued. The WSA/Combustor was cooled down for entry into the Combustor to see if any tubes are plugged. Because the Combustor is down no acid is being processed with the acid gas being sent to the LP Acid Gas Flare until the train B AGR was shut down. Both temporary Wabash package boilers are online operating at 70% and supplying 325# steam to the plant.

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

CO₂ Compression / Dehydration (Areas 180 and 260) – Train A CO₂ Compressor commissioning has been suspended this month due the inability to supply on spec CO₂ from the process to run the compressor for commissioning and resource availability. The vendor was brought in the last week of December to begin commissioning train B CO₂ Compressor (CO-2080) if the quality of the CO₂ from the AGR continues to improve. The vendor is requiring the CO₂ from the AGR unit to be 98% before it can be sent through the compressor. Crews will attempt to run the compressor Thursday (12/29) using the CO₂ from the skid while the vendor is evaluating the samples of CO₂ from the AGR. 2 of the 8 refrigeration compressors are running this week supporting trains A and B AGR ambient temperatures this week.

Flare (Area 190) – High pressure in the LP Acid Gas Flare Monday morning (11/28) due to a suspected plug in the flare line resulted in the flare being shut down. Scaffolding was erected Tuesday (11/29) for the crew to scan the line. A specialty contractor was brought in Wednesday (11/30) to scan the flare line from the WSA/AGR to the top of the flare to locate the blockage before steaming the line could commence. The scan determined that there was a thin layer of growth, potentially Ammonia Bicarbonate, on the inside of the 36" flare line. The actual blockage was found to be at the top of the flare at the diffuser. The holes in the diffuser were 90% plugged which caused a back pressure in the flare line Thursday 12/1. The flare line was steamed out using one of temporary Wabash boilers to dissolve the salt in the diffuser. After steaming the line and diffuser crews rescanned the line again to verify the salt/blockage was removed. Friday (12/9) morning a pressure of around 7 psig was detected in the LP Gas Acid Flare. Fearing the diffuser was plugged again it was decided to begin steaming the flare between the LP/Acid Gas Flare K.O. Drum (DR-097) and the top of the flare. Steam out was completed by Friday night (12/9). Investigations are underway to determine if steam assist is required on a permanent basis. Permitting requirements are also being explored. The flare K.O. Drum pump (PU-097A) that was sent out for repair was received and reinstalled Friday morning (12/9). Modifications are ongoing on the Ultrasonic Flow Systems for the LP Acid Gas & Ammonia Flares. All four flares are operational (Trains A and B HP Flares, Ammonia Flare, and LP Acid Gas Flare).

Waste Water Treatment (Area 210) – The explosion hatch on top of the Wastewater Tank (TK-0042) was inspected and reset Wednesday (11/30) along with the reinstallation of PVRV (pressure/vacuum relief valve) that was sent off for inspection and recalibration. The Hydrogen Sulfide Stripper Reboiler (HX-0042) that was sent off for repair on Monday (11/28) was received and reinstalled on Saturday (12/3). Another plug in the vertical section of the overhead line from the Hydrogen Sulfide Stripper (CL-0042)

to trains A & B AGR Rich Solvent Flash Drums (DR-1063 and DR-2063) was also removed (dissolved by steaming) Tuesday afternoon (12/7). The new tie-ins for the permanent design fix for the PH imbalance by KBR has been completed without the need of an outage. The Wastewater Tank (TK-0042) was blocked in early last Friday morning (12/9) after a pressure build up was detected in the LP Acid Gas Flare. After the flare line was steamed out the clearance was released and the Wastewater Tank was put back in service. Monday (12/12) the acid system was commissioned with acid being injected into the system. The PH was reading 9 before the acid was injected and 7 after the acid injection started. Monitoring showed the system was still not operating correctly due to the lack of PH controls downstream. The strippers (H₂S and Ammonia) were out of service Monday (12/12) and Tuesday (12/13) due to an overload on the VFD which tripped the GI Wastewater Sump Pump. Because of the pump being down the Wastewater Tank (TK-042) had reached a level of 88% with no way to process the water. The overload problem was resolved as well as temporary monitoring was put in place downstream to control the PH. The system is now processing water and the level in the Wastewater Tank (TK-042) is coming down.

Acid Storage Tanks and Off Spec Acid Tank (Area 260) – The Sulfuric Acid Offspec Tank (TK- 0073) remains at 75% capacity with on spec acid.

Nitrogen Plant (Area 260) – The nitrogen storage tanks are full with between 30 and 40 nitrogen trucks on standby in town during the month to supplement nitrogen supply for Gasifier B and the restart of Gasifier A.

Combined Cycle HRSG's, CT's, Steam Turbine & Auxiliary Boiler (Areas 510, 520, 530, 540, and 550) – Sending syngas to Combustion Turbine B was delayed week ending December 9 in order to make modifications to Sour Water system, foaming in the AGR, and low weekend temperatures that adversely affected Water Gas shift reheat. The next milestone is to run on spec syngas to Combustion Turbine B followed by running both Combustion Turbines simultaneously with on spec syngas. Poor quality syngas to Combustion Turbine B the week before Christmas caused Gasifier B to trip. Around 10:30 am on Christmas Day (12/25) on spec syngas was sent to the turbine at 66% and continued uninterrupted until Wednesday night (12/28) when the flow of syngas to the turbine was suspended.

Water Treatment, Cooling Towers, and Main Gate Security (Area 570, 580, 590, and 700) – Construction is complete.

Sewer Plant and Ash Storage Pond (Area 800) – Modular tanks 3, 4, 5, and 6 have been cleaned and are scheduled to be dismantled for relocation to the south side of the plant. Three additional modular tanks have been purchased and will also be erected on the south side of the plant. The exchangers that were being used for evaporating the water from the sludge on the north side of the modular tanks have also been removed. This area is the future site for the permanent truck wash. Modular tanks 7 and 8 are maintaining 500,000 gallons/each of demin for the two temporary Wabash package boilers by using the water from the Condensate Tank.

Process Water Reservoir (Area 900) – Flocculent was added to the LDF sump so crews could pump the water off the top before cleaning the sludge out of the sump. This sludge is being hauled to the GAMU for disposal.

Safety

Project Safety Summary: Since the beginning of the project, there has been 87 reportable incidents at the site with 40,937,371 man hours worked. This year, the site has worked 3,895,714 man hours with 5 reportable incidents. The project RIR stands at 0.26 for the year and 0.43 for the Project Total to Date.

Schedule

Construction is complete for plant base scope. The schedule for scope additions, as of 12/18/16, is included in Appendix E.

Startup

- At the end of November, total startup employee staffing was at 150, including 15 SCS startup employees, 129 supplemental, and 6 OPCO's staff; plus 273 startup supplemental craft support and 22 I&C field technicians (grand total of 445 – a decrease of 46 from end of October).
- Startup Issues / Focus Areas (through December 11, 2016)
 - Refrigeration – all eight refrigeration compressors are operational; ammonia refrigeration system is fully charged and operational; working with manufacturer on oil supply pressure issues.
 - AGR system commissioning – AGR A and B are operational on syngas, and both have demonstrated effective removal of sulfur and CO₂.
 - Lignite preparation equipment commissioning – executing lignite feed Test Packages; addressing dust mitigation modifications at the ash mixer; validating moisture control system for each dryer; need to demonstrate adequate throughput to support sustained gasifier operation.
 - Wet Sulfuric Acid – operational and producing sulfuric acid.
 - Gasifiers – first lignite feed completed on both gasifiers; syngas used for electrical production on both combustion turbines.
 - Compressors – Train 1 and 2 recycle CO₂ compressors commissioned and ready for service; Train 1 and 2 flash gas compressors commissioned and ready for service; Train 1 and 2 CO₂ product compressors final testing in progress - commissioning post COD pending availability of required CO₂ quantities.
 - Gas Cleanup – Train A and B WGS catalyst reactors activated and in service.
 - Sour Water – working pH imbalance issues causing salt deposition in the system; temporary acid injection system installed; tie-ins for permanent system installed.
- Through January 1, 2017, startup progress was 95.6% complete overall (0.2% increase from November 27) vs. planned 100%.

- 967 TOP's have been commissioned out of a total of 968 (1 remaining). 41% (398 of 968) have been turned over from startup to operations (mostly CC and associated BOP).
- Startup test packages are 91% complete (87 of 96 complete; 87 required for TOD). All of the remaining 9 test packages are currently in progress.
- Overall, I/O checks are 100% complete for base scope. New scope accounts for all of the remaining points that require testing.
- Startup to Operations punchlist summary for base scope (excluding scope additions) shows a decrease in remaining open items from 3,617 on November 27 to 3,432 on January 1 (none of these are high priority).
- MPC reported the following startup achievements in December:
 - Gasifier 'A' balancing purges and leak checks completed.
 - H2S Stripper Reboiler repair completed.
 - Syngas Scrubber 'A' clearances released.
 - Installation of Sour Water Acid Injection system mechanically complete.
 - All six PDAC feeders tested on Transport Air.
 - All priority B punchlist items (+16K) completed.
 - Gasifier 'A' loaded with bed ash, brought to temperature and currently holding temperature on DDI's.

Operations and Maintenance

Overall 276 of the planned 309 permanent employees are on staff (318 of 309 including contractors). Current supplemental contract staff will be considered for remaining 28 permanent positions.

Process Safety Management (PSM) program development:

- There are 14 PSM elements – 13 of the 14 are complete (ready for chemicals). Remaining 2 PSSR's were completed in November.
- Executing action items for the remaining 1 element - Process Hazard Analyses.
 1. Process Hazard Analysis - all eight PHA's requiring updates are complete, working through last few lower priority remaining recommendations (>99% complete).

CC Operation:

- 2016 year to date EFOR on natural gas is 0.65% through January 4, 2017.
- Through January 4, 2017, electrical generation on syngas has totaled 1,536 MWH on CTA and 16,075 MWH on CTB.

Gasifier Operation:

- Through January 4, 2017, syngas production has totaled 911 hours (38 days) on Train A and 1,423 hours (59 days) on Train B.

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 November 2016 report, the IM reported that there were three new coal leases in Kemper County, two new land purchases and a Proof of Death and Heirship recorded in Kemper County, one coal mining land purchase in Lauderdale County and an update on the Kemper County lawsuit.

In this December 2016 report the IM will discuss the two new property purchases of coal mining land in Kemper County, no new land purchases of coal mining land or coal leases in Lauderdale County and an update on the Kemper County Lawsuit.

The IM has reviewed the above described information and determined the following:

- MPC purchased two new tracts of land covering a 2.88 net acres in 15.8 surface acres located in Sections 27 and 34, Township 9 North, Range 15 East, Kemper County, MS. The purchases are part of the Crogman Wooten, Sr. Estate.
- There were no new land purchases or coal leases in Lauderdale County, MS. in the last month by MPC.
- MPC has purchased a total of 38.28867 net acres out of 83.4 acres or 45.91% interest in the Crogman Wooten, Sr. Estate. The Estate heirs own land in Sections 27 and 34, Township 9 North, Range 15 East, Kemper County, MS.
- The parties to the Barham versus Mississippi Power Company lawsuit are still waiting for a decision from the Judge regarding 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. The case has been under consideration by the Judge for almost sixteen months.