

IM Monthly Report



Mississippi Public Service Commission Kemper IGCC Project

June, 2017

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 June, 2017, and review of the project status reported by MPC for the period from April to June, 2017 (Production Meeting Reports May 22 and June 21, 2017, April and May 2017 PSC Reports, and Kemper County IGCC Weekly Executive Summary and Metrics through June 18, 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):

- June, 2017 – Accounting audit of financial records from end of March, 2017 through end of April, 2017 held at MPC offices in Gulfport, MS (Appendix C).
- June, 2017 – Daily monitoring of on-going site construction and startup activities at the jobsite (Appendix E).
- Week of June 12, 2017 – Review of gasifier startup activities held at the jobsite (Section 1.10).
- June 12 and 13, 2017 – Review of project EPC status and held at the jobsite (Appendix D).
- June 28, 2017 – Update from MPC and SCS on status of open RFI's (Appendix B).

Project Status through May, 2017 (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.
- E&CS and MPC Management of Change (MOC) process implementation and training.
- Design revisions from support requests, updated vendor information, and scope additions/OCR's.
- Supporting closeout of punch list items.
- 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 June, there were eleven (11) new awards issued for:

- 1) Syngas Scrubber Pump Plan 23 Seal Plan Coolers for RP #4040;
- 2) Internal Spray Headers for the Syngas Scrubbers for RP #4040;
- 3) Coagulant Dosing Pumps for RP #4096;
- 4) Syngas Scrubber Upper Bed Packing Replacement for RP#4040;
- 5) Chimney Hats for Syngas Scrubbers for RP #4292;
- 6) Nine (9) ½" Manual Ball Valves for RP #4096;
- 7) Two (2) ½" Check Valves for RP #4096;
- 8) Two (2) ½" Back Pressure Control Valves for RP #4096;
- 9) Control Valves for the Sediment Pond and North and South Gasifier Sumps for RP #4086;
- 10) Distribution Plate Coating for RP #4098;
- 11) Rotary Press Pilot Test for RP #4060.

In addition, one vendor recommendation was approved for Eight (8) Tanker Trucks of Selexol Solvent.

Construction – Overall base plant construction is 100% complete (as of November 13, 2016). Remaining work includes ongoing punchlist and scope addition activities. The schedule for scope additions, as of 6/27/17, is included in Appendix E.

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.

Supply Chain – 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. Initial CO₂ sales to Denbury and sulfuric acid sales to Martin Products were achieved in February and are on going.

Liberty Mine - Current land control is 100% complete for the initial five year permit area. Construction activities are complete. Mine is operating and stockpiling/delivering lignite. Total actual spending for the mine development through May, 2017, including mine Allowance for Funds Used during Construction (AFUDC), was unchanged at \$232 million, 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 May, 2017, contracts totaling \$2.177 billion have been awarded to MS companies, and total MS spending is \$2.162 billion (about 29% of the total, including uncapped costs). MS workforce contributed 206

construction jobs and 410 plant/mine jobs in May. A total of 572 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 staging of the initial placement of the lignite stockpile. Initial stockpile of 10,000 tons was increased to 32,000 tons in January (32% capacity).*
- Recovered water filtering – *generating 1.5 million gpd more water than expected; a trial coal fines removal system has been installed consisting of polymer (flocculent) injection, and a polymer dilution system was added to prevent plugging of the candle filters; system testing in progress (good early results); moving to permanent equipment, but it is unproven whether the system changes will fully address the operability issues caused by the higher levels of coal fines in the recovered water from the Venturi Condensers.*
- Plugging issues at the roll crushers - *new 7 blade internal Rotary Inlet Air Locks have been installed on all 6 trains; will also install auto lube systems (purchased; 1 of 6 installed).*
- Lignite dryer solids accumulation – *backup in feed zone eventually trips inlet feeders; modified fluidization grid plates and grizzly bars have been installed on all six dryers and are being monitored for process optimization (good early results).*
- Lignite dryer weigh belt feeder plugging – *coal fines growth from the walls requires on-going maintenance to clean out; periodically damages the belt feeder; lined feed chutes have been installed on all six dryers; will install air rappers on discharge chutes.*
- Lignite dryer relief valves - *new loop seals are being installed on all 6 dryers to replace the existing PRV's which have been lifting and not reseating.*
- Pulverizer wind box erosion – *leaks are being repaired as identified; long term solution needed.*
- Gasifier clinker formation – *in mid-June, Gasifier A experienced difficulties withdrawing ash from the Seal Leg into the CCAD system due to suspected plugging of the outlet grate with refractory pieces and/or, possibly, ash clinkers; root cause is being investigated.*
- Continuous Coarse and Fine Ash Depressurization systems (CCAD and CFAD) - *both the CFAD and CCAD systems are experiencing leaks due to internal erosion of the pipe and or fittings from high velocity solids; ash is leaking through PLD filters; routed PLD vent piping to ash silos; replacing PLD's with new design when available (44 of 64 replaced); replacing piping in key areas with more wear resistant material; Administrative Controls will be implemented to ensure safe operation while repairs are being completed.*
- Syngas cooler tube leaks – *In June, additional tube leaks in exchangers in Train B were discovered; inspection of Steam Generator HX-2210 in mid-June revealed a small number of tube ferules were raised up from a normal position and some of these were*

popped out of place completely; in addition, a mechanical plug had fallen out of a previously sealed leaking tube in this exchanger and had to be welded back into place; in late June, a small hot spot was identified on the shell of Superheater Section II (HX-2113), which is indicative of refractory damage typically caused by a tube leak. Root Cause Analysis and long term solution has been requested (see Appendix B, RFI 2-893); considering acoustic monitoring system; operational changes will be implemented to reduce stresses; syngas cooler superheater sections will be replaced post in service (18 to 24 months).

- *Train B Particulate Control Devices (PCD's) – on 6/21, contractor completed replacement of all 18 candle filter bundles in the Train B PCD FL-2106 after numerous weld cracks were earlier identified where the filters were welded to the secondary tubesheets.*
- *Ash unloading system – modifications on all 4 ash moisturizers have improved operation; dust suppression still an issue at times during unloading for disposal; ash unloading facilities will be relocated to the ash management unit post in service.*
- *Ash disposal – all material stored in the ash management unit must meet maximum moisture requirements; current process at start and end of run may not meet moisture requirements; installing an ash dewatering pad to dry out noncompliant loads (10 trucks/day, 4 tons/truck).*
- *Syngas Scrubber water bypass – operational improvements are being evaluated to reduce load on sour water system; new chimney tray hats will be installed.*
- *Sour Water System – inconsistent inlet composition causing control issues; considering installation of online analyzers; H₂S stripper reboiler is plugging and experiencing tube leaks due to ash carryover from the PCD's (see above) and metallurgy; reboiler will be replaced with new metallurgy (Incoloy 825) to be received in July; in June installed spare exchanger with old metallurgy (carbon steel) and new isolation valves to improve future replacement duration.*
- *Process Water Management – current 5 million gallon storage is insufficient; installed new 1.7 million gallon temporary tank; considering additional permanent tankage (3.5 million gallon) and Zero Liquid Discharge (ZLD) plant (800 gpm).*
- *Nitrogen Plant – capacity is insufficient to support simultaneous startup of both gasifiers; existing plant can only make 1% of output as liquid; supplemental nitrogen is being brought in by truck to support startup (demurrage costs \$1 million in January); will install additional liquid nitrogen storage tank; considering increasing plant capacity.*

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 (June, 2017).

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

Requests for Information (RFI) Status

The overall status of the project data requests are summarized in Appendix B to this monthly report. Most of the RFI's have been posted, reviewed and closed (over 1000 items total; 16 open items remaining). Primary concerns noted by the engineering disciplines are summarized below:

- Accounting – *MPC posted response to new RFI 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, under IM review.*
- Scope Additions – *MPC has posted updated list through April, 2017 for approved items (\$166 million) and through May 31, 2017 for pending items (4 items); June update still pending; weekly updates are being provided to the IM Site Team for all FCR's, OCR's and Resource Pool Listings.*
- Process and Technology – *new RFI was submitted in March requesting Root Cause Analysis for recent syngas cooler tube leaks along with long term action plan, schedule and cost; short term plan posted. New RFI's were submitted in April concerning ash conveyance and PLD vent piping erosion, PLD failures and replacement, and PCD ash leakage and repairs (response pending).*
- CC Performance Data – *MPC posted response to new RFI requesting CC performance data on natural gas.*
- Shutdown and/or Mothballing procedures for gasifier equipment – *IM submitted new RFI in June requesting procedures to be used to protect gasifier equipment during planned shutdown announced on June 28.*

Project Cost and Schedule

In the May, 2017 PSC Report, MPC reported suspension of operations and startup activities on the gasifier portion of the Kemper IGCC, and an increase in forecast capped cost of \$10.8 million now at \$5.946 billion. Forecast uncapped costs increased in May by \$0.7 million now at \$1.570 billion.

Total capped spending for the plant through May, 2017, with deduction for Department of Energy (DOE) funding, was \$5.700 billion. Overall plant EPC remained at 99% complete. Uncapped spending through May was \$1.530 billion. Refer to Appendix G for the PSC Report Summary.

Overall project execution status was reviewed on June 13, 2017 at the jobsite. Refer to Appendix D. Primary concerns are additional schedule slippage and associated cost increases, and unknown startup and technology risks.

At the Commission's June 21, 2017 open meeting, the Commission unanimously passed a motion instructing its counsel to prepare an order for consideration at its July 6, 2017 meeting regarding rate recovery for the Kemper IGCC (the "Proposed Order"). Refer to Accounting summary below.

On June 28, 2017, the Company notified the Commission that it was beginning a process to suspend operations and start-up activities on the gasifier portion of the Kemper IGCC. Refer to Accounting summary below.

Accounting

Topp McWhorter Harvey, PLLC (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 April 30, 2017, and the examination of special-purpose Forecasted Schedules for the period beginning May 1, 2017, through the completion of the Project.

On June 30, 2017, the Company filed their May 2017, monthly Form 8K with the SEC which increased its Capped Plant Cost Current View (forecast) for the Kemper IGCC Project to approximately \$5.946 billion, net of DOE grants and Cost Cap Exceptions. The Company’s Monthly Status Report through May 2017, increased its Current View (forecast) of Total Exemptions and Exceptions (Non-Capped Cost) to approximately \$1.570 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 May 2017, is \$7.516 billion.

In its Form 8K filed with the SEC on June 28, 2017, the Company stated that at the Commission’s June 21, 2017 open meeting, the Commission unanimously passed a motion instructing its counsel to prepare an order for consideration at its July 6, 2017 meeting regarding rate recovery for the Kemper IGCC (the “Proposed Order”). Pursuant to the motion, the Proposed Order would establish (i) a regulatory liability account to maintain current rates related to the Kemper IGCC following the July 2017 completion of the amortization period for certain regulatory assets approved in the In-Service Asset Rate Order that would allow for subsequent refund if the Commission deems the rates unjust and unreasonable and (ii) a new docket for the purposes of pursuing a global settlement of costs of the Kemper IGCC (the “Kemper IGCC Settlement Docket”). Pursuant to the motion, in the Proposed Order, the Commission would request resolution of the following areas in any such proposed settlement agreement: (i) at a minimum, no rate increase to the Company’s customers (with a rate reduction focused on residential customers encouraged); (ii) removal of all cost risk to customers associated with the Kemper IGCC gasifier and related assets; and (iii) modification or amendment of the certificate of public convenience and necessity (the “CPCN”) for the Kemper IGCC to allow only for ownership and operation of a natural gas facility. Pursuant to the motion, the Proposed Order would provide that any related settlement agreement be filed within 45 days from the effective date of the Proposed Order.

In addition, pursuant to the motion, the Proposed Order would provide that, in the event a settlement agreement is not reached, the Commission would reserve its right to take any appropriate steps, including issuing an order to show cause as to why the CPCN for the Kemper IGCC should not be revoked or amended to provide for operation as a natural gas facility only.

On June 28, 2017, the Company notified the Commission that it was beginning a process to suspend operations and start-up activities on the gasifier portion of the Kemper IGCC. The Company believes this action is necessary for several reasons. First, in light of the uncertainty as to the future of the gasifier portion of the Kemper IGCC, the Company believes it is proper and prudent to engage in an orderly suspension to preserve workforce safety and health, while still retaining the necessary workforce and ability to run the combined cycle units. Second, the



Company believes that beginning this process is a prudent step to manage costs in light of the current circumstances surrounding the Kemper IGCC, including, but not limited to, (i) the factors affecting the economics of the Kemper IGCC; (ii) the positions articulated by other parties in recent motions filed with the Commission; and (iii) the Commission’s statement of intent and expectations relating to the establishment of the Kemper IGCC Settlement Docket.

The Company expects to continue to operate the combined cycle portion of the Kemper IGCC as it has done since August 2014.

At May 31, 2017, approximately \$3.4 billion in Kemper IGCC costs were not reflected in the Company’s retail and wholesale rates. These costs primarily relate to the following:

Cost Category	Actual Costs <i>(In Billions)</i>
Gasifiers and gas clean-up facilities, including allowance for funds used during construction (“AFUDC”)	\$ 2.5
Lignite mine and carbon dioxide pipeline facilities, including AFUDC	0.4
Combined cycle and common facilities, including AFUDC	0.3
Other	0.2
Total	\$ 3.4

Although the ability to achieve a negotiated settlement is uncertain, the Company intends to pursue any available settlement alternatives and will also consider other possible operational and cost recovery options. The ultimate disposition of the gasification portion of the Kemper IGCC remains subject to the Commission’s jurisdiction, including the potential resolution of the matters addressed in the Proposed Order. If, as a result of the Proposed Order, any related discussions or proceedings with the Utilities Staff or the Commission, or otherwise, the Company does not ultimately obtain rate recovery of the \$3.4 billion of Kemper IGCC costs not currently in rates, the Company would be required to recognize a charge to income in the second quarter of 2017 for those unrecovered costs, in addition to any other costs required to be incurred.

The ultimate outcome of these matters cannot be determined at this time.

On June 30, 2017, the Company Filed a Form 8k with the SEC submitting its Kemper County IGCC Project Monthly Status Report through May 31, 2017 to the Commission which included the following comments:

Kemper IGCC Schedule, Cost Estimate and Rate Recovery

The Company previously filed a Current Report on Form 8-K dated June 5, 2017, which disclosed they expected the remainder of the Kemper IGCC to be placed in service by the end of June following completion of certain repairs to gasifier "B." During June, gasifier "A" has achieved periods of production of electricity using 100% syngas and has produced commercial grade CO₂ and sulfuric acid. In addition, work has continued on gasifier "B;" however, further repairs were required and re-start of gasifier "B" had not commenced by the time of the suspension described above. Accordingly, the Company no longer expects the remainder of the Kemper IGCC will be placed in service by the end of June. The May Monthly Status Report contains further increases in the cost estimate subject to the cost cap for the Kemper IGCC of approximately \$11 million primarily related to the repairs performed during May and June 2017.

As previously disclosed, on June 28, 2017, in light of the current circumstances surrounding the Kemper IGCC, including the uncertainty as to the future of the gasifier portion, the Company notified the Commission and began a process to suspend operations and start-up activities on the gasifier portion of the Kemper IGCC as of June 28, 2017. In the event start-up activities resume, 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, continued issues with ash removal systems or syngas coolers, 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). Furthermore, additional improvement projects to enhance plant performance, safety, and/or operations ultimately may be completed after the remainder of the Kemper IGCC is placed in service 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.

If start-up activities resume, the Company currently estimates additional base costs of approximately \$25 million to \$35 million for each month that start-up activities continue, 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. 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 \$16 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 these matters cannot be determined at this time.

On July 6, 2017, the Commission issued an order to establish Docket 2017-AD-112 requiring settlement proceedings for the Kemper Project. The order stated that the Commission believes

that the following areas should be resolved by the Company, the Staff, and intervening parties and should include the following:

1. Any costs resulting from the settlement and assigned to the Company's customers shall result in, at a minimum, no rate increase to its customers. The Commission encourages serious discussions that would lead to a rate reduction, with a particular focus on residential customers.
2. The settlement should seek to remove the risk of ratepayers bearing any of the costs associated with the gasifier and related assets.
3. The settlement should include modification or amendment of the certificate issued in Docket No. 2009-UA-014 to allow only for ownership and operation of a natural gas facility at the location of the Kemper County In-Service Assets.
4. And any settlement shall be filed with Commission no later than 45 days from the effective date of this order (July 6, 2017).
5. Also, if an appropriate settlement is not reached and approved, the Commission reserves its right to exercise its full authority to resolve all issues associated with the Kemper Project, including an order to show cause and subsequent proceeding, which could potentially result in revocation of the Kemper Project certificate.

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 prepared by MPC and LF for the MDEQ and the Corps of Engineers, including the following:

- **401 Water Quality Certification:** All water quality monitoring reports since the 1st semi-annual monitoring report of 2013.
- **404 USACE Permit:** Annual monitoring reports for Jones County, Leak County and Plant Sweat mitigation sites. DOE Mitigation Action Plan (MAP) reports from 1st Quarter 2014 to present.
- **MSHA Sedimentation Pond and State Dam Construction Permit:** Notice of completion, certification, state identification number and proof dams added to state's dam inventory list.
- **State Mine Permit:** Proof permit has been renewed. Any modifications to permit conditions. Annual reports showing disturbed area, area mined, area leveled and vegetated areas since beginning of mining operations.
- **NPDES Permit:** Evidence permit has been renewed. All monitoring reports associated with permit submitted to MDEQ.

- **State Stormwater Permit:** Copy of permit. Copies of any reports required by permit and submitted to MDEQ.
- **SPCC Plan:** Any plan updates and proof of re-certification of report by Professional Engineer.

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 (see Appendix B, RFI 2-904).

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 June 12 (see Section 1.10). Next visit is scheduled for week of July 10.

Key Technical Milestones Not Yet Achieved as of 06 JUL 2017

- Resume simultaneous operation of 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 in co-fire mode with recycled syngas going back to Gasifiers A and B.
- Demonstrate ability to reliably and continuously withdraw coarse ash from both Gasifiers through their respective CCAD systems and fine ash from the PCDs in both trains through their respective CFAD systems after replacing all the original failure-prone PLDs in the CCAD and CFAD systems with new PLDs of an improved, more robust design.
- Achieve the scheduled/targeted 4-5 days of continuous, simultaneous operation of both Gasifiers with 100% of the on-spec syngas produced by both Gasifiers going to CTA and CTB operating on 100% syngas (no co-firing) near the current maximum capacity limit (80%) imposed by the combustion turbine vendor in co-fire mode.
- Successfully run both CTA and CTB turbines on syngas (co-firing with natural gas is acceptable) for the minimum testing time required by the turbine vendor prior to the next borescope inspection and complete that inspection with no concerns noted by vendor.
- Demonstrate ability to export on-spec CO₂, ammonia, and wet sulfuric acid products at near full design rates for some to-be-determined minimum period of time while remaining in compliance with regard to plant environmental emissions limits.
- Achieve and reliably sustain full design coal feed rate (~400 kpph) to both Gasifiers for a to-be-determined minimum period of time while continuing to produce on-spec syngas, CO₂, ammonia and WSA products.

- Achieve full design power production of 524 MW based on 100% syngas flow to both CTA and CTB (no co-firing with natural gas) plus design steam turbine operation for a to-be-determined minimum continuous period of time.
- Demonstrate ability to operate both Gasifiers reliably over an extended period without:
 - Forming ash clinkers or fused ash on walls of the Gasifier or experiencing refractory damage requiring a shutdown to repair, OR
 - Experiencing significant difficulties continuously withdrawing ash from each Gasifier through its associated CCAD system (including CCAD PLDs) and reliably discharging it from the Ash Moisturizers, OR
 - Experiencing significant difficulties continuously withdrawing ash from each PCD through its associated CFAD system (including CFAD PLDs) and reliably discharging it from the Ash Moisturizers, OR
 - Any operational problems in the twin gasifier coal preparation/feed systems, Syngas Coolers, AGR trains, or combustion turbines CTA and CTB, that restrict or curtail syngas production or power generation based on syngas fuel use.
- Demonstrate ability to reliably operate the Venturi Scrubber – Recovered Water Filter System in both Trains A and B along with any equipment modifications/additions as may be required, such as the new Venturi Scrubber Duplex Strainers and the new Recovered Water Polymer Addition System, while continuously removing coal fines at the target efficiency level and recovering design quantities of clean water needed for operations.

Lignite Delivery Facility

LDF construction is 100% complete. The levels in all six Crushed Coal Silos were maintained to support coal feed in trains A and B Gasifiers this month. The LDF stopped delivering coal to Crushed Coal Silos 1, 2 and 3 at the beginning of the shift Wednesday afternoon (6/28) so operations could start deinventorying the silos. As of Thursday morning (6/29) all six Crushed Coal Silos were empty. The dewatered sludge from the filter presses in the LDF is still being hauled to the ash pond. The few hot spots that were detected in the dome this month were removed and the pile repacked.

Contract Awards Review

IM reviews of Contract Awards 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

Significant Technical Events which Occurred in June 2017

- JUN 1: Gasifier A was pressure tested with nitrogen at 300 psi and leaks fixed.

- JUN 1: Gasifier B continued running on DDIs and one Startup Burner at 1305 degrees and 25 psig while maintenance replaced the packing on the other Startup Burner (AH-2303) before it was placed back in service.
- JUN 3: Coal feed to Gasifier B was reestablished.
- JUN 4: CTB begins co-firing on syngas from Gasifier B which is operating at a coal feed rate of 245 kpph at 420 psig.
- JUN 4: Gasifier A startup burners were lit after completing the replacement of a PRV on the PLD Vent Gas Drum. Gasifier A heat-up continued following a brief hold due to nitrogen usage and other issues with Gasifier B.
- JUN 4: Due to numerous CFAD leaks coal feed to Gasifier B was suspended at 3:30 pm in order to isolate the system to make repairs; coal feed resumed at 7:19 pm.
- JUN 6: Gasifier heat-up continued with DDIs being used after gasifier temperatures reached 1200F.
- JUN 7: After Gasifier A temperatures of 1700F were achieved, coal feed to Gasifier A was initiated at 6:37 pm with syngas being processed through the Water Gas Shift (WGS) unit by 11 p.m.
- JUN 7: After issues removing ash from PCD Fine Ash Receiver through the new-design CFAD PLD leg (FL-1120A) were noted, plant management approved placing old CFAD PLD leg in service (FL-1120B) and soon after ash began being withdrawn successfully through both legs.
- JUN 8: Coal feed rate to Gasifier A was 180 kpph at 290 psig.
- JUN 8: Due to a leaking pressure control valve (PCV-24162) off the PLD Vent Gas Drum (DR-2043), coal feed rate to Gasifier B was reduced to 110 kpph in preparation for isolating the valve in order to replace it.
- June 8: At 8:40 pm coal feed to Gasifier B was suspended after the Gasifier tripped; Gasifier operation was resumed on DDIs to maintain temperatures and to safely isolate the piping to the Vent Gas Drum (DR-2043) for ash leak repairs and for replacement of the pressure control valve (PCV-24162).
- JUN 8: Coal feed rate to Gasifier A was increased to 250 kpph at 374 psig before sending syngas to CTA at 12:17 pm.
- JUN 8: All six Train A and B Coal Dryers were operational during the past week.
- JUN 8: Both Recycle Gas Compressors A and B (CO-1008 and CO-2008) were in service sending recycle gas for fluidization on Gasifiers A and B. In addition, all four Process Air Compressors were in service supporting circulation in Gasifiers A and B. CO2 Product Compressors A and B (CO-1080 and CO-2080) are both offline. Trains A and B HP Flares, LP Acid Gas Flare and Ammonia Flare were all operational.
- JUN 9: WSA is operational and 18 truckloads of on-spec sulfuric acid were shipped out during the past week.
- JUN 9: CTA and CTB are both firing on natural gas only.
- JUN 10: Gasifier B was taken offline and cooled down due to a suspected leak in the Syngas Cooler.
- JUN 10: Coal feed rate to Gasifier A lowered due to expansion joint leak on Dryer 2 and was then increased to 270 kpph at 415 psig after repairs were completed.
- JUN 10: CO2 Product Compressors A again began sending both LP and MP CO2 to the pipeline.
- JUN 12: Coal feed rate to Gasifier A was reduced due to issues withdrawing ash through CCAD system.

- JUN 12: Initial inspection of the Syngas Cooler for Gasifier B revealed some dislocated tube ferrules on the Steam Generator HX-2210 and hot water was drained from both Steam Generators (HX-2110 and HX-2210).
- JUN 13: Plant operations started removing ash from the Gasifier B Seal Leg through nozzles.
- JUN 13: Crews had to clean out both Train A Clinker Catchers (FL-1130 and FL-1230) in order to sustain ash removal with large pieces of material being removed from Clinker Catcher FL-1130.
- JUN 14: Manway (MH3) on Gasifier B was opened so crews could enter the Seal Leg to remove the ash in the bottom of the Seal Leg.
- JUN 14: Ash was discovered blowing out of a clamp installed on pressure control valve (PCV-14162) off the Train A Vent Gas Drum (DR-1043).
- JUN 15: Problems withdrawing ash continue to plague Gasifier A CCAD system with coal feed rates reaching a high of 340 kpph before being reduced to 150 kpph after ash level in the gasifier once again increased to a high level of 91 feet and the PCV off the PLD Vent Gas Drum continued leaking with a large ash dust cloud visible.
- JUN 15: Ash was loaded from all 4 Ash Mixers the past week without any mechanical problems and ash clouds visible only during beginning and end of ash discharge cycle.
- JUN 15: Combustion Turbine A started co-firing with syngas at 12:17am with syngas between 37% and 67%. Combustion Turbine B has been operating on natural gas since syngas was pulled JUN 7 due to leaks on the CFAD system.
- JUN 15: Coal feed to Gasifier A was suspended this morning due to the pressure control valve (PCV-14162) leaking and no way to isolate the valve for repairs or replacement. The gasifier was put on DDIs to maintain temperature.
- JUN 20: At 10 pm coal feed to Gasifier A was reestablished at 110 kpph.
- JUN 21: Coal feed to Gasifier A was reduced to 60 kpph due to problems withdrawing ash from the Seal Leg to the CCAD system and the Standpipe ash level rising to 90 feet.
- JUN 21: Contractor completed replacement of all 18 filter bundles in the Train B PCD FL-2106 after numerous weld cracks were identified where the filters were welded to the secondary tubesheets. Contractor started reinstalling the back pulse piping and blow back pots and will continue after the leak testing is complete in Syngas Cooler HX-2113.
- JUN 21: Repairs of demister pad and leak testing were completed on the Syngas Scrubber (CL-2007).
- JUN 22: After efforts to clear the suspected blocked outlet grate in the Seal Leg of Gasifier A, coal feed rate remains at 60 kpph as ash level in Gasifier slowly drops.
- JUN 22: Both Steam Generators (HX-2110 and HX-2210) in the Gasifier B Syngas Cooler have been inspected and cleaned and the mechanical plug that had fallen out of HX-2210 was welded back in place.
- JUN 22: A small hot spot was identified (blue paint turning white on the cooler shell) on the shell of Gasifier B Superheater Section II (HX-2113), which is an indicator of potential refractory damage.
- JUN 22: Train A is circulating both the Lean and Semi-Lean Selexol loops at low rates while awaiting resumption of syngas flow later today or tonight. Train B remains offline.
- JUN 22: Both pressure control valves off Train A and B Vent Gas Drums (DR-1043 and DR-2043) have been replaced with new isolation valves installed around both valves.
- JUN 22: CTA started co-firing with syngas at 33% and then ramped up to 100% syngas.

- JUN 24: Backed out syngas to CTA at 11:35 PM after operating a total of 14 hours and 25 minutes on 100% syngas.
- JUN 25: CTA started co-firing with syngas at 33% reaching 100% syngas at 8:56 am.
- JUN 28: MAJOR NEWS EVENT: As stated in an 8-K SEC filing by Mississippi Power Company and parent company The Southern Company: “On June 28, 2017, Mississippi Power notified the Mississippi PSC that it is beginning a process to suspend operations and start-up activities on the gasifier portion of the Kemper IGCC.”
- JUN 28: MILESTONE: A record high coal feed rate of 500 kpph (above nameplate capacity) was achieved to Gasifier A for an unspecified period of time with the gasifier operating at 525 psig. Coal feed rate was then reduced and held at 300 kpph.
- JUN 29: Coal feed rate to Gasifier A was sustained at 300 kpph while providing LP and MP CO₂ to the product pipeline until the coal feed system was deinventoried at 7:38 am.
- JUN 29: MILESTONE: After several interruptions and resumptions of 100% syngas flow to CTA since JUN 24, CTA achieved a record weekly production of 15,862 MWH during the period JUN 22-29.
- JUN 29: 44 out of the 64 total number of PLDs in the Trains A and B CCAD and CFAD systems have been replaced with new design PLDs.
- JUN 29: CO₂ Product Compressor A (CO-1080) was taken offline this morning while CO₂ Product Compressor B (CO-2080) remains offline.
- JUN 30: Shutdown and cooldown of both gasifiers and all related upstream coal feed preparation and downstream syngas cleanup and chemicals recovery equipment is underway.

Startup

- At the end of May, total startup employee staffing was at 63, including 7 SCS startup employees, 54 supplemental, and 2 OPCO's staff; plus 276 contractor craft support (grand total of 339 – a decrease of 16 from end of April).
- Startup Issues / Focus Areas (as of June 11, 2017)
 - Gas turbines on syngas – demonstrated transitions between natural gas and syngas without turbine trips; working toward full load on syngas; tuning proceeding on CTA.
 - Lignite preparation area – modified chutes at crusher discharge to reduce plugging at dryer inlet; modifying dryer feed zones to improve material distribution and prevent plugging; managing treatment of venturi scrubber recovered water for reinjection in syngas scrubbers; demonstrate adequate throughput to support sustained gasifier operation.
 - Wet Sulfuric Acid – produced and delivered on spec sulfuric acid.
 - Ash Removal – replacing damaged PLD's when available; focusing on at least one complete line; working spare line while unit is operating; repairing ash leaks caused by erosion.
 - Compressors – Vent Gas Compressor on-line to manage ash silo pressures; both Extraction Air Compressors integrated into process air header.
 - Sour Water – producing on-spec ammonia as process stabilizes; upgrading bottoms pumps drives and seals.

- Through June 11, 2017, startup progress was 96.2% complete overall (no change from May 28) vs. planned 100%.
 - 968 TOP's have been commissioned out of a total of 968 (100% complete). 41% (398 of 968) have been turned over from startup to operations (mostly CC and associated BOP).
 - Startup test packages are 99% complete (95 of 96 complete). The only remaining test package is currently in progress and is not required prior to TOD.
 - 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 no change in remaining open items from 36 on May 28 still 36 on June 11 (none of these are high priority).
 - MPC reported the following startup achievements in June:
 - Train 'A' syngas cooler and other work completed.
 - Achieved 165 hours continuous syngas to CT-A.
 - A record high coal feed rate of 500 kpph (above nameplate capacity) was achieved to Gasifier A
 - CTA achieved a record weekly production of 15,862 MWH during the period JUN 22-29
 - Startup activities suspended on June 28

Operations and Maintenance

Overall 287 of the planned 309 permanent employees are on staff (334 of 309 including contractors). Current supplemental contract staff will be considered for remaining 22 permanent positions.

Process Safety Management (PSM) program development:

- All 14 PSM elements are complete (ready for chemicals).
- IM has requested final PSM Audit Report showing completion of all open actions noted in the March 2016 Draft Report.

CC Operation:

- 2017 year to date EFOR on natural gas is 1.28% through June 20, 2017.
- Through June 29, 2017, CTA has operated 977 hours on syngas producing 83,625 MWHs while CTB has operated 1,092 hours on syngas producing 81,275 MWHs.

Gasifier Operation:

- Through June 20, 2017, syngas production has totaled 2,039 hours (85 days) on Train A and 3,077 hours (128 days) on Train B.

Integrated Operation:

- Through the end of May, both trains have operated simultaneously while producing electricity from syngas on both turbines for a total of 138 hours (maximum continuous integrated run time of 54 hours from January 29 - 31).

Land

IM Review of Documents, Leases and Purchases from the Kemper County and Lauderdale County, Mississippi Courthouses and Update on Litigation Related to the Kemper IGCC Power Plant Site and Liberty Mine, Kemper County, Mississippi

In the May report, the IM presented a summary report on land acquisition activities for the Kemper Project through May 31, 2017 which was a supplemental report to the previous summary of land purchased for the Kemper Project through March 31, 2013. The May report contained three exhibits including a Copy of the Land Section Prudency Review Summary Report, Summary of Requests for Information for Kemper Project Land and Highlight Summary of Monthly URS Land Reports. In addition to the summary information, the May report identified one new coal mining land purchase in Kemper County, Mississippi and one new coal mining land purchase in Lauderdale County, Mississippi since the IM's last visit to both courthouses on April 25, 2017. The two new purchases identified in the May report were discovered during the IM's visit to the Kemper County Courthouse on May 30, 2017 and the IM's visit to the Lauderdale County Courthouse on May 31, 2017. No new coal leases were reported in either county in the May report.

In this June 2017 report, the IM will discuss one new coal lease in Lauderdale County, Mississippi, one new purchase of coal mining land in Lauderdale County, Mississippi and one new purchase of coal mining land in Kemper County, Mississippi. These leases and acquisitions were discovered during the IM's visit to the Lauderdale and Kemper County Courthouses on June 20, 2017. During those visits, no new coal leases were discovered in Kemper County. The status of the Kemper County lawsuit now on appeal with the Mississippi Supreme Court is also noted below as is the status of other litigation related to the Kemper Project.

The IM has reviewed the one new coal lease and two new coal mining land purchases referenced above and determined the following:

- MPC purchased one new tract of land in Kemper County, Mississippi in the last month totaling 14.0 acres, more or less, located in S1/2 of NE 1/4 and part of NE 1/4 of NE 1/4, Section 33, Township 9 North, Range 15 East from Dewitt Wallace Griffin, Deloise Ann

Morgan, Berry Jean Jackson, Diane Eloise Lambert, Minnie Lucille Griffin and Vicky Denise Rhone. The subject Warranty Deed was filed of record on June 16, 2017 and recorded in Book 418 at Page 108 bearing Instrument No. 17961.

- MPC purchased one new tract of land in Lauderdale County, Mississippi in the last month totaling 3.9 acres, more or less, located in Section 2, Township 8 North, Range 15 East subject to a 20.0 foot wide easement being parts of Lots 3 and 4, Section 2, Township 8 North, Range 15 East from James Ronald Chisolm. The subject Warranty Deed was filed of record on June 2, 2017 and recorded in Book 2874 at Page 487 bearing Instrument No. 2017005057.
- MPC filed one Memorandum of Coal Lease in Lauderdale County, Mississippi in the last month covering a total of 116.0 acres, more or less, in three separate parcels with Parcel 1 containing 60.0 acres, more or less, located in SE1/4 of NE1/4 and the E1/2 of NE1/4, Section 9, Township 8 North, Range 15 East; Parcel 2 containing 20.0 acres, more or less, located in W1/2 of SW1/4 of NW1/4, Section 10, Township 8 North, Range 15 East and Parcel 3 containing 38.0 acres, more or less, located in SW1/4 of NE1/4, Section 9, Township 8 North, Range 15 East less and except therefrom 2.0 acres, more or less, from Jennifer Lynn Wilkerson and Gary Steve Wilkerson. The subject Memorandum of Coal Lease is dated May 23, 2017, filed of record on June 2, 2107 and recorded in Book 2874 at Page 492 bearing Instrument No. 2017005058.
- MPC did not purchases any new coal leases in Kemper County, Mississippi in the last month.
- The Kemper County Lawsuit proceeds with an extension until July 10, 2017 for the court reporter to complete the case transcript.
- There have been no other lawsuits filed in Kemper County, MS. in the last month.