

IM Monthly Report



Mississippi Public Service Commission Kemper IGCC Project

January, 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 January, 2017, and review of the project status reported by MPC for the period from November, 2016 to January, 2017 (Production Meeting Reports December 19, 2016 and January 25, 2017, November and December, 2016 PSC Reports, and Kemper County IGCC Weekly Executive Summary, Metrics and Control Meeting Reports through January 31, 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):

- January, 2017 – Accounting audit of financial records from end of October, 2016 through end of November, 2016 held at MPC offices in Gulfport, MS (Appendix C).
- January, 2017 – Daily monitoring of on-going site construction and startup activities at the jobsite (Appendix E).
- Week of January 9, 2017 – Review of gasifier startup activities held at the jobsite (Section 1.10).
- January 9 and 10, 2017 – Review of project EPC status held at the jobsite (Appendix D).
- January 25, 2017 - Teleconference with MPC and SCS to discuss status of open RFI's (Appendix B).

Project Status through December, 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.
- 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 January, there were five (5) new awards issued for 1) Replacement Impeller and Motor for Recovered Water Pump; 2) 6900 Gallon Storage Feed Tank, 4900 Gallon Storage Tank and Spillguard; 3) Pumps for the Sodium Hypochlorite System; 4) New Packing/Bed Support Grid/Bed Limiter for CL1007; and 5) Sight Glasses. There were also two (2) new vendor recommendations approved for 1) Spare HP Burner Nozzles for the WSA Combustor; and 2) Fournier Sludge Press Test.

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/delivering lignite. Total actual spending for the mine development through December, 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 December, 2016, contracts totaling \$2.168 billion have been awarded to MS companies, and total MS spending is \$2.152 billion (about 30% of the total, including uncapped costs). MS workforce contributed 234 construction jobs and 381 plant/mine jobs in December. 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. Initial stockpile of 10,000 tons was increased to 32,000 tons in January (32% capacity).

- *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; performance of the new filter elements in the Recovered Water Candle Filters is being monitored during the lignite runs; better results but these filters are not able to handle the full flow, so bypass flow is being routed to gasifier sumps and temporary tanks for solids collection and disposal; a trial coal fines removal system is being setup for testing consisting of polymer (flocculent) injection, settling tanks, filter press, pump and hoses.*
- *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 (3 of 6 complete).*
- *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 and CCAD Systems (Continuous Fine and Coarse Ash Depressurization) – ash leaks are causing piping erosion; pipe fittings are being replaced; PLD's will be replaced, and vent gas will be rerouted from low pressure PLD's to coal silos for filtering upstream of vent gas compressor (see WSA below).*
- *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.*
- *Sour Water System – high pH balance is causing ammonia bicarbonate salt formation in the system; temporary acid and caustic injection systems were installed in the unit with initial results being positive; tie-ins for permanent system in progress. Repaired Hydrogen Sulfide Stripper Reboiler is leaking again and will be replaced with spare and sent back to the shop for additional repairs and root failure cause analysis.*
- *WSA - issues with tubes plugging in the Waste Heat Steam Generator and burner nozzles plugging at the Combustor are being addressed; samples sent off for analysis, thought to be ash leaking into the vent gas system through the PLD's; tubes were cleaned and burner nozzles replaced.*
- *CO2 Product Compressors – commissioning is being hampered by low CO2 pressure and water accumulation in the pipeline; water and air removed and first CO2 from the LP Flash Drum was introduced into the pipeline; investigating axial movement on Train B compressor; final commissioning will be completed after In Service Date.*
- *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.*

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 (January, 2017).

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

- Accounting – *MPC posted response to 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, under IM review.*
- Scope Additions – *MPC has posted updated list through December, 2016 for approved items (\$145 million) and through January 25, 2017 for pending items (26 items); 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 December 2016 PSC Report, MPC reported a delay in forecast in service date from January to February, 2017, and an increase in forecast capped cost of \$50.8 million now at \$5.606 billion, including an increase in base contingency of \$2.9 million now at \$22 million and a decrease in Schedule Risk \$25.0 million now at zero. Forecast capped cost increase was due to increased startup fuel, outage work and related modifications, improvements and maintenance costs (\$26 million), plus schedule delay costs (\$25 million). Forecast uncapped costs increased in December by \$27.3 million now at \$1.486 billion, due primarily to increases in AFUDC costs (\$18.3 million).

Total capped spending for the plant through December, 2016, with deduction for Department of Energy (DOE) funding, was \$5.495 billion. Overall plant EPC remained at 99% complete. Uncapped spending through December was \$1.425 billion. Refer to Appendix G for the PSC Report Summary.

As of January 31, 2017, the current working schedule indicates TOD of 2/12/17, which is a 459 day slip from the November 2014 rebaseline date, and a 34 day slip from the 1/1/17 report. The critical path to TOD is currently through Train 'A' Syngas Produced Electricity

followed by Syngas Operations in parallel with Train 'B' Syngas Operations. The critical path for Syngas Produced Electricity Available Train 'A' is currently through WSA heatup; then production of On-Spec Syngas for CTA.

Overall project execution status was reviewed on January 10, 2017 at the jobsite. Refer to Appendix D for meeting attendance. 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 February, 2017. MPC will continue to evaluate startup schedule and remaining risks; however, recent trends in startup progress (0.3% per month over the last three 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, and as reported by MPC (see Appendix H).
- 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, operation and technology risks – emergent issues, primarily equipment reliability, associated with sustained integrated operation of both gasifiers at design capacity, sustained electrical production on both combustion turbines at rated capacity, sustained production of by products at design rates and quality, and overall plant process control integration.

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 November 30, 2016, and the examination of special-purpose Forecasted Schedules for the period beginning November 1, 2016, through the completion of the Project.

On January 31, 2017, the Company filed their December 2016, monthly Form 8K with the SEC which increased its Capped Plant Cost Current View (forecast) for the Kemper IGCC Project to approximately \$5.606 billion, net of DOE grants and Cost Cap Exceptions. The Company's Monthly Status Report through December 2016, increased its Current View (forecast) of Total Exemptions and Exceptions (Non-Capped Cost) to approximately \$1.487 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 December 2016, is \$7.093 billion.

In connection with the filing of the Company's Kemper County Integrated Coal Gasification Combined Cycle Project Monthly Status Report through November 2016 (the "November Monthly Status Report"), the Company disclosed that it expected the Kemper IGCC to be placed

in service during January 2017. The Company achieved integrated operation of both gasifiers, including the production of electricity from syngas in both combustion turbines, on January 29, 2017. Integrated operation of both gasifiers and both combustion turbines has continued through the date of the December 2016 monthly Form 8K filing. However, the Company has determined that an outage of approximately one week is needed to repair and make modifications to further improve the plant's ability to achieve sustained operations sufficient to support placing the plant in service for customers. As a result of this decision and the related impacts on the remainder of the schedule from these challenges, the Company now expects that the Kemper IGCC will be placed in service in late February 2017.

The Company has revised its previous cost estimate, which included projected costs through January 31, 2017, to include projected additional schedule costs through February 28, 2017. Accordingly, the December 2016 Monthly Status Report contains an increase in the cost estimate subject to the cost cap for the Kemper IGCC of approximately \$51 million, including an adjustment of approximately \$26 million for the month of December 2016 related primarily to startup fuel, the estimated cost of the outage work and other related modifications, improvements and maintenance, and approximately \$25 million related to the inclusion of projected schedule costs through February 28, 2017.

Any extension of the in-service date beyond February 28, 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 \$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.

In the fourth quarter of 2016, as a part of its Integrated Resource Plan process, the Southern Company system completed its regular annual updated fuel forecast, the 2017 Annual Fuel Forecast. This updated fuel forecast reflected significantly lower long-term estimated costs for natural gas than were previously projected.

As a result of the revised operating expense projections reflected in the Discovery Docket Filings and the updated long-term natural gas forecast, the Company is updating its project economic viability analysis of the Kemper IGCC as required under the Commission's April 2012 order confirming authorization of the Kemper IGCC. The project economic viability analysis measures the life cycle economics of the Kemper IGCC compared to the closest economic alternative, a natural gas combined cycle generating unit, under a variety of scenarios and considering fuel, operating and capital costs and operating characteristics as well as federal and state taxes and incentives. The reduction in the projected long-term natural gas prices and the increase in the estimated Kemper IGCC operating costs are expected to negatively impact the project economic viability analysis, which is expected to be completed before the end of February 2017.

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

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 misrepresented 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 was held on January 13, 2017, and the Court took the motions under advisement. The Southern Company Defendants anticipate that the Court will enter an opinion during the first quarter of the calendar year 2017. 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 (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 January 9 (see Section 1.10). Next visit will be conducted week of February 13. 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 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 trips of Gasifier A in late October due to high temperatures in the Lower Mix Zone need to be thoroughly investigated. Mitigation actions should then 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 as of 31 JAN 2017

- Resume 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% of the 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 syngas (co-firing with natural gas is acceptable) for the minimum testing time required by turbine vendor (Siemens) prior to next borescope inspection and complete that inspection with no concerns noted by Siemens.
- Demonstrate ability to export on-spec CO₂, ammonia, and wet sulfuric acid products at design rates while remaining in compliance with regard to environmental emissions.

- Achieve and reliably sustain full design coal feed rate (~400 kpph) to each Gasifier 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.
- 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 the Venturi Scrubber - Recovered Water Filter system in both Trains A and B (with any equipment additions and modifications as may be required) 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. 250 tons of coal is being maintained in all 6 Crushed Coal Silos supporting coal feed in both Gasifiers when needed. Approximately 32,000 tons of coal is being maintained in the dome to support coal feed. 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 January 22, 2017)

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 were bottled up most of the month until operation began nitrogen heat up of the system on Wednesday (1/25) ahead of coal feed in Gasifier A Thursday morning (1/26). In area 220 Syngas flow resumed Monday (1/9) through the system and continues to run without any issues.

Process Air (Area 110) – Recycle Gas Compressor B (CO-2008) was supplying recycle gas to the fluidization valves on Gasifiers B until last night (1/25) when syngas was flared at the outlet of the AGR unit. The compressor is expected to be brought back on line later this morning (1/26). Recycle Gas Compressor A (CO-1008) remains on stand-by this week. Testing/integration into the system on train A Extraction Air Compressor will be completed during syngas flow to Combustion Turbine A. All four Process Air Compressors (1, 2, 3 and 4) continue to support circulation in Gasifiers A and B this month.

Selexol (Areas 130 and 230) – In area 130, the unit was in hot stand-by while circulating the Semi-Lean loop until operations began pressuring up the system for coal feed Thursday morning (1/26) with the Lean Solvent loop circulating at 3000 gpm and the Semi-Lean loop at 6000 gpm. In area 230 syngas flow resumed Wednesday (1/11) after being down earlier due to poor quality syngas which tripped Combustion Turbine B. The system was back on line Tuesday (1/12) with the Lean Solvent flow at 4000 gpm and the Semi-Lean Solvent flow at 14,385 gpm and the system operating between 300 and 335 psig. Insulators are insulating piping on the CO₂ Flash Drum this week. Currently syngas is being flared from the outlet of the unit. CO₂ from the LP Flash Drum may be used Thursday (1/26) for CO₂ Compressor runs if quality levels remain high.

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 – The Gasifier tripped Monday night (1/2) after maintaining a reduced coal feed rate of 210 kpph at 350 psig. Because the pressure in the Gasifier was between 350 and 400 psig when it tripped and there wasn't any pressure at the fluidization nozzles the pressure in the Gasifier forced coal into the fluidization nozzles which plugged the nozzles. Crews completed unplugging the nozzles Tuesday (1/3). The Gasifier was pressured tested to 600 PSIG by 2:30 pm on Tuesday (1/3) with no leaks detected. After the pressure test operations started the steam warm up loop and lit the start-up burners Tuesday night (1/3). Coal feed resumed Monday morning (1/9) with a rate of 250 kpph at 300 psig. The coal feed rate was reduced to 130 kpph at 277 psig Thursday (1/19), enough to maintain the Recycle Gas Compressor for fluidization on Gasifier B, due to issues with train B coal handling equipment. Feed rates are expected to be increased once the issues with the coal handling equipment and WSA are resolved.
- Gasifier A – Reestablishing circulation in the Gasifier was completed over the weekend with temperatures being maintained at 1700 degrees using the DDI valves through Thursday (1/5). Environmental constraints are preventing coal feed to resume in Gasifier

A this week. Existing permits only allow the amount of acid gas from one Gasifier at a time to be flared to the LP Acid Gas Flare. Because the WSA unit is down all acid gas was being flared. Operation began feeding coal Friday (1/20) at 4:45 pm which marked the first time syngas was produced from both Gasifiers at the same time. The Gasifier produced syngas for almost two days before compounding upsets forced coal feed to be suspended and operation to transition back to DDI valves to maintain temperature (1650 degrees at 25 psig) in the Gasifier through Thursday morning (1/26) when coal feed resumed.

- Train B PDAC System – All 6 PDAC's (4A, 4B, 5A, 5B, 6A and 6B) are operational with only 4B using nitrogen instead of transport air for coal feed. On Tuesday (1/17) transport air was once again being used on 4B.
- Train A PDAC's – All 5 PDAC's (1B, 2A, 2B, 3A and 3B) are operational and ready to feed coal to Gasifier A. PDAC 1A was locked out Wednesday (1/4) to begin taking internal measurements for adding an internal bridge buster or FIBB (Fluidized Internal Bridge Buster) in Lock Vessel 1A.
- Monday (1/2) crews were scheduled to begin removing the south tower crane but due to the weather this has been delayed again. On Monday (1/9) crews begin removing the south tower crane but due to high winds on Wednesday (1/11) the removal was delayed again. The tower crane was finally removed over the weekend of (1/14).
- The final repairs to the freight elevator continue 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 A Dryers – Operation began heating up and inventorying all 3 dryers last night (1/25) in preparation for coal feed Thursday morning (1/26). Coal bed levels are around 55% in all 3 dryers ahead of restarting coal feed to Gasifier A.
- Train B Dryers – Dryer trains 4, 5 and 6 started supplying coal for Gasifier B Monday (1/9) with issues on train 6 Roll Crusher persisting while operation continues to monitor this crusher. Dryer trains 4, 5, and 6 were all operational over this past weekend supplying coal for Gasifier B until train 6 dryer was shut down Monday (1/16) because of Roll Crusher plugging and mechanical failure on train 6 Merrick Feeder. These repairs were completed with all three dryers operational. On Tuesday (1/24) dryer train 5 was down for roll crusher gear box replacement and the new 7 blade inlet feeder to be installed. The repairs were completed on train 5 and the dryer was back on line Wednesday afternoon (1/25) with some inlet feeder and fluidization issues Wednesday night (1/25) but seems to be operating well Thursday morning (1/26). Operation lost dryer train 4 Wednesday night (1/25) for a short time when the hood pressure went up and the PRV lifted. The dryer is coming back on line as bed levels increase. This dryer will come down after for roll crusher gear box replacement after train 6 dryer repairs from last night (1/25) are complete. Dryer train 6 remains offline since Wednesday night (1/25) due to weigh belt clean out and belt repairs.

- Train 6 Merrick Feeder – early Monday morning (1/16) the motor for the drag chain located under the weigh belt conveyor failed allowing coal to build up damaging the conveyor belt, rollers, bearings and bearing housings. Repairs were completed Tuesday (1/17) with the system running on manual because of a speed control issue. This system was shut down Wednesday (1/18) to repair the issue with the speed control after the plugging on train 4 weigh belt conveyor outlet was removed and is back on line.
- Train 4 Merrick Feeder – plugging (possibly wet coal) at the discharge of the weigh belt conveyor required this system to be shut down early Wednesday (1/18) to remove the source of the plug.
- New internal Rotary Inlet Air Lock (7 blades) – The third 7 blade internal arrived Tuesday (1/17) and was installed in train 5 Wednesday (1/25). The first two 7 blade internal that were received were installed on trains 2 and 6.
- The coal/water mixture from the north and south sumps is still being bypassed at the LDF to the modular tanks where it is being processed along with any water that is not being processed through the Recovered Water Candle Filters.
- The new Venturi Scrubber duplex strainers will be installed at a later date when they are received.
- On the northwest side of the Venturi Scrubbers a temporary coal fines removal system is being setup consisting of 5 settling tanks, 1 filter press, pump and hoses. This trial system will be used to remove the coal fines from the water stream from the condensing section of the Venturi Scrubbers. This trial system is intended to remove the coal fines and recover the process water that is currently being lost at the LDF. Equipment is still being received and installed for this temporary system.
- The new Venturi Scrubber duplex strainers will be installed at a later date when they are received.

Ash Removal System (Area 150A/250A) – Ash removal through 3 and 4 Ash Moisturizers continues with the consistency of the ash mixture looking much better. There wouldn't be any dust suppression issues if they could continue mixing to this consistency for disposal. Towards the end of the month ash removal through all 4 Ash Moisturizers 1, 2, 3 and 4 was observed with some dust related issues observed.

Wet Acid (Area 160) – With the unit still down from Thursday (12/29) crews entered the Waste Heat Steam Generator (HX-0070) Friday (12/30) to find out why they weren't able to get any heat past the generator to the SCR. They found the damper operational but the generator tubes plugged. The material plugging the tubes at the entrance was a dry type material but the deeper into the tube the harder the material became. Operations are trying to locate something to clean out the 2" diameter tubes. A sample has been sent off for analysis to determine what this material is and how it got there. Maintenance began removing the damaged outer ring gas burner nozzles in the Combustor. These nozzles will be replaced when the new nozzles arrive later. Tube cleaning in the Waste Heat Steam Generator (HX-0070) and refractory cleaning in the Combustor (AH-0070) is

complete. The nozzle replacement in the Combustor (AH-0070) is complete with heat up in the WSA unit starting early Wednesday morning (1/25) at 3 am. The unit is on track to be ready to be turned over to operation at 8 am this morning (1/26). While the unit is heating up acid gas produced from train B ARG unit is being sent to the LP Acid Gas Flare. 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) – Commissioning was completed on train B CO₂ Compressor (CO-2080) with low pressure CO₂ at 97% from the AGR LP CO₂ Flash Drum. After a couple of trips on Wednesday (1/11) and readjustment of the thrust bearing due to vibration the first on-spec CO₂ at 98% achieved Thursday (1/12). CO₂ at 111 psig from the AGR LP CO₂ Flash Drum was put into the pipeline up to the first block valve located 6 miles down the pipeline. CO₂ placement into pipeline was expected to continue Monday (1/16) until moisture in the pipeline was detected. The moisture in the pipeline was removed by cutting and removing a section of above ground piping from both trains and swabbing the pipeline using several absorbent pigs to the boundary limit of the plant. The swabbing was completed Tuesday (1/24) with both 10" lines and the 14" common header line dry. Crews began restoring both cut out sections Wednesday (1/25) with welding and NDT completed on Thursday (1/26). Several pigs were launched Monday (1/30) using CO₂ from trucks brought in to supply the compressor to push the air out of the line all the way to Denbury. Air freeing by pigging the pipeline was completed by midnight on Monday (1/30) with CO₂ in the 61 miles of pipeline all the way to Denbury.

Flare (Area 190) – All four flares are operational (Trains A and B HP Flares, Ammonia Flare and LP Acid Gas Flare).

Waste Water Treatment (Area 210) – Over the weekend (1/22 and 1/23) processing water was slow due to high levels in the Wastewater Tank from weather related water accumulation that limited capacity in the Wastewater Tank (TK-042), which also takes weather runoff wastewater. The level in the Wastewater Tank (TK-042) Wednesday (1/25) was 74% and 72% today (1/26). PH control continues with acid injection at the Hydrogen Sulfide Stripper (CL-042) and adding caustic after the Wastewater Ammonia Stripper (CL-044). Foaming issues continue in the unit with antifoam being added at a newly added injection point.

Acid Storage Tanks and Off Spec Acid Tank (Area 260) – No acid is being sent to the Sulfuric Acid Offspec Tank (TK- 0073) due to WSA unit being down and the Gasifier B trip on Monday (1/2). Acid from the Sulfuric Acid Offspec Tank (TK- 0073) is being loaded into trucks at the Acid Unloading Station and then offloaded into totes to be used for the acid injection at the Hydrogen Sulfide Stripper (CL-042).

Nitrogen Plant (Area 260) – The Main Air Compressor B tripped due to a vibration probe spike during the severe weather Monday night (1/2). After the Main Air Compressor tripped, both liquid nitrogen pumps tried to come up at the same time which tripped them both out as well. This completely shut down the nitrogen plant. The unit was brought back on line later in the day. The vendor's engineering staff is looking at a

way to separate the electrical feed (460V) on the liquid nitrogen pumps. The nitrogen storage tanks are full with nitrogen trucks on standby in town to supplement nitrogen supply for the restart of Gasifier B followed by Gasifier A.

Combined Cycle HRSG's, CT's, Steam Turbine & Auxiliary Boiler (Areas 510, 520, 530, 540, and 550) – Syngas to Combustion Turbine B was suspended after Gasifier B tripped Monday night (1/2) and again on Monday (1/9) after poor quality syngas tripped the Turbine. Syngas feed was reestablished early Thursday morning (1/12) at 4 am to Combustion Turbine B at 67% co-fire. Since last Thursday (1/12) Combustion Turbine B has been generating electricity by co-firing with natural gas and syngas with syngas percentages varying from 30 to 87%. The 87% represented 100% of the syngas that was being produced over the weekend. Tuesday night (1/18) at 11:12 pm syngas flow to CTB was suspended due to issues with train B coal handling equipment. Combustion Turbine B began generating electricity by co-firing with natural gas and syngas Tuesday (1/24) at 1:20 pm at 51% syngas. Syngas flow was suspended Thursday night (1/26) at 9:20 pm due to several dryer related issues. Syngas flow will resume as soon as the dryer are back to a stable state.

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) – Processing water at the modular tanks on the north side of the plant continues with dewatering and sludge removal in 5 of the 6 modular tanks. The sludge that is removed is being sent to the GAMU (Gasification Ash Management Unit) for disposal. Modular tank 4 is ready to be dismantled and relocated to the south side of the plant. Modular tanks 7 and 8 are maintaining 500,000 gallons/each of demin water for the two temporary Wabash package boilers by using the water from the Condensate Tank.

Process Water Reservoir (Area 900) – Currently on the south side of the plant 3 new modular tanks have been erected. A few small liner leaks are requiring the tanks to be pumped down to repair the leaks. HDPE piping runs are now complete from the LDF to the modular tanks on the south side of the plant. Currently the coal/water mixture from the north and south Gasifier sumps is being pumped to the modular tank on the south side of the LDF sump for processing through the filter press/presses and the water sent to the reclaim sump. Once this system is complete and operational and when the current system at the LDF is overwhelmed, the coal/water mixture from the north and south Gasifier sumps will be pumped from this modular tank to the ones south of the plant for storage before being pumped back to the LDF for processing through the filter press/presses.

Safety

Project Safety Summary: Since the beginning of the project, there has been 87 reportable incidents at the site with 41,021,986 man hours worked. This year, the site has worked 60,262 man hours with 0 reportable incidents. The project RIR stands at 0.00 for the year and 0.42 for the Project Total to Date.

Schedule

Construction is complete for plant base scope. The schedule for scope additions, as of 1/31/17, is included in Appendix E.

Startup

- At the end of December, total startup employee staffing was at 123, including 10 SCS startup employees, 110 supplemental, and 3 OPCO's staff; plus 374 contractor craft support and 11 I&C field technicians (grand total of 508 – an increase of 63 from end of November, all contractor craft support).
- Startup Issues / Focus Areas (as of January 15, 2017)
 - Refrigeration – all eight refrigeration compressors are operational; ammonia refrigeration system is fully charged and operational; working with manufacturer on oil supply pressure issues.
 - Lignite preparation equipment commissioning – closed out lignite feed Test Packages; managing treatment of venturi scrubber recovered water; need to demonstrate adequate throughput to support sustained gasifier operation.
 - Wet Sulfuric Acid – combustor repairs in progress.
 - Compressors – Train 1 and 2 CO₂ product compressors final testing in progress; removed water from pipeline and started charging CO₂.
 - 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 22, 2017, startup progress was 95.8% complete overall (0.2% increase from January 1) 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 97% complete (93 of 96 complete; 87 required for ISD). All of the remaining 3 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 3,432 on January 1 to 2,632 on January 22 (none of these are high priority).
 - MPC reported the following startup achievements in January:
 - Train B CO₂ Product Compressor run for first time, for 2+ hours.
 - Train B CO₂ Product Compressor sent CO₂ into the pipeline.
 - Siemens allowance of up to 80% load on syngas for CT-B.
 - All Startup Turnover Package commissioning complete.
 - Started Train 'A' on coal feed with Train 'B' producing Syngas – first time both trains producing syngas concurrently.
 - First Concurrent Electricity Production with Both Gas Turbines on Syngas.

Operations and Maintenance

Overall 283 of the planned 309 permanent employees are on staff (333 of 309 including contractors). Current supplemental contract staff will be considered for remaining 26 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 0.77% through January 24, 2017.
- Through January 24, 2017, electrical generation on syngas has totaled 1,536 MWH on CTA and 24,166 MWH on CTB.

Gasifier Operation:

- Through January 24, 2017, syngas production has totaled 911 hours (38 days) on Train A and 1,800 hours (75 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 December 2016 report, the IM reported that there were two new property purchases of coal mining land in Kemper County, MS., no new purchases or leases of coal mining land in Lauderdale County and an update on the Kemper County lawsuit.

In this January 2017 report the IM will discuss one new property purchase of coal mining land in Kemper County, the redemption of property owned by Mississippi Power Company (MPC) sold for delinquent property taxes in Lauderdale County and a ruling on the Motions for Summary Judgment filed in the Kemper County Lawsuit.

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

- MPC purchased one new tract of land covering a .752381 net acres in 15.8 surface acres located in Section 27, Township 9 North, Range 15 East, Kemper County, MS. The purchase is part of the Crogman Wooten, Sr. Estate.
- MPC has purchased a total of 39.04148 net acres out of 83.4 acres or 46.81% 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.
- There was one Release From Delinquent Tax Sale for 18.10 acres of land owned by MPC in Section 3, Township 8 North, Range 15 East in Lauderdale County, MS.
- The parties to the Barham versus Mississippi Power Company lawsuit have received an Opinion from the Court regarding the Motions for Summary Judgment filed by both parties and argued at a court hearing held August 27, 2015 in the Chancery Court in Philadelphia, MS. The Court ruled that MPC prevailed in its Motion for Summary Judgment and awaits a written Judgment from MPC to sign. The Barham Families can file an appeal on the ruling with the Mississippi Court of Appeals.