

## EDWARDSPORT IGCC – MOVING FORWARD

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General Manager – Projects



## PROJECT BACKGROUND

- Project Owner – Duke Energy Indiana
- Location – Edwardsport Indiana
- IGCC Technology – GE Energy “Reference Plant” design
- Feasibility Study – 2005
- FEED Study – 2006
- Permitting and Regulatory Processes – 2007
- Design and Construction – 2008 to 2012
- Approved Budget = \$2.35B
  
- The Project is “CO<sub>2</sub> Capture Ready” but capture is not currently in the Project Plan



# WHAT A DIFFERENCE A YEAR MAKES – OCTOBER 2008





# WHAT A DIFFERENCE A YEAR MAKES – SEPTEMBER 2009





# OFF SITE LAYDOWN AREA – SEPTEMBER 2009





# POWER BLOCK AREA – SEPTEMBER 2009





## CONTROL BUILDING AND WAREHOUSES – SEPTEMBER 2009





# AIR SEPARATION UNIT AREA – SEPTEMBER 2009







# COOLING TOWER – SEPTEMBER 2009





## WATER TREATMENT – SEPTEMBER 2009





## COAL GRINDING, SLURRY PREP AND GASIFICATION – SEPTEMBER 2009





## COAL UNLOADING AND RECLAIM AREAS – SEPTEMBER 2009





# GASIFICATION TOWER STEEL – OCTOBER 1, 2009





## WORK COMPLETED BY QUANTITY VS. BUDGET

	Quantity Completed	Current Budget
Excavation	1,454,000 CY	1,600,000 CY
Back Fill	923,000 CY	1,496,500 CY
Piling	2,385 each	2,597 each
Concrete	56,400 CY	136,000 CY
Structural Steel	32 Tons	18,000 Tons
Underground Pipe	83,500 L-ft.	109,000 L-ft.
Aboveground Pipe	0	462,000 L-ft.
Equipment to Set	261 each	1,666 each
Electrical Cable	74,655 L-ft.	3,666,000 L-ft.



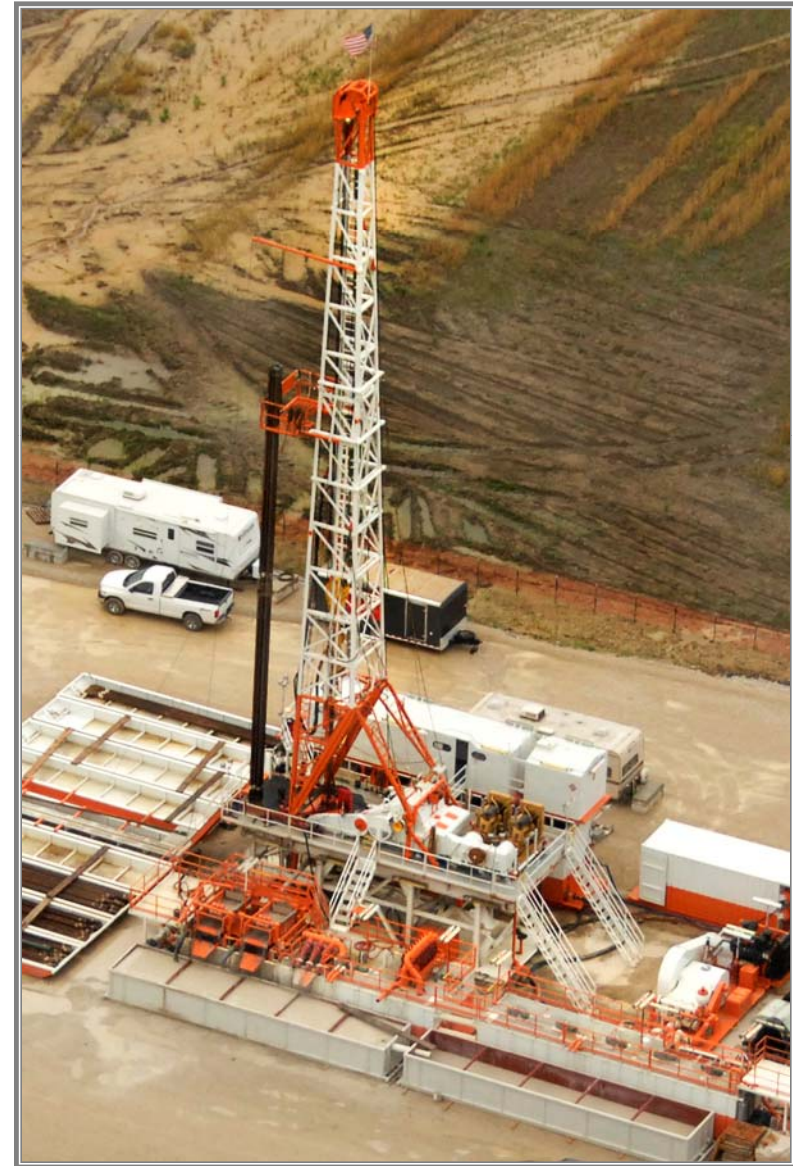
## ENGINEERING IS 85% COMPLETE – WHAT DID WE LEARN?

- Major equipment count remained stable during detail design cycle, associated bulk material counts increased significantly
- Design development type scope creep due to complexity of integration, i.e. CO<sub>2</sub> compressor, gas turbine fuel skid
- Realization that Edwardsport design is truly a first of a kind, not two (2) times Polk
- GE project engineering organization improved execution efficiency as compared to FEED phase – GE's gasification organization has evolved and matured significantly over past four (4) years, this will be an advantage to following projects



## GREY WATER SURPRISE

- Waste stream during FEED was non-hazardous
  - Planned to use deep well injection
  - In 2007, the waste stream was projected to be hazardous.
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- Bevill Exemption for wastewater from gasification
  - Hazardous Waste Permitting vs. Project Schedule

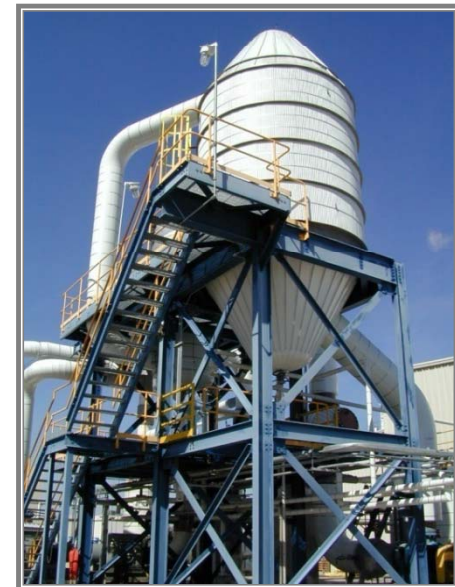






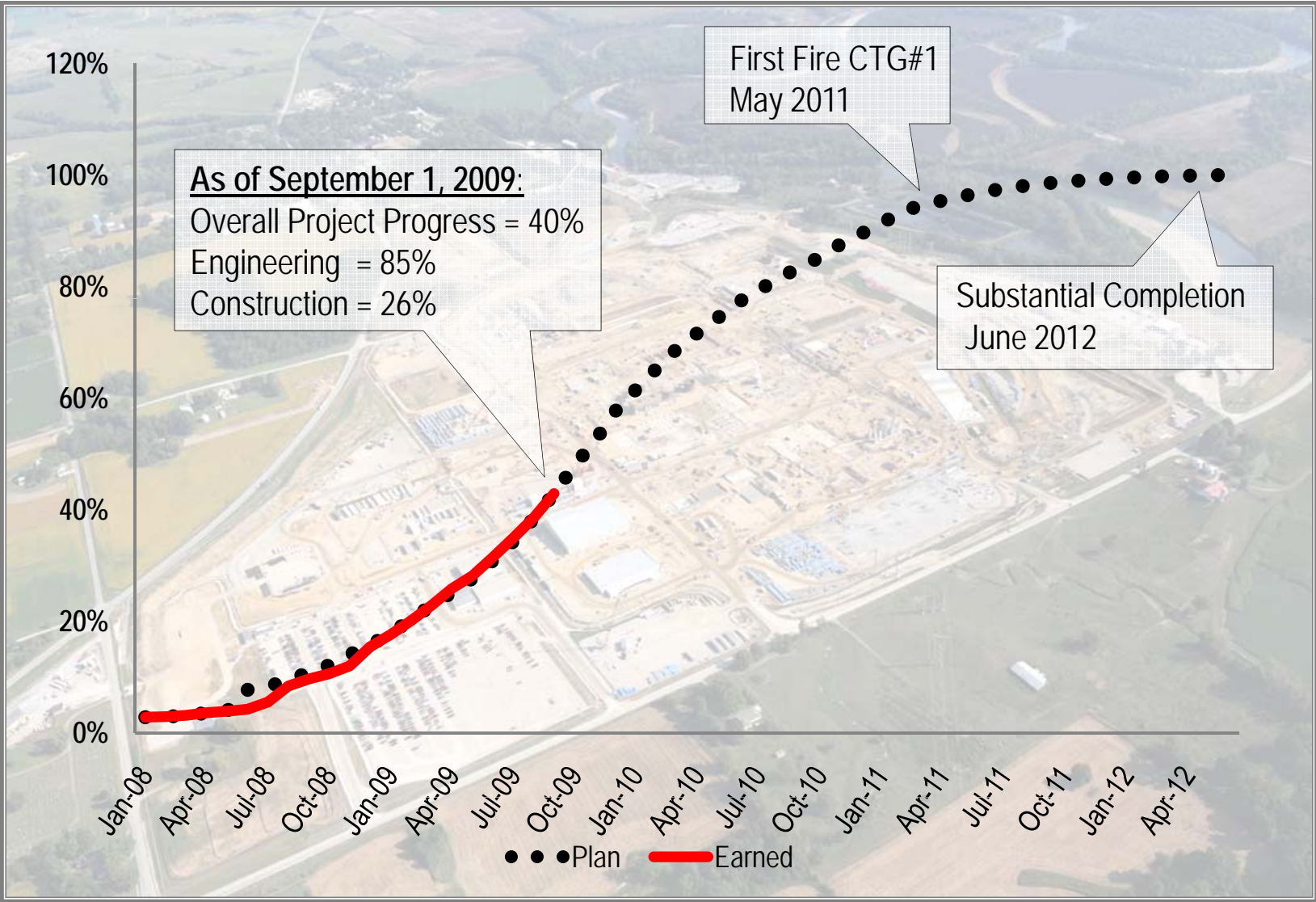
## SWITCH TO EVAPORATION AND CRYSTALIZATION

- October 2008 began discussion with EPA on Bevill Exemption
- March 2009 – Decision to pursue alternatives with Burns and McDonnell
  - May – Met with potential vendors
  - June – Selected vendor
  - July – Contract Signed
- Veolia HPD providing process design and proprietary equipment
- Burns & McDonnell providing engineering services for system integration
- Duke Energy Project Team managing the Construction



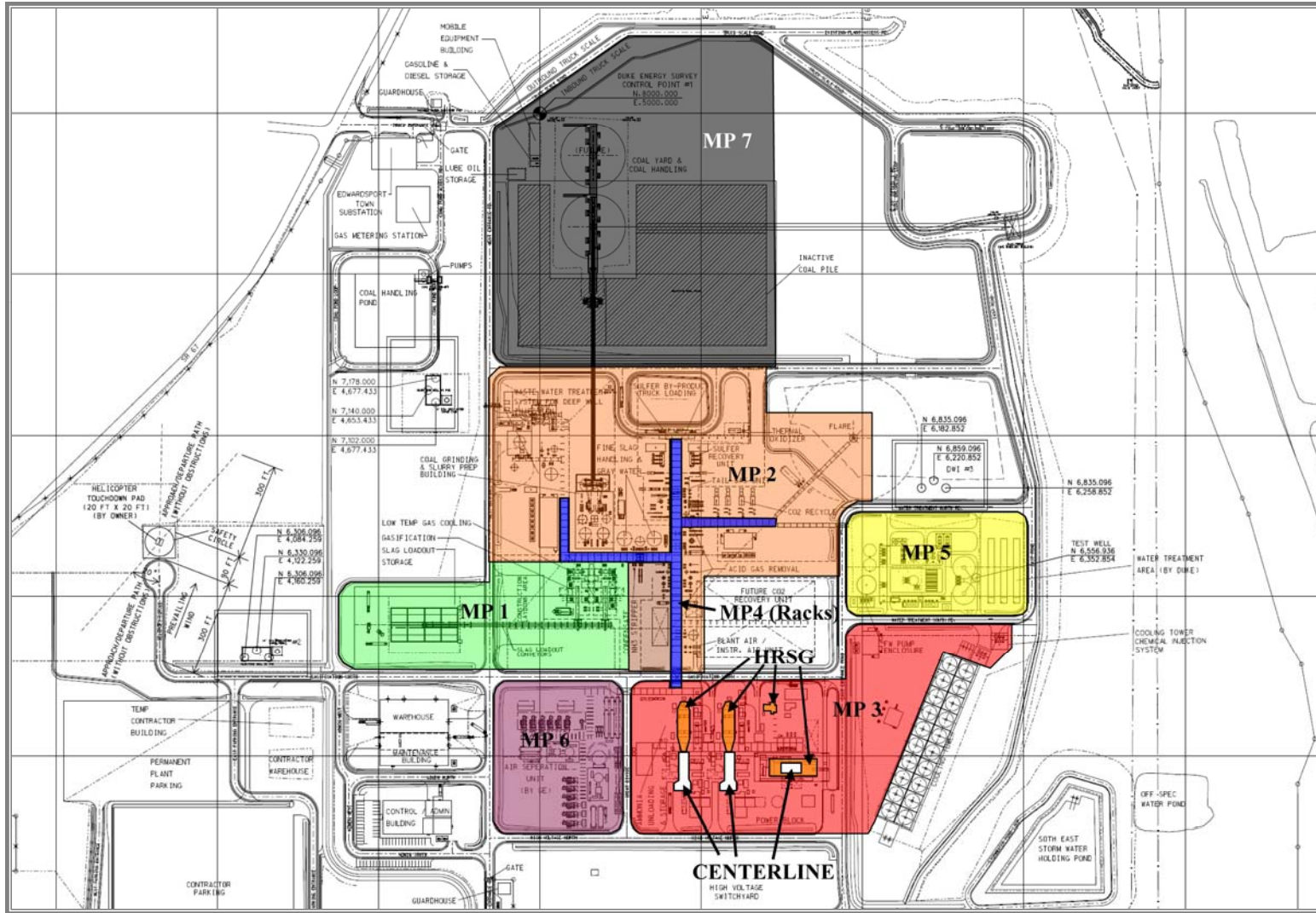


# PROJECT PROGRESS CURVE





# CONSTRUCTION





## PREPARATION FOR OPERATION

- Developing operating procedures
- Operator training program
  - Classroom
  - Field
  - Simulator
- Maintenance planning
  - Equipment documentation
- Practical and technical learning from current operators
- Re-evaluating manning levels and skill needs





## Carbon Capture and Sequestration at Edwardsport IGCC Plant

- FEED study for carbon capture underway
- Filed \$121 m request with IURC for detailed characterization of storage site that included:
  - Deep saline aquifers
  - Depleted oil or gas fields
  - Enhanced oil recovery
- Retained Schlumberger Carbon Services to begin working on site assessment for deep saline sequestration in Edwardsport IGCC vicinity
- Submitted DOE Clean Coal Power Initiative Round 3 application





# Questions?