Medupi rewards its Achievers

At Medupi we recognize that the Project is challenging and in order to achieve set objectives; dedication and commitment are needed in order to deliver on our commitment to South Africa. We acknowledge that gathering and sharing experiences is a very powerful means of encouragement.

On 14 October 2014, Medupi rewarded its top achievers by recognizing exemplary accomplishments and achievements, also motivating other team members to continue doing a good job and to strive for excellence. The event was complemented by a Heritage theme, and team members went the extra mile by proudly portraying their traditional attire and cultures. The best dressed females and males were awarded prizes.

The Medupi Choir provided a stimulating Medupi musical experience. Our Master of Ceremonies, Maji Molokoane, ensured that Medupians were reminded of the simple things in life, by means of laughter.

This event allowed our team members to have a break from the office, interacting with colleagues on a lighter note, sharing laughter, time for reflection and identifying the bigger picture. Medupi Senior Management honored staff that have shown outstanding commitment and accomplished significant achievements.

Staff members gave feedback indicating that “being rewarded for doing well is one of the biggest incentives.”

The Medupi Senior Management team would like to congratulate all Achievers for their invaluable contribution towards the success of the Medupi Power Station Project.
Boiler Registration submitted to the Department of Labour

Congratulations to our Engineering team. On Friday 10 October 2014 the Boiler Registration documentation was handed over to the Department of Labour in Polokwane to begin the registration process for the Unit 6 Boiler.

This event marks the first new build Boiler to be registered by Eskom in the new democratic South Africa, and indeed the first in this century!

Boiler registration with the Department of Labour is required as no user may use a steam generator, i.e. Boiler, unless such user is in possession of a certificate of registration for that Boiler. This certificate is issued by the Department of Labour (DoL) and is a legal requirement. The Boiler must be registered before energy can be applied to the Boiler and is required for the start of First Oil Fire.

Medupi’s Successful Innovations (Part 2) – VDC Facility, CAVE

The Medupi Virtual Design and Construction facility, i.e. CAVE (Computer Analysis and Virtualization Environment), was set up within the Medupi Project to provide a visualization centre with specialised projection hardware to display fully integrated Unit 3D models for use by Team Medupi and the Contractors to assist in rapidly gaining an understanding of the design, fabrication and construction activities required to build the power station.

The VDC Cave technician’s assist Team Medupi by supporting and facilitating meetings between the Employers and the Contractors representatives; using the integrated 3D models as visual aid information for technical arrangement clarity during these meetings for construction of Unit 6 & 5. In March 2012 the Medupi Project won a Gold Award from the American Council of Engineering Companies of New York on the Medupi Virtual Design & Construction System which has been implemented to assist Eskom’s Medupi Project.

Eskom Arrangement Design - 3D Model

- Provide design input information to Eskom’s Contractors such as Servitudes and Limits of Scope to enable the Contractors to design to the Employers Requirements.
- Receive the Contractors detail 3D designs, Conduct Model Reviews with the System Engineers to formulate comments and review responses to be issued to the Contractors to optimize and achieve fully integrated 3D model designs submissions by the Contractors.
- Convert Contractors 3D Model Designs to Medupi Plant Coordinates for insertion into the fully integrated Medupi Plant Model; to enable constructability and maintainability studies.
- Identify arrangement issues and review for clash detection and perform interface management between the separate Contractors system designs, thereby improving constructability and avoiding site rework.
- Generation of design solutions for integration of separate contractors design packages and incorporate specific Employer design requirements into the overall Medupi design.
The use of the 3D Model has had the following benefits:

1. Terminal Points
   • To validate the TP Data sheets in both Geodetic and Plant 0 Coordinate Systems. Evaluate proposed arrangements and routings and terminal point locations to deliver cost effective and optimum solutions.
   • Resolve Contractors terminal point coordination issues and assist the Employers Engineer and Contracts Management Department with determination and resolution of Contractors claims.

2. Pull Planning
   • Provided support and innovative solutions to structuring of works into sub-packages for more effective prioritisation during Pull Planning sessions on the following systems:
     • Coarse Ash Belt Washing
     • Coal Stockyard Pollution Control System
     • Fire water systems
     • Phase 2 Raw Water System - supply and return.

3. Alternate Arrangement Studies
   • HVAC equipment rigging studies.

Solutions and routings to manage dam levels around site i.e. CDD Dams, CSY Pollution Control Dams.

Good progress is being achieved on the construction of Unit 6 with Boiler restoration completed and the Boiler filled with water on 06 October 2014. Test runs on the Oil Burners commenced. All gas burners were fired, tested and completed on 09 October 2014.

Mill 10, 20 and 40 were run for the first time. These dry-runs are being executed for purposes of commissioning and in support of First Coal Fire. The Feeders Variable Speed Drive Software configuration has also been completed.

Aux Steam range blow-through has been completed on the Mill pipeline, Steam Air Heater pipeline and Atomising Steam pipeline. The completion of the Aux Steam blow-through is needed to supply Atomizing Steam to Oil Burners in support of First Oil Fire.

The Boiler Circulation pump was successfully direction checked. The purpose of the circulation pump is to circulate water in the Boiler in order to prevent distortion that may occur if the water in the Boiler is not circulated effectively.

The Soot blower (Super Heater System) was successfully pressure tested. The Soot blower is a steam blowing system capable of cleaning the Boiler within a period of no longer than 4 hours. This prevents the furnace from slagging whilst burning the most adverse Coal. This activity is in support of First Coal Fire.
Notwithstanding the fact that the resources are assisting with Unit 6, and other challenges, the Unit 5 team is showing good progress in various areas. The team is currently focusing on providing access to the contractors responsible for pulling in the electrical and C&I cables.

The electrical contractor responsible for the installation of racking has inspected several racks in both the Turbine and Boiler areas.

The civil works underneath the ACC is progressing well and the team is confident that we will complete this work ahead of schedule.

**Steam Soot blower** pipe work completed up to the Control Station on 63m

**Completed cable racking** installation on Pulse Jet Fabric Filter Plant (PJFFP) Sub-station – 0m

De-grit sump rebar fixing in progress
ACC Deep drains – Construction of the only outstanding section of clean and dirty water drains in Unit 5 is progressing very well with all pipes and manhole now in place.

Condensate System Piping – For the past week we have seen steady progress with regards to installation of piping for the main condensate system in the ACC area. This is an important step towards the LP flushing milestone.

Cable Racking Installation – Installation of the primary cable racking is underway in most of the areas in the Turbine with some of the racking already having been released for cable pulling activity.
Racking around the Turbine Generator: (West, South and East up to 6.6m Aux-bay were inspected and safety cleared.

MV Switchgear: Interconnecting cables pulled. Termination in progress.

C&I Equipment Room: C&I Contractor has started installing the cards into the C&I Equipment. This is the first step towards SIT (Site Integration Testing).
Unit Transformers 1 and 2 for Unit 4 were placed. Installation of Auxiliaries is planned to commence shortly.

Unit 4 Condensate extraction pump piping installation has commenced.

The Condensate Reserve Tank (CRT) base bitumen application and survey for Unit 4 were completed. Once the survey results are accepted, the mechanical construction of the CRT will commence.

Unit 3 Air Cooled Condenser Condensate Tank (ACCCT) building air ejectors have been placed into position. Condensate and Auxiliary steam piping installation can now commence.

Unit 3 Turbine Centreline has been established and welding of the centreline keys is in progress. Bearing pedestal final installation will follow once the key welding is complete. Placing of the HP and IP Turbines will follow after the bearing pedestals have been installed.
How does a Generator operate?

Each generator consists of a rotor and a stator. The rotor is directly coupled to the turbine shaft and revolves within the stator. The stator windings consist of many copper bars in which electricity is produced by the rotation of the magnetic field created by the rotor. Cooling is achieved by circulating hydrogen through the generator. The stator is further cooled by circulating demineralised water through the hollow conductors comprising the stator windings. The electricity produced passes from the stator windings to a transformer where the voltage is raised to the national transmission voltages. Electricity passes to the high voltage yards from where it is distributed to consumers via the national grid.

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