

News from IEM Miri Branch

Technical Visit to the Bakun Hydroelectric Power Project Site

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The Bakun Hydroelectric Power (HEP) Project is one of the biggest hydropower projects ever undertaken in Malaysia, with an estimated power generating capacity of 2,400MW. The Bakun HEP Reservoir is constructed on the Balui River, approximately 37km upstream of Belaga in the state of Sarawak. The Balui River drains an area of approximately 14,750km² at the proposed dam site, and the reservoir inundated an area of 695km².

On 24 August 2007, a team of 27 engineers organised by the Institution of Engineers Malaysia (IEM) Miri Branch had made a technical visit to the HEP Project site. We left Miri at 6.00 a. m. and arrived at the Bakun Hydroelectric Power Project site around 11.00 a.m. The visitors were warmly welcomed by the site management team with some refreshments.

The site management team was led by General Manager (Construction) Mr. Uwe Rossmeier, a German national, who presented the project details, progress, etc. Mr. Vong Nee Toh, Senior Engineering Geologist, gave another very detailed presentation on how the project started, and the unpredictable difficulties they encountered on the completed construction of the Cofferdam. They also touched on the Bakun Dam design and the major civil and construction work of the original design which was scheduled to commence in early May 2003. This work was undertaken by its main contractor Malaysian-China Joint Venture (MCH JV) for the civil work portion which was valued at several million ringgit.

The technical visit to the HEP Project gave the visitors some valuable insights into the Bakun Cofferdam construction of the three concrete diversion tunnels. During the presentation of the Bakun Dam, it was mentioned that the completed dam will be a 205m high Concrete Face Rockfill Dam (CFRD), with a crest length of 740m, a base width of 560m and a crest width of 12m. This makes it one of the



Figure 1: A side view on the construction of the huge Cofferdam which is still in progress



Figure 2: A view of the completed dam



Figure 3: A view on how the dam has been gradually constructed



Figure 4: Upstream of the completed Cofferdam



Figure 5: Downstream of the Cofferdam



Figure 6: Presentation of IEM Miri Branch Bannerette to the Bakun site management, Rossmeier (right) by Engr. Chin (left)



Figure 7: A group photo of the participants with the HEP Project model



Figure 8: A group photo of IEM's participating engineers on top of the Cofferdam



Figure 9: Another photo of the IEM participants



Figure 10: After having been amazed by the gigantic construction work, participants decided to take another group photo for remembrance

highest rockfill dams in the world. It will flood 69,640ha of land, an area bigger than Singapore.

After the site briefing, we were driven by a convoy of ten 4-wheeled vehicles to the site at various locations. Again, we were given the pre- and post-construction briefing, and solutions to the problems they encountered during the construction especially before and during the construction of the Cofferdam (Figures 1 to 5). Both site management representatives guided us very carefully during our site visit as well as answered our queries. It was a great experience for all. We also appreciated the healthy 'kampong' lunch that the site team treated us to.

Lastly, we took the opportunity to show our appreciation for their hospitality by presenting our IEM Miri Branch bannerette to the site team representative (Figure 6) and also by sharing the objectives of the IEM. We finally departed from the site around 3.30 p. m. for another programme in Bintulu.

Some feedback from our participating engineers:-

Engr. Lai Kok Leong

The trip has benefitted me in many ways. I got to know more friends, learnt new construction

technical skills, have a better understanding on the commercial aspects of the project and more. I am very grateful for the opportunity to visit the Bakun construction site, a grand world-class generator sites.

Engr. Winston Toh, Junior Maintenance Engineer, Sarawak Offshore Execution

I learned many things from the trip to the Bakun Hydroelectric Dam. Besides being more familiar with the history of the dam, I gained technical knowledge on cement faced rock-filled dam structure and its construction process; general awareness on transmission, distribution and consumption of the generated load; knowledge on project management issues such as logistics, contract management, managing stakeholders and partners, environmental and safety; as well as general awareness on geology and hydrology.

In conclusion, this was a very fruitful visit, a real eye opener for me, especially for a fresh graduate. It also motivated me to continue to expand my knowledge in engineering as I realise just how much an engineer can contribute to the development of the country and improve the quality of life. A trip like this will always be an inspiration to me as I advance in my profession. ■