



Bakun Dam ‘Unsafe’! – Exclusive Evidence on Corner-Cutting and Sloppy Construction Practices

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Watering down the concrete! Construction phase in 2009.

Devastating information has come into the hands of Sarawak Report, which throws terrifying doubt over the safety of the Bakun Dam!

Inside information, which includes documents, photographs and videos, has been passed over to us by former a Quality Controller, who says concerns about sloppy procedures and cost-cutting measures were ignored by the bosses at Sinohydro.

The sensational video footage [below] clearly shows workers hosing extra water into the cement mixers before it is pumped into the dam, which is visible in the background. Our information is that this forbidden practice was endemic on the project and that poor quality control procedures allowed it to happen.

It is well-known that the Chinese contractors were under extreme pressure from the Malaysian Government during the period up to 2009 to get the dam finished as quickly and cheaply as possible, after a series of delays and cost over-runs.

The informant who spoke to Sarawak Report told us:

“We compromised all the time to speed up the project”

The total failure of Quality Control that amounted to negligence



Ready to inundate - Bakun was Taib^L's pet project. It has been bailed out by the Employee Provident Fund, Malaysia^L's main public service pension fund.

Bakun has been filling since last October and it is now just 15 meters short of full inundation. An area the size of Singapore has been flooded to accommodate the hydro-electric project, which sits up-river of tens of thousands of inhabitants, including the major city of Sibü.

However many believe that it will turn out to be a White Elephant as no genuine use has been found to justify its construction. Now the whole integrity of the project is thrown into question by the major concerns our information will now raise over the safety of its construction.

The key problem, according to our informant, has been a total failure of the Quality Control measures, which are supposed to ensure the dam is built to proper specifications.

He complains that there were “definitely not enough” Quality Controllers hired for the project and that therefore it was impossible to carry out adequate supervision across the many different work points on the enormous site.

Dams are constructed according to carefully calculated specifications, he explained, particularly with regard to the mix of ingredients for the concrete that is used. The quality of the concrete is vital for the strength and safety of the structure and the so-called ‘design’ of the preparation takes into account the specific conditions of the particular project.

Dangerous short-cuts and cost-cutting

There were two dangerous malpractices that have been particularly highlighted by the Quality Controller, who has spoken to us. First, he says the contractors habitually

substituted higher grade mix with lower grade cement in the composition of the concrete to save money.

“When you prepare concrete you need to add water, sand and aggregate and the process must carefully follow the design and quantities of all the ingredients”, he explained. “You also need to put in chemicals to strengthen the concrete and make it slow to harden. Any deviation or substitution of lower grade materials can seriously compromise the quality of the concrete”.

Secondly, he says that when the mixed concrete was then taken from the batching plant in cement carriers to be pumped into the dam, workers were then responsible for another regular malpractice that was endemic on the project and had far-reaching implications. This was the adding of extra water to the mix to make it more fluid and easier to pump. He would reject batches of concrete that he caught being weakened in this way, however he says that he knew that with so little over-all supervision on the site many others got through.

Hydro Corporation (M) Sdn. Bhd.
 18 PMT)
 Batching Plant DELIVERY DOCKET

Bintulu Office : No. 5, Taman Millennium, 97000 Bintulu,
 Tel : 086-313 584 Fax : 086-313 421

TIME	DATE	ACCOUNT	TRUCK	DRIVER	DOCKET NUMBER
14:04	07/07/2009		H037		111456
SPECIFICATION			CEMENT TYPE	MAX AGGREGATE SIZE (mm)	ADMIXTURE TYPE
HC(M)P2&3					SPILLWAY R.S FLIP BUCKET
THIS LOAD (m³)	TOTAL ORDER (m³)	PROGRESSIVE TOTAL (m³)	LEAVE PLANT	ARRIVE JOB SITE	START DISCHARGE
25/40P-25	PUMP(OPC PFA)	40MM,20MM,	14.04	1426	1541
SERVICE/ADDITIONAL INFORMATION			FINISH DISCHARGE	LEAVE SITE	ARRIVE PLANT
			R6,NN	C25/40P-25	170+/-25
RECEIVED IN ACCORDANCE WITH THE STANDARD CONDITIONS OF SUPPLY AND DELIVERY RECIPIENT (CHOP AND AUTHORISED SIGNATORY)			745		
QTY:			745		
Hydro Corporation (M) Sdn. Bhd			NAME :		
			I/C NO :		

REJECTED (written diagonally across the form)

07.07.2009 16:04 (stamped in orange)

Rejected - this batch of concrete was rejected by the Quality Controller because water was introduced, but its believed many more got through.

The informant has provided us with numerous photographs of this practice taking place at the dam site and has also sent us video, clearly showing workers hosing in water into the cement carriers.

“They did this practice all the time when I was not around. It happened all over. They were doing it to make it easier to pump the concrete and to stop their pumps blocking”.

The Quality Controller explained what dam experts have confirmed to Sarawak Report, which is that any tampering with the mix of the concrete at this stage undermines the strength of the concrete and forms a serious risk.

Watering concrete

The UK construction expert Dr Andy Hughes from the company Atkins Global acknowledges that there is a frequent temptation for workers on dam sites to water the concrete, which is hard to handle in the correct state:

**“People will cut corners, which is why you have supervision”, he said.
“Any watering of concrete should be rare on a dam site and it should be controlled and done for a specific purpose”.**

When we explained the practice at Bakun by workers on site, he insisted “Any changes should be done in a managed way. The most important thing is that you have consistency across the dam. If they were doing it ad hoc in a patchwork quilt all over the dam you would not know where the strengths and weaknesses are”.



At it again. Our informant says this is another occasion when he caught workers watering down the concrete, but that his bosses did not take it seriously.

Dr Hughes surmised that the actions by the workers might have been further prompted by the tampering that was taking place earlier in the process, which would have altered the consistency of the concrete.

“If they have changed the ingredients they may need more water. It is like playing around with the ingredients of a cake”, he explained. “The specification will have been designed according to the conditions of the area and the nature of the available materials. Any changing of the design mix should have gone through a formal process”.

The bosses ‘didn’t want to know’

Our informant tells us that he constantly reported the problems to his bosses at Sinohydro, including at their daily meetings. However he got little response or support:

“I used to raise this issue and nobody took any notice of it. They would just say ‘OK let it go, warn them not to do it next time’, that is all”, he told us. “If I found them adding water to the concrete I would reject it as sub-standard, but I could not be everywhere all the time and I know it was happening when I was not there”.

Sarawak Report has photographs of these rejection notices (see above), reporting that water had been added to the concrete. However our insider is certain that the vast majority of this tampered mix was not rejected and was used in the construction of the dam.

Dangerous negligence that undermines the safety of Bakun



Powerful energy - starting to fill up.

Our investigations have shown that the seriousness of these findings cannot be underestimated in terms of the long-term and short-term safety of the dam. Our informant confirms that:

“The mix was used for the spillway, the intake point, the plunge pool and the face slab, which are all very critical features of the dam. If these features of the dam give way then the reservoir will break”.

It is a prognosis confirmed by Dr Andy Hughes, who acts as a spokesman for the British Dam Society. Bakun is a concrete faced, rock filled dam. The concrete is laid in slabs with critical joints. He told us:

“The integrity of that slabbing on the upstream face is what keeps the water back. This is a critical element and there have been numerous problems with the cracking of the upstream membranes of these dams, particularly in South America... Personally, I always worry about the design of these things as we are still not sure how to really design them”

Hughes went on to say:

“The spill-way in particular is also very important. It has to have very high strength concrete, because of the high velocity of the water passing through. There are very high forces here”.

High time to investigate !

For years Sinohydro and the construction contractors have refused to take adequate action in response to the official complaints of under-resourced Quality Controllers at Bakun. Now the project is completed, the dam is being filled and the story is out.

This is not the only safety issue related to the construction of the dam. It has already been raised as a matter of concern that Bakun has been constructed in a region comprising several fault lines that could be strained by the added load of the water. Minor tremors have been recently recorded, but these issues have been likewise ignored.

Tens of thousands of people live down river , culminating in the major coastal city of Sibü. To refuse to thoroughly investigate concerns raised by the projects own experts would be a form of negligence of the utmost seriousness.

There has been yet another attack on Sarawak Report today. This time our site was temporarily disabled by a deliberate hacking exercise. We suggest the proper avenue for the authorities is to address this issue and the many other serious matters that we have been trying to raise in recent weeks and not to persist in trying to shut us up instead.

<http://www.sarawakreport.org/2011/04/bakun-dam-unsafe-exclusive-evidence-on-corner-cutting-and-sloppy-construction-practices/>