

Personal best

Michael Rogers is the President of the International Commission on Large Dams (ICOLD). Here he kicks off a new series of articles in IWP&DC where members of the industry list their top ten memorable projects

MY CAREER AS A dam engineer started in June 1979. Nearing the end of my freshman year in Civil Engineering at Illinois Institute of Technology (IIT) in Chicago, Illinois, US, my father quietly took me aside to explain the high cost of higher education. "I covered you during the first year," he said "but moving forward, you need to do your part. I suggest you look for a part-time or Co-Op (co-operative education) job." That is exactly what I did. The Co-Op Department at IIT sent out my brief and insignificant resume to more than 20 local engineering companies. Only one called me back – Harza Engineering Company. I had no way of knowing that this single step to help pay for my college costs would change my life forever. Harza – the company and the amazing people there – introduced me to the world of dams, which I had never even considered. I was hooked on dams! Now, nearly 40 years since my first introduction to the world of dam engineering, I offer My Top Ten Favourite Dams from my personal perspective and a very fortunate career.



His fond memories of the Aswan Dam project would keep Michael Rogers excited about travelling the world to see dams and people from different cultures throughout his career

1899 and 1902. When completed, it was the largest masonry dam in the world designed to provide storage of annual floodwater for irrigation and water supply for the lower Nile region. Harza was studying the seismic stability of the masonry dam, so I spent three weeks in the amazing city of Aswan, Egypt. It was an eye-opening adventure and I was completely enthralled at the Egyptian culture and the warmth of its people. I fondly remember walking down the cornice in Aswan and drinking the local Karkade Tea. The fond memories of this

project would keep me excited throughout my career for opportunities to travel around the world to see dams and meet amazing people from all cultures. ●

Aswan (Old) Dam (Egypt)

The Old Aswan Dam was my very first overseas trip outside of the United States. The original Aswan (Low) Dam was built by the British about 1000km up-river from Cairo between



Completed in 1884, the

Bear Valley (old) Dam (City of Big Bear Lake, US)

The Bear Valley (old) Dam is on my list of favorites because I was fortunate to spend 14 years as the Owner's Dam Safety Engineer for the "new" Bear Valley Dam during my time living in southern California. The 25m high Bear Valley Dam currently forms Big Bear Lake in southern California. Built in 1910 by the famous dam engineer, John Eastwood, Bear Valley Dam has provided water supply, irrigation and recreational benefits for more than 100 years. But that's not the whole story. Located 50m upstream and now submerged in Big Bear Lake is the original Bear Valley (old) Dam. Completed in 1884, the original Bear Valley Dam was an 18m high thin arch dam – the world's first arch dam. At that time, the dam was considered the "Eighth Wonder of the World" because it created the largest man-made lake in the world – and the arch dam design worked! I was always intrigued with the contrast in dam engineering shown at Big Bear where the changing times dictated two different types of dams in the exact same location. I think that if a new dam would be needed at Big Bear Lake, the modern approach in our industry would probably dictate a roller-compacted concrete dam structure. ●



Guri Dam in Venezuela was the first dam Rogers worked on as an 18-year-old student at Harza

Daniel-Johnson Dam (Canada)

As one of the largest concrete dams in the world, the Daniel-Johnson Dam is both elegant and functional. Located on the Manicouagan River in Quebec, Canada it is on my Top Ten list because of its sheer beauty and iconic appearance. The

dam is a multiple arch and buttress structure with its engineering lineage back to the Eastwood dams in California early in the 20th Century. This 214m high dam was completed in 1970 for hydropower (2600MW) and water supply. Instantly recognisable, I like this dam because it represents the individual character of

all dams. When I talk with students and others about dams, I always make the point that each and every dam in the world is unique – they all have their individual names (like each of us) with their own appearance and character traits – both good and bad. For me, I see only good character in the Daniel-Johnson Dam. ● f



Hoover Dam – probably one of everyone's favourite dams but, the ICOLD President believes, it represents the daring nature of worldwide dam engineers

j Guri Dam (Venezuela)

Guri Dam is important to me because it was the very first dam that I worked on as an 18-year-old Co-Op student at Harza. I came into Harza with an assignment on the drafting table at a time when drawings were made with ink pen on mylar. Guri had been designed by Harza in the late 1950s as a 106m high (Stage I) concrete gravity dam with the provision to include a 56m high raise (Stage II) when additional funding would become available. With the growing domestic demand for electricity, the Guri construction moved directly from Stage I to Stage II. Dam raise projects would eventually become an important aspect of my career. My interest in dam raises can be traced back to the amazing engineering that went into what is still the largest raise of a concrete dam in the world at Guri Dam. I ended up transferring from the drafting table (I wasn't very good at drafting!) to the hydraulics engineering department at Harza and would spend the rest of my college Co-Op career working there on Guri and several other amazing dam projects from around the world. ●

Hoover Dam (Las Vegas, US)

Hoover Dam is on my Top Ten List because it is probably one of everyone's favorite dams. Instantly recognizable, Hoover Dam is the iconic American project of the dam engineering profession. Originally known as Boulder Dam, Hoover Dam was designed by the US Bureau of Reclamation and built during a time of economic struggle in the United States by brave men and women, many of whom lost their lives. To me, Hoover Dam has come to symbolize the ingenuity of dam designers and the dedication

San Vicente Dam (San Diego, US)

I've had many wonderful opportunities during my career at Harza/MWH/Stantec. In the 1980s, I transferred to a small group called Special Projects that specialised in dam safety work. Part of the work in safety for dams was a new approach to construction called roller-compacted concrete (RCC). My experience as a designer of RCC projects led to increasing opportunities, which culminated in the role as Project Manager for the San Vicente Dam Raise Project. As part of the massive Emergency Storage Project in San Diego, California to provide storage of an emergency supply of water in case of catastrophic earthquake, the dam raise at San Vicente Dam was designed and built using RCC. This project became the largest raise of a concrete dam in the United States and the largest raise in the world using RCC. I was very proud to work on the Emergency Storage Project work for almost 15 years with the very talented staff of the San Diego County Water Authority in San Diego. It was an amazing opportunity and when complete, the Emergency Storage Project won the American Society of Civil Engineers Outstanding Civil Engineering Achievement of 2017. ●

Teton Dam (Idaho, US)

Located on the southern border of Idaho, the Teton Dam suffered a catastrophic failure on June 5, 1996. The resulting flood caused significant damage to the surrounding area. As the highest dam, the event was a major disaster. The dam was built in 1976 and was one of the largest dams in the world. The failure was a major disaster and a significant event in the history of dam engineering. The dam was built by the U.S. Army Corps of Engineers and was one of the largest dams in the world. The failure was a major disaster and a significant event in the history of dam engineering. The dam was built by the U.S. Army Corps of Engineers and was one of the largest dams in the world. The failure was a major disaster and a significant event in the history of dam engineering.