

DAM AND RESERVOIR FAILURES (19)

I Main Topics

A General comments

B Teton Dam

II General comments

In the 1960s and 1970s, reservoirs impounded behind some of the world's tallest dams failed. The failures can be examined in terms of (a) the physical conditions and processes that resulted in failure, and (b) organizational failures - that is, a failure of the organizations that constructed or oversaw the construction of the dams to adequately recognize, characterize, evaluate, and assess the level of risk associated with the conditions and processes at the dams. This lecture addresses both issues.

III Teton Dam

<http://www.lib.utah.edu/spc/photo/p211/p211.html>

<http://www.geol.ucsb.edu/~arthur/Teton%20Dam/narrative.html>

<http://www.rootsweb.com/~idfremont/flood.htm>

On June 5, 1976, the Teton Dam, 44 miles northeast of Idaho Falls in southeastern Idaho, failed. It was one of the world's tallest earth-fill dams (~89 m) at the time of the failure. Nearly 300,000 acre-feet of water (or 80 billion gallons or $\sim 300 \times 10^6 \text{ m}^3$) flooded farmland and towns downstream. Damage estimates range around \$1 billion and fourteen people's deaths were attributed to the dam failure. The failure has been widely attributed to hydraulic fracturing of the dam core by water that accessed the core via fractures. The failure can also be attributed to a combination of (a) inadequate recognition, characterization, and evaluation of the fractures in the foundation, and (b) inadequate engineering of the foundation to seal the fractures.