RECLAMATION
Managing Water in the West

U.S. Department of the Interior
Bureau of Reclamation

Safety Evaluation of Existing Dams International Technical Seminar and Study Tour June 5-14, 2017

Denver, Colorado, Park City, Utah and Las Vegas, Nevada

Introduction/Seminar Objectives

In most countries throughout the world, interest in the safety of dams has risen significantly in recent years. Aging dams, new hydrologic information, and population growth in floodplain areas downstream from dams has resulted in an increased emphasis on dam safety evaluation as well as operation and maintenance related to the safety of dams. Those responsible for the safety of existing dams must implement policies and procedures that warrant public confidence. This demands professional practices that incorporate the lessons of the past and conform to the most advanced technical state-of-the-art. The need for trained personnel is essential. This seminar will provide professional personnel with a comprehensive guide to establishing or enhancing a visual inspection/evaluation program and increase the technical capabilities of those responsible for safety evaluations. Bureau of Reclamation officials will provide the training for the seminar. Reclamation is responsible for the proper operation, maintenance, and structural safety of more than 400 dams and distribution systems. Reclamation has conducted similar seminars for its own staff, as well as for more than 5,000 technical and administrative officials from other domestic and international agencies.

Seminar Topics

The first portion of the seminar, will take place in Denver, Colorado, at the Denver Federal Center, and will consist primarily of classroom presentations and discussions. A tour of the Bureau of Reclamation Research Laboratories will also be featured. Lectures, case histories, and structured discussions covering all aspects of a dam safety examination program are led by Reclamation engineers or geologists with extensive experience and knowledge in the areas of design, construction, operation, maintenance, and dam safety. The course outlines the hydrologic, seismic, geotechnical, electrical, mechanical and structural considerations of dam safety as well as operation, maintenance, surveillance, and emergency preparedness. Presentations, case histories, and a walk-through abbreviated examination are used to present the multidiscipline approach to an effective safety of dams program.

Who Should Attend

The seminar is designed for managers, administrators, engineers, and geologists responsible for the design, construction, operation, maintenance, and safety of dams. Policymakers and planners, as well as those with technical responsibilities, may also benefit from the seminar. All presentations, discussions, and printed materials will be in the English language. Participants should have a good command of general and technical English usage.

Study Tour

The post session study tour begins June 9, with a tour of Rocky Mountain National Park, one of America's most treasured parks. Participants will travel by air June 10, to Salt Lake City, Utah, and enjoy free time to explore beautiful Park City, Utah, home of the 2002 Winter Olympics. June 12 and 13 will include site visits to Starvation Dam, Upper Stillwater Dam, Jordanelle Dam, Echo Dam and East Canyon Dam, all part of Reclamation's Upper Colorado Region. Participants will travel by air the evening of June 13, to Las Vegas, Nevada, and the seminar will conclude with a VIP tour of Hoover Dam followed by a close out luncheon, June 14.

Registration Fee

The registration fee is **$3200** per person and includes: 1) Various printed and electronic materials; 2) Most breakfasts and lunches; 3) Airfare during study tour (Denver/Salt Lake City/Salt Lake City/Las Vegas); 4) Motorcoach transportation; and 5) Hotel accommodations during the **Study Tour, June 10-14.** The registration deadline is **May 15.** Due to contractual arrangements with hotels and airlines, any registrations received after the deadline, will incur a registration fee of **$3500**. Please submit a legible copy of your passport with your registration form.

Hotel Reservations

Hotel accommodations in Denver, Colorado, during the **Technical Seminar, June 5-9, must be reserved and paid for by the participant.** Reservations must be accompanied by a first night deposit or guaranteed with a major credit card. There is no penalty if reservation is cancelled 48 hours prior to arrival.

A block of rooms have been reserved at the Marriott Denver West, Golden Colorado, at a special rate of $169 per night plus tax. It is highly recommended you reserve your room early to ensure availability. The special rate is available until **May 15**. Reservations made after May 15, will be at the prevailing room rate, subject to availability.

Marriott Denver West
1717 Denver West Boulevard, Golden, Colorado

Website: Book your group rate for the US Bureau of Reclamation

Phone: 1-888-238-1803 or 1-303-279-9100 Code: US Bureau of Reclamation

Arrival and Departure Information

International travel should be arranged into Denver, Colorado, no later than Sunday, June 4. At the end of the study tour, your flight should be arranged out of Las Vegas, Nevada, no earlier than Thursday, June 15.

Participants are responsible for transportation from Denver International Airport to the Marriott Denver West Hotel and from the Embassy Suites Hotel, Las Vegas, to McCarran International Airport.

Participants are responsible for luggage fees during the study tour. Please visit Delta Airlines at http://www.delta.com/content/www/en_US/traveling-with-us/baggage.html

Internet

Wi-Fi is available in limited areas at the Denver Federal Center. It is not available at this time in the conference room. Free Wi-Fi is available at all hotels.

Electricity

Electricity in the United States is 120 volts AC at a frequency of 60Hz. Type A plugs are used (two flat blades).

Letters of Invitation / U.S. Visa

If you require a visa to enter the United States, it is strongly recommended that participants apply as soon as possible to allow adequate time for registration and visa processing as the process can take several months. Reclamation will only send invitation letters to those registered for the seminar.

Payment

The preferred method of payment is a credit card. Wire transfer and checks are accepted. Checks should be in U.S. dollars and made payable to the Bureau of Reclamation. Funding is not available from the seminar organizers.

Climate and Clothing

Participants should expect warm weather. Business casual attire is recommended during the technical session. Long pants and sturdy closed-toed shoes are required during the study tour.

Dietary Needs

Please note on the registration form if you have dietary needs or restrictions.

Medical Insurance

Accidental injury/medical emergency insurance is strongly recommended and should be purchased prior to traveling to the United States. Reclamation is not financially responsible for any illnesses or injuries that may be incurred by participants. Please refer to the following website for reference: http://www.medexassist.com/Individuals/Products/travmedchoice.aspx

Further Information Contact the Bureau of Reclamation's International Affairs Office: Phone 1-303-445-2139, fax 1-303-445-6322. E-mail inquiries to should be sent to Amedina@usbr.gov or Avigil@usbr.gov . Information contained in this announcement can also be located at http://www.usbr.gov/international/seminars.html

Study Tour Site visits

Rocky Mountain National Park in northern Colorado spans the Continental Divide and encompasses protected mountains, forests and alpine tundra. It's known for the Trail Ridge Road and the Old Fall River Road, drives that pass aspen trees and rivers. The Keyhole Route, a climb crossing vertical rock faces, leads up Longs Peak, the park's tallest mountain. A trail surrounding Bear Lake offers views of the peaks.

Starvation Dam is a zoned earthfill dam 64 meters (210 feet) high and 936 meters (3070 feet) long at the crest. It is located 5 kilometers (3 miles) northwest of Duchesne, Utah, on the Strawberry River. Bedrock at the site consists of one geologic formation, the Uinta, which occurs in the dam site and reservoir area. The bedrock is mostly fluvial in origin at the dam site but becomes partially lacustrine within the upper areas of the reservoir, and is composed of variegated shale with interbedded sandstone, siltstone, and limestone.

Jordanelle Dam and Reservoir provide water storage at an upstream site by exchange for Bonneville Unit water in Utah Lake and Strawberry Reservoir and for most of the water presently regulated in 15 small reservoirs on the headwaters of the Provo River. The reservoir functions as a long term holdover reservoir to provide storage through a six year drought period. Jordanelle has a height of 119 meters (391 feet), reservoir capacity of 3.9×10^8 cubic meters (320,300 acre-feet) with a surface area of 12.4 square kilometers (3,068 acres). The dam is designed to withstand an earthquake of Richter scale magnitude 7.5 on the Wasatch Fault (14 kilometers (19 miles) west of the dam site), and magnitude 6.5 for a local random earthquake directly below the dam.

Echo Dam is an earthen dam constructed in 1931 by Reclamation. It has structural height of 48 meters (158 feet) and contains 1,180,000 cubic meters (1,540,000 cubic yards) of materials. The spillway has a capacity of 11,500 cubic meters (15,000 cubic feet) per second. The outlet conduit is a concrete-lined horseshoe tunnel to the gatehouse, from which two steel pipes pass through a tunnel to the valve house. The outlet works has a capacity of 1605 cubic meters (2,100 cubic feet) per second. The structure was recently upgraded to improve the expected performance in the event of seismic loading.

Park City, Utah lies east of Salt Lake City in the western state of Utah. Framed by the craggy Wasatch Range, it's bordered by the Deer Valley Resort and the huge Park City Mountain Resort, both known for their ski slopes. Utah Olympic Park, to the north, hosted the 2002 Winter Olympics and is now predominantly a training facility. In town, Main Street is lined with buildings built during a 19th-century silver mining boom.

East Canyon Dam is a concrete thin-arch structure with a height of 79 meters (260 feet), crest length of 133 meters (436 feet), and a volume of 27,300 cubic meters (35,716 cubic yards). The dam was constructed in 1966 to replace an old concrete arch dam and increase the reservoir capacity from 3.6×10^7 to 6.3×10^7 cubic meters (29,000 to 51,200 acre-feet), covering a surface area of 2.8 square kilometers (684 acres). The uncontrolled spillway is on the left end of the dam and has a capacity of 4740 cubic meters/second) (6,200 cubic feet per second); the outlet through the dam has a capacity of 542 cubic meters/second (710 cubic feet per second).

Hoover Dam and Lake Mead, spanning the Arizona-Nevada State line, are located in the Black Canyon of the Colorado River about 56 kilometers (35 miles) southeast of Las Vegas, Nevada. It is a concrete thick-arch structure, 221 meters high (726.4 feet) and 379 meters long (1,244 feet). The dam contains 2.48 million cubic meters (3.25 million cubic yards) of concrete; total concrete in the dam and appurtenant works is 3.36 million cubic meters (4.4 million cubic yards). Built during the Depression; thousands of men and their families came to Black Canyon to tame the Colorado River. It took less than five years, in a harsh and barren land, to build the largest dam of its time. Now, years later, Hoover Dam still stands as a world-renowned structure. The Dam is a National Historic Landmark and has been rated by the American Society of Civil Engineers as one of America's Seven Modern Civil Engineering Wonders.

Upper Stillwater Dam is a roller compacted concrete gravity dam 89 meters (292 feet) high and 807 meters (2650 feet) long located on Rock Creek, about 50 kilometers (31 miles) northwest of Duchesne, Utah. The foundation consists of Pre-Cambrian sandstone and argillites with nearly horizontal bedding planes. Most of the length of the dam bears on hard sandstone. Near each abutment the dam bears on argillite, which overlies the sandstone.