STEWARDING DAM SAFETY IN ALBERTA

THE DAM INTEGRITY ADVISORY COMMITTEE (DIAC)

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A Disturbing Trend

• Obed Mountain Mine dyke breach, Alberta, 2013
• Mount Polley Mine tailings dam breach, British Columbia, 2014
• Fundão Tailings Dam Failure, Brazil, 2015
• Oroville Dam Spillway Incident, United States, 2017

Could It Happen Again?
Alberta Dam Safety – 2015

• Alberta Chamber of Resources (ACR) Assessment:
  • The dam safety ‘system’ in Alberta – cultivated over five decades – was among the best in the world
  • Managing the inescapable risks of dam failure means that proactively reducing the probability as low as practical* presents a multi-faceted challenge which needs sustained stewardship and ongoing improvement

• Office of the Auditor General of Alberta (OAG) Report
  • Recommended improvements to the dam safety regulatory framework in Alberta were already underway

*As Low As Reasonably Practicable (ALARP); English Case Law, 1949
Four Strategic Themes

• ACR hosted a two-day 2015 workshop to examine the components and conditions of dam safety; four strategic themes emerged
• To advance the themes, DIAC was formed on the principles that success was possible only through intentional stewardship and continuous improvement of the ‘system’

Define/Clarify Engineer of Record and Other Key Roles
Develop/Share Best Practices
Effective Thinking/Communication About Risk
Support the Development Regulatory Guidelines and Practice
Alberta Dam Integrity System Components
DIAC’s Role and Objectives

DIAC supports the dam safety system (water and tailings dams) across natural resource sectors with the following objectives:

• Timely sharing of non-proprietary operating experiences and learnings
• Maintain a global watching brief on dam safety issues, incidents and trends
• Identify new technologies and facilitate their assessment and implementation
• Integrate implementation of Canadian Dam Association and Mining Association of Canada guidelines for resource sector dams
• Facilitate discussions of mutual interest with regulators
• Develop recruitment strategies for the next generation of dam safety engineers, following the model of the ACR Mining Industry Advisory Committee
## Initiatives and Activities

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<th>Initiative</th>
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<tr>
<td>Define EOR and other key roles in dam safety</td>
<td>Complete</td>
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<td>Develop State-of-practice reference list</td>
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<td>Develop State-of-practice design guide</td>
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<td>Guide for communication of risk</td>
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<td>Support for regulatory updates</td>
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The Alberta Legacy

• Foresight in developing and adopting high standards, innovation and improvement processes (e.g.; independent review boards)

• Leadership and leading edge application of technical advancements to complex practical conditions and situations

• Connection and interaction with regional, national and international dam safety interests and initiatives
Generative Unease

While taking pride in the Alberta system robustness, and the unique role that DIAC is poised to undertake, we are reminded about the importance of “generative unease” by a quote from the investigation report* for the spillway failure at Oroville:

“Although the practice of dam safety has certainly improved since the 1970s, the fact that this incident happened to the owner of the tallest dam in the United States, under regulation by a federal agency, with repeated evaluations by reputable outside consultants, in a state with a leading dam safety program, is a wake-up call for everyone involved in dam safety.”

Moving Forward

• Based on the recent assessments, activities, and the strong legacy and culture of dam safety in Alberta, DIAC is positioned to:
  • Move forward with confidence that current engineering practices, corporate commitment and regulatory oversight are well established to appropriately manage the risks inherent in operating major water and tailings dams,
  • Appreciate and enhance the engineering practices, corporate commitment and regulatory oversight to interact with synergy in ‘the system’, which is more robust than the sum of the component parts, and
  • Provide a key role to support and broker, through which the industry-wide ‘system’ can be nurtured and improved
Special Thanks...

The ACR – support for DIAC and this paper

Members of DIAC – selfless contribution of time, expertise and experience in the pursuit of dam safety

Owners, regulators, stakeholders, engineers and technologists – dedicated to dam safety and who make up the dam safety system