Challenges of Dams in Cold Climates

- Dam Type Selection
- Logistics in Remote Territories
- Short Construction Seasons
- Severely Constrained Sites
- Protective Measures for Concrete
- Membranes
- Volcanoes, Earthquakes and Faults

USSD Cold Regions Engineering Conference
Anchorage, Alaska     September 20 and 21, 2017
Karahnjukar Hydro Project, Landsvirkjun - Iceland
Karahnjukar Engineering Joint Venture (KEJV)

MWH was a member of the VST Sponsored Joint Venture retained for Design and Engineering Support During Construction.
General Layout of Main Dam
Specific Site Challenges and Solutions

- Mobilization in Remote Area
- Jökuldalur Canyon: Construction of Toe Wall
- Jökuldalur Canyon: Dam Fill
- Plinth Construction
- Face Slab Construction
Mobilization: Challenges

Remote Area

- Arrange Accommodation for >1200 persons
- Erect Plants and Workshops
- River Diversion & Dam Excavation
Mobilization: Solutions

- Temporary accommodation & Installation
- Subcontracting
- Know-How & Experienced Personnel

Remote Area
Early Start of Excavation
Jökuldalur Canyon: Challenges

Toe Wall Construction

198m
Jökuldalur Canyon: Solutions

Concrete Distribution

Winterizing

Toe Wall Construction

Toe Wall Completed

Toe Wall Construction

Photo of construction site dated 14/05/2005
Core Wall With PVC Membrane
Jökuldalur Canyon: Challenges

Dam Fill
Jökuldalur Canyon: Solutions
Jökuldalur Canyon: Solutions
Jökuldalur Canyon: Solutions

- Processing Plant
- Conveyor Distribution
- Rock Ladder
View of Distribution Operations
Plinth Construction: Challenges

Steep Slope and Artic Weather
Plinth Construction: Solutions

- Rockfall protection
- Erect protective shelter
- Winterizing

HOT AIR

Steep Slope and Arctic Weather
Face Slab Construction: Challenges

Schedule and Arctic Weather
Face Slab Construction: Solutions

- Starter Slabs & paving machine
- Multi tasks
- Winterizing

INSULATING MATS