Rock Island Spillway
Bays 17 & 25 Hoist Replacement

Commission Presentation

April 15, 2019
Rock Island Spillway
Bays 17 & 25 Hoist Replacement

Presentation Purpose:

Review staff recommendation to revise scope and budget from repair to replace.
Rock Island Spillway
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Proposed Commission Action:

1) Approval of budget revision for revised scope.

2) Authorization to advertise bids.
Rock Island Spillway
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Agenda

• Background
• Project Objectives
• Alternatives
• Recommendation
• Next steps
Background
Spill Bays 17 & 25

100 Ton Hoist Original 1970
Rerated to 116 Ton in early 90’s
Relocated to spill bays 17 & 25.
Auto Hoist Purpose:

- Allows remote gate operation from RI Control Room or Dispatch
- Located at shallow spill bays - one 22-foot gate linked to one 11-foot gate.
- Flow Capacity approx. 16 to 20 kcfs per bay
- Critical to managing reservoir water elevations, especially during unexpected flow changes such as powerhouse unit load rejections.
Background
Bay 17 Hoist Failure

Failure Event:
• March 29, 2017
• Gate initially opened to 8 feet
• Failure occurred in a hoist gear box
• Without knowing of failure, gate was lowered to closed position.
• Next operation to open gate caused gate racking and rope failure. (Hoist was trying to lift gate from one side only)

Actions Taken
• Hoist removed and spill bay configured for manual gate operation (gantry cranes)
• Spill Bay 25 of similar design inspected
  – Gear shaft had cracks
  – Spill bay 25 equipment removed
Background

Damage Summary:

- Wire rope failed
- North guide rail damaged
- 22 foot gate to 11 foot gate linkage damaged
- Broken Shaft on North side gearbox
- Center worm gear teeth damaged
Background

- Gear Box
- Broken Gear Shaft

Location of sheared shaft
Project Objectives

• Determine if Auto Hoist function should be restored.
• If determined to be restored:
  – By when.
  – Confirm required design load (site load test).
  – Improve safety and access for operation and maintenance.
  – Design criteria consistent with spillway modernization study.
  – Minimize construction downtime and impacts to other projects.
Alternatives

• Operate spill bays 17 and 25 with gantry cranes.
  – Short term; Long term; Until spillway modernization study completed.

• Replace failed components with like kind (repair).

• Replace with properly sized equipment.
Recommendation

Replace with properly sized equipment now.

• Justification:
  – Auto spill capacity should be equal or greater to turbine capacity to mitigate risk and damage of overtopping.
  – Provide redundancy for potential other hoist downtime (maintenance, failures).
  – Improve safety by decreasing dependency on crews to operate cranes to hoist gates.
  – Improved flexibility for unexpected flow changes due to changing Mid-Columbia River coordination.
  – Spillway Modernization implementation 2022+
Justification

Rock Island Turbine Flow Capacities
Estimated by Current Outage Schedule

Current capacity
Add back #10
Add back #17
Add back #25
Recommended Alternative
Next Steps

• Revision to 2019 Budget
  – New $3.2M Capital Project for purchase of two gate hoists. Expenditures: 2019 $1.4M; 2020 $1.8M.
  – 2019 District Capital Budget to remain the same.
  – Need original $500k O&M budget for steel structure and concrete repairs, and gate modifications. 2019 - $200k; 2020 - $300k.

• Approve resolution to advertise Bids
• Load test – April
• Solicit bids May-June 2019
• Manufacture, test and deliver by Feb. 2020
• Install March 2020
Questions?