Rock Island Hydro Project Update

Commission Presentation
November 5, 2018
Overview – RI Hydro Projects

• Accomplishments for 2018
• Rehab challenges
• Schedule evaluation
• Recommended schedule
- Accomplishments -

PH2 Governor Controls, MCM, DFR, Excitation, Relays
2012-2018 $13.5M
- Accomplishments -
PH2 Draft Tube Gates – 2010 to 2019
- Accomplishments -
Rock Island Storage Building – Dec. 2018 $5M
- Accomplishments -
RI Facilities - Shuttle Lift Purchase Aug. 2018 $950k
-Accomplishments-
RI Domestic Water Tank – June. $2.4M
- Accomplishments -

PH1 House Unit
- Accomplishments -

B1-B4 Modernization Prep Work Sept. 2018 $2.65M

- New headgates received and installed
- New stoplogs received and installed
- New dewatering equipment in service
- Accomplishments -

B1-B4 Equipment supply – new runner
B6 Modernization Completed in April 2018

- Accomplishments -

- Catalyst for restart of B5 to B8 rehab. Shutdown May 2014 due to min. air gap.
- 23 month construction duration
- Turbine and generator efficiencies achieved (~12%).
- Project Cost $30.6 Million
- Rehab Challenges -

• B6 completion delayed by dropped head cover, new spider and contractor (~11 months).
• B9 vibration concern (outstanding punchlist item)
• B9 Kaplan pipe failure (~13 month outage)
• B9 exciter rub (~ 2 month outage)
• B6 exciter rub (~ 2 month outage)
• B7 completion extended for new head cover (~3 months).
- Rehab Challenges – PH1 Schedule Changes

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B1-B4 Contract Outage Plan

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Current Outage Plan - October 2018

Red = forced outage   Yellow – waiting to start rehab work   Gold = rehab schedule impact
Green  = scheduled outage
- Rehab Challenges –
B1-B4 Schedule

• Objective was to have 3 units undergoing rehab work at the same time.
• Per 16-60 contract: B4, B3 and B2 would undergo work simultaneously.

B1-B4 field work could not start because:
• B7 rehab underway
• B9 Kaplan pipe and exciter rub
• B6 exciter rub and punchlist
- Rehab Challenges -
B9 Kaplan Pipe Failure – June 2017
-Rehab Challenges-
B6 Exciter Rub August 2018
- Rehab Challenges -

B9, B6 Exciter Rub – Stator Sole Plate Installation
- Rehab Challenges -

B-9 Stator Sole Plates
- Rehab Challenges -
B-9 Stator Sole Plate Modifications
- Rehab Challenges -
B9 Kaplan Pipe Failure
-Rehab Schedule Evaluation-

• Contractor and District performed extensive B6 lessons learned.

• District evaluated over 20 schedule alternatives.
  – Safety, resource availability, environmental, cost,…

• Preferred alternatives identified.

• Working to resolve contractual obligations.
-Rehab Schedule Evaluation-

Preferred alternative objectives

• Resolve outstanding rehab issues
  – B6 punchlist and B9 vibration
• Use Lessons learned – new procedures, consistent craft labor and vendors.
• Establish a schedule with contingency and sustainable productivity.
• Maximize unit availability for HCP.
• HCP check-in completed by 2021.
- Recommended Schedule–
PH1 Unit Work Plan

• B7 rehab continues until fall 2019
• B9 back on line Sept. 27, 2018
• B4 Turned over to Andritz October 4, 2018
• B6 back on line October 27, 2018
• B8 maintenance outage started Oct. 29 (6 weeks)
• B5 maintenance follows B8 (8 weeks)
• B6 punchlist follows B5 maintenance (8 weeks)
• B3-B2-B1 follows B6
• B5 follows B7 if all issues resolved
- Recommended Schedule -

Cost Impacts

• B6 liquidated damages assessed for late completion. $630k to District
• B7 new headcover cost ~ $500k
• B9 Kaplan pipe repair – cost share in negotiation.
• B6, B9 stator move – contractor cost
• B6, B9 punchlist – contractor cost
• B1-B4 cost will be higher because not able to work on 3 units at one time - in negotiation
• B1-B4 completion delayed (~18 months)
• B5, B8 completion sooner (~12 months)
QUESTIONS?