

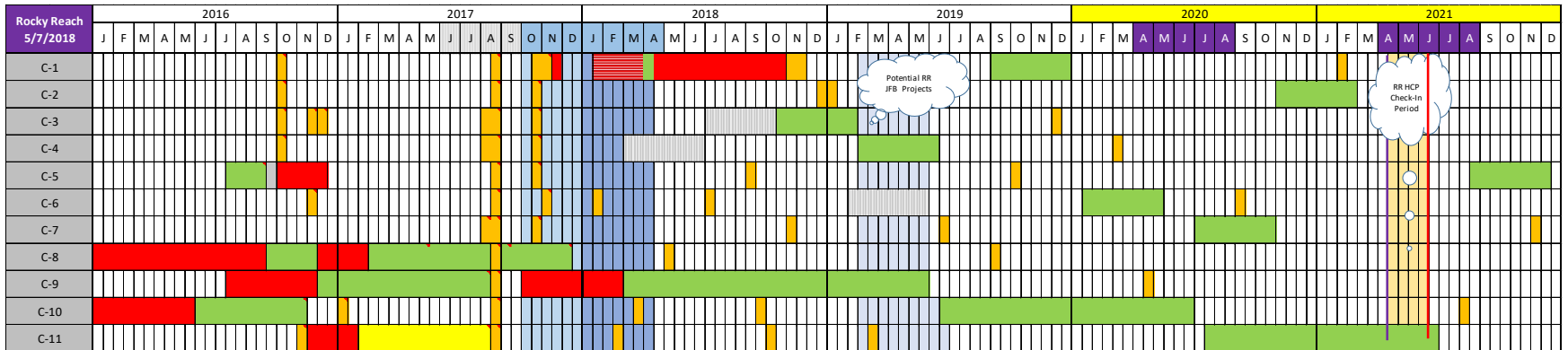
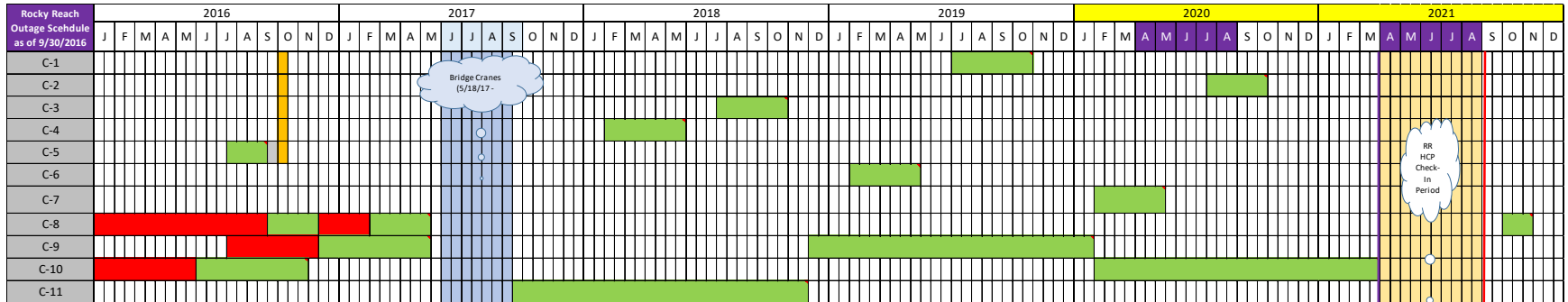
Rocky Reach and Chelan Hydro Update

Commission Presentation
May 14, 2018

Overview

- Schedule Review/Changed Conditions
- Accomplishments to Date
- Milestones to Come
- Emerging Work

Changed Conditions



- Accomplishments -

RR C-8 : C-11 Stator Rewinds

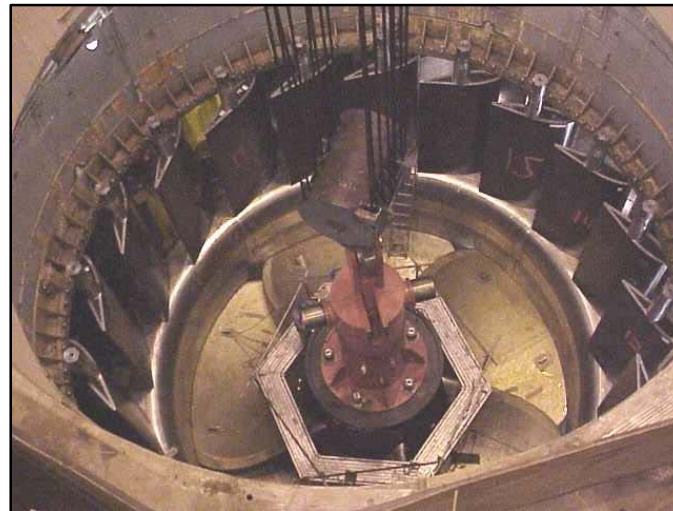
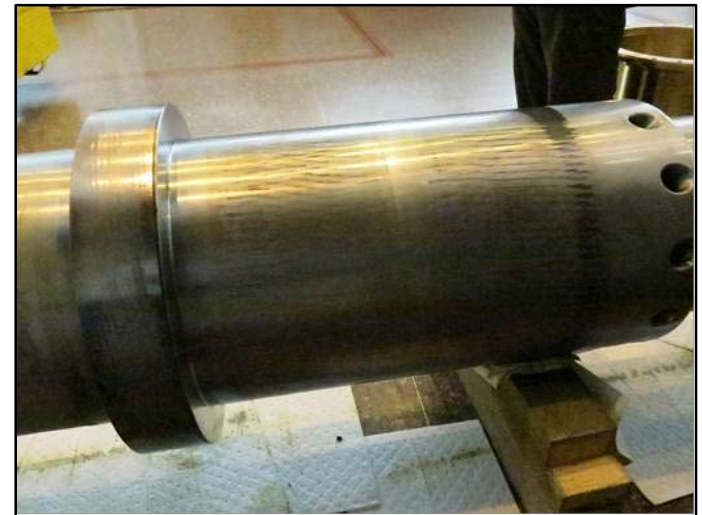


C-8:	12-18-17
C-9:	4-28-17
C-10:	11-21-16
C-11:	8-17-17

- Accomplishments - RR Intake Gantry Cranes



- Accomplishments - RR C-8 Turbine Repairs



- Accomplishments - RR Powerhouse Bridge Cranes



- Milestones to Come -

RR C-9 Turbine Repairs

Scope of Work:

- Holistic turbine repairs
 - Hub refurbishment
 - Blade servo refurbishment
 - Wicket Gate refurbishments
 - Headcover replacement
- Rotor pole refurbishment
- New Governor PLC Controller
- New Excitation Regulator

2018 Milestones:

- Remove rotor
 - Complete
- Remove turbine
 - 7-12-18
- Ship turbine hub to Voith
 - 9-19-18
- Receive refurbished turbine hub
 - 12-12-18
- Return to Service
 - 6-7-19

- Schedule Assessment -

Decision to schedule Surge Tank Project during Fire Season

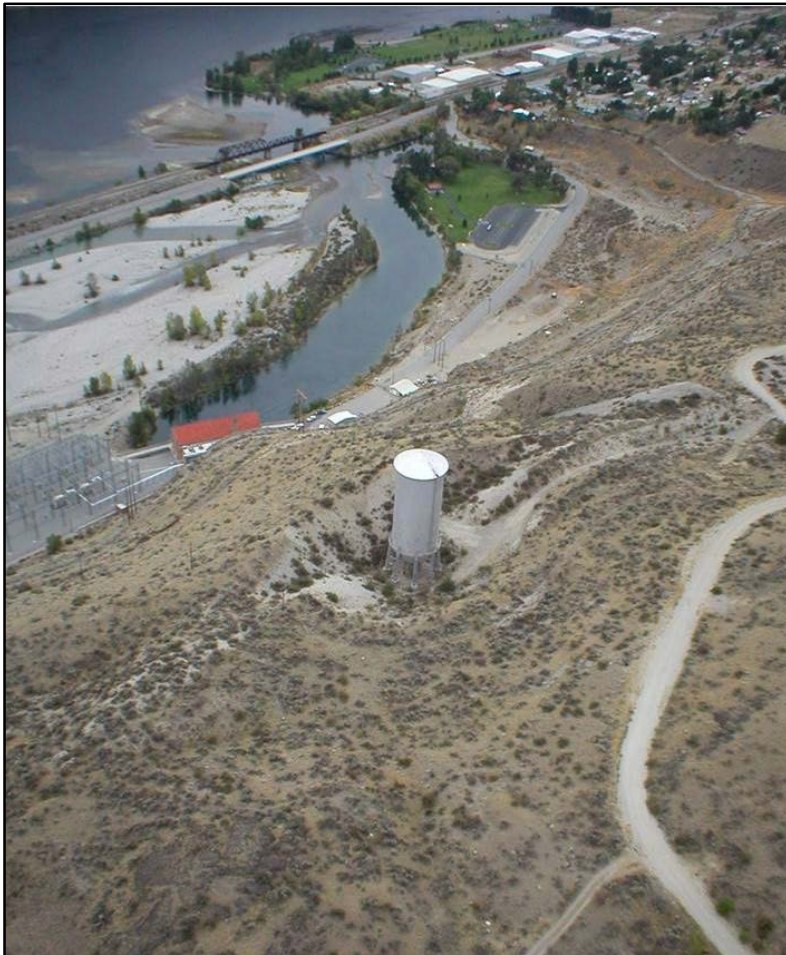
Schedule Constraints:

- Oxygenate Tailrace
 - 1 unit run November – March
- Gorge flow < 320 cfs
 - March 15 – May 15
- Minimize Unnecessary Spill
 - Majority of run-off known by July
- Fall Spawning
 - Starts typically by October 15

Remaining Risk:

- Transmission System Reliability
- Distribution System Reliability
- Mitigating Actions

- Milestones to Come - Chelan Surge Tank Painting



Scope of Work

- Surge Tank Painting
- Penstock Inspection
- Unit A-1 Overhaul
- A1/A2 Exciter Replacement
- A1/A2 11 KV Breaker Replacements
- A2 Cavitation Repairs

- Milestones to Come - Chelan Surge Tank Painting

2018 Milestones

- Tank site mobilization 7-6-18
- Unit shutdowns on 7-16-18
- By 9-28-18:
 - Tank returned to functionality
 - A2 Cavitation repair
 - A2 Exciter installation complete
 - A2 Breaker replacement complete
 - Penstock watered up
 - Unit A-2 returned to service
- By 10-5-18:
 - A1 overhaul complete
 - A1 Exciter installation complete
 - A1 Breaker replacement complete
 - A1 returned to service



- Emerging Work - RR C-1 Trunnion Bushing Wear

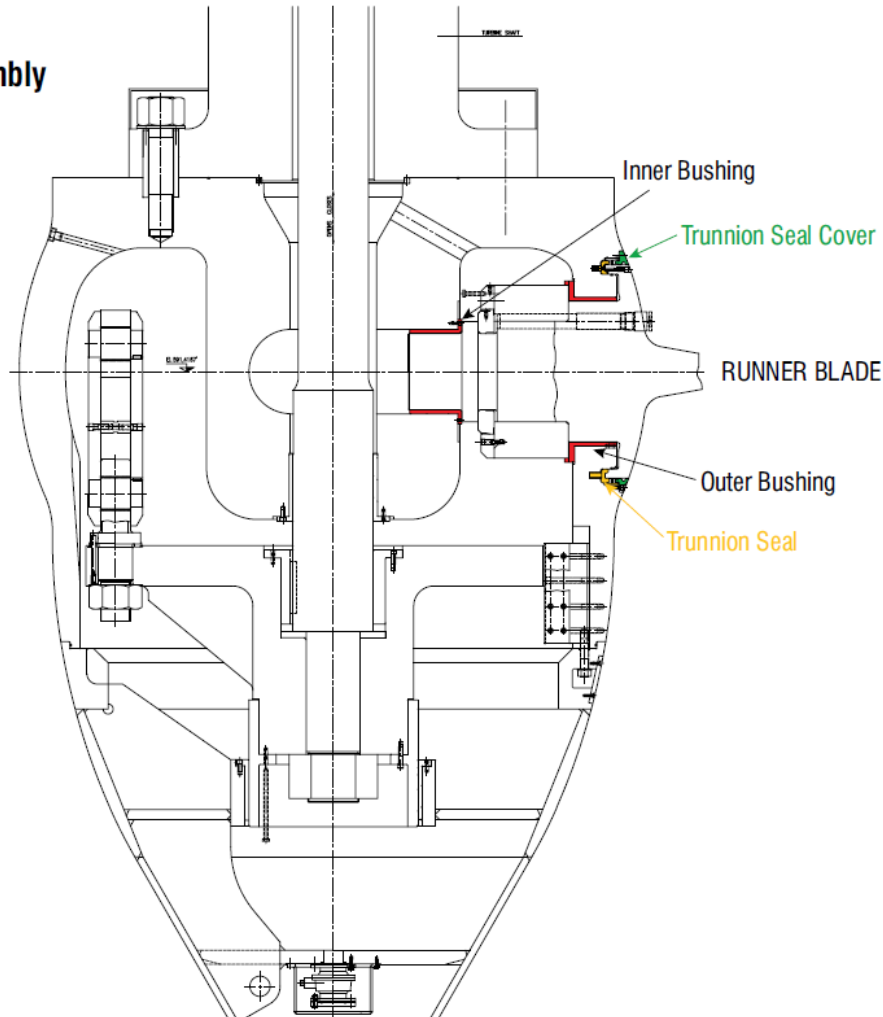
- Turbine replaced in April 2003
- Bushing wear resulted in oil release
- Use new design for seals



- Requesting sole source approval for new seals and turbine bushings

Trunnion Seals, Covers and Bushings

C1 - C7 Runner Assembly



- Purchase 1 set for C1
- Install and evaluate seals
- Bushings for future repair
- Option to purchase additional items for C2-C7

Summary:

Schedule Review/Changed Conditions

Accomplishments:

- RR Stator Rewinds
- RR Intake Gantry Crane
- RR C-8 Turbine Repair
- RR Powerhouse Bridge Cranes

2018 Milestones to Come:

- RR C-9 Turbine Repairs with other unit associated work
- Chelan Surge Tank Painting

Emerging Work:

- RR C-1 Trunnion Bushing Seal Replacements

QUESTIONS?