



EIC'S HYDRO HISTORY: WELD-LESS SURFACE REPAIRS

Grand Coulee Dam

- Repairs of four 8" diameter, 1000 lb. rod ends (4/20)
- Stem surface repair for 18,000 lb. wicket gate vane (7/17)
- Pump shaft bearing surface, including machining (4/15)
- Trunnion bore repair (6/18)

Hoover Dam

- Bore repairs on two 8" diameter, 786 lb. gate arms (4/20)

McNary Dam

- Main generator shaft; 6 surfaces, 2 different alloys (Ni-Al-Mo and pure Al); 8,500 lbs. (3/16)
- Intermediate shaft; 4 surfaces, 2 different alloys (Ni-Al-Mo and pure Al); 8,500 lbs. (9/15)
- 22' diameter diffuser ring; 49,000 lbs. (9/15)
- Two mechanical bearing housings (7/15)
- 44" ID split bearing sleeves (10/13)
- 22' diameter head cover; (9/15)

Logan Dam

- Coat runner seal ring surface and dynamically balance (8/19)

Rock Island Dam

- Coat 29" diameter bore of 14,500 lb. thrust bearing collar (2/20)
- 51" split ring hub; 0.1" per side build-up (5/15)

John Day Dam

- 58-1/2" diameter bore split packing box; 0.15" per side build-up (01/19)

Lower St. Anthony Falls Dam

- Bore of 54" diameter runner (8/17)

Minidoka Dam

- Repaired cavitation damage on 16'8" diameter outer wicket gate barrels and wicket gate seal rings (Units 8 & 9)
- 8' diameter inner wicket gate barrels, wicket gate seal rings (Units 8 & 9)
- Performed 1600 hours of confined space field repairs on Unit 9
- All work performed 10/17-10/18)

Box Canyon Dam

- 11-1/2" diameter oil head guide ring (7/17)
- 14" diameter oil head (7/17)

Lower Monumental Lock & Dam

- 52" diameter mandrel (2/17)
- 57" diameter packing box (2/17)
- 52" diameter shaft sleeve (7/17)

Dolgeville Dam

- Stem surface repairs for 12 wicket gate vanes (4/17)
- 15" ID stuffing box (4/17)
- 16" diameter seal flange (4/17)
- 34" outer ring, 2-piece (8/17)
- 34" split seal flange (8/17)

Hyatt Dam

- 27" diameter upper cylinder head (12/16)
- 27" diameter lower cylinder head (12/16)
- 27" diameter piston; nickel-aluminum bronze overlay (12/16)
- 120" diameter companion flange; extensive welded pit repairs; 17,000 lbs. (11/16)
- 120" diameter field extension; multiple surfaces; 11,500 lbs. (11/16)

Palisades Dam

- 29" ID split packing box (2/16)
- 18" ID servomotor barrel (6/13)

Yakama Nation

- 250 hp runner, complete coating and dynamic balancing; (1/16)
- Journal and seal bearing surfaces on two runner shafts (4/14)
- 48" diameter runner, including pit repairs and complete overlay coating and balancing (4/14)

Hoover Dam

- Bore repairs on two 8" diameter, 786 lb gate arms (4/20)

Hills Creek Dam (USACE)

- 4-segment 23" ID split packing box (11/15)
- 23" ID 4-segment split packing box (3/14)
- 29" ID 2-segment split packing box (2/14)

Lower Salmon Dam

- 24" ID of thrust collar (9/15)
- 23" ID guide collar (8/15)

Toppenish Dam

- 1500 hp runner, coating and balancing (1/15)

USBR (other locations)

- 19" ID of two servomotor barrels— including extensive pit repairs; 4,000 lbs. (6/14)
- 18" ID of a guide bearing collar; 4,000 lbs. (6/14)
- 20" ID of a thrust collar; 6,500 lbs. (6/14)

Miscellaneous

- 29" ID of split packing box (3/15)
- Two Babbitt bearing pockets (10/13)
- 44 each gate valve shafts (12/12)
- Many impellers and volutes coated with HVOF tungsten carbide (2004 – present)

Standards Compliance

- AWS C2.19/2.19M Specification for the Application of Thermal Spray Coatings to Machine Elements for OEM and Repair
- AWS C2.16/2.16M Guide for Thermal-Spray Operator Qualification

- ASTM E2109-01(2014) Standard Test Methods for Determining Area Percentage Porosity in Thermal Sprayed Coatings
- ASTM D4541 Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers
- ASTM C633 Standard Test Method for Adhesion or Cohesion Strength of Thermal Spray Coatings

About EIC

EIC has specialized in manufacturing and repairing severe duty machine parts— including over 100 critical hydroelectric components—since 2003.

Dynamic Balancing

- 14' long, 7-1/2' diameter, 5,000 lbs.
- Erbesd Reliability M30 laser vibration analyzer with G0.4 standard capability.

Machining & Welding

- Haas VF3 CNC vertical machining center
- Haas HL4 CNC horizontal lathe
- Cincinnati OD cylindrical grinder
- Falcon surface grinder
- 5 manual lathes up to 14' long, 32" swing
- 3 manual mills
- MIG, TIG, SMAW, and PTA welding

To Contact Technical Sales

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Horizontal Kaplan cast iron distributor.
Repaired with over 600 pounds of machinable super-nickel overlay applied without welding.