

Ozark and Webbers Falls Powerhouse Major Rehabilitation

[REDACTED]
18 June 2015



US Army Corps of Engineers
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Webbers Falls Scope, Cost and Schedule

- **Project Scope: Replace three turbines, rewind three generators and rehabilitate all cranes, tailrace and intake gates and bulkheads.**
- **Total Project cost: \$84.7M (\$79.9M customer funded)**
- **Turbine Contract Awarded: February 2008**
- **Awarded Turbine Contract Amount: \$39.3M**
- **Current Turbine Contract Amount: \$47.1M**
- **Current Required Completion Date : 5 October 2012**
- **Anticipated Completion Date: 6 June 2016**



Webbers Falls Current Project Status

- **Unit 3 completed the 100 day acceptance test and was placed in service 26 November 2012.**
- **Unit 1 generator damaged rotor pole repair was completed and installed in September 2014.**
- **Contractor dry commissioning of Unit 1 turbine was completed in December 2014.**
- **Unit 1 wet testing was delayed due to issues identified during initial water up and is currently being delayed to repair the existing pinion bearing that was undersized.**



Webbers Falls Current Project Status - Cont

- **Unit 1 pinion bearing to be factory accepted by HDC on 16 June. Wet testing is expected to resume the week of 6 July 2015.**
- **Unit 1 generator coils installed, with all checks and inspections complete.**
- **Unit 2 was delivered to the contractor on 29 January 2015 which mitigated any delays to the overall contract.**
- **Unit 2 generator pre-disassembly measurements have been recorded and disassembly has begun.**



Webbers Falls Current Project Status - Cont

- **Unit 2 disassembly, stay vane repairs and laser survey complete.**
- **Unit 2 spider bracing currently being installed to machine the existing SS wear band.**
- **Unit 2 re-installation scheduled to commence October 2015.**
- **CPARS unsatisfactory rating issued to Andritz on 8 May 2015.**



Webbers Falls Project Cost Breakdown

2014 Current Cost Est. -	\$84.7M
Turbine Rehab Cont. -	55.3
Generator Rewind Cont -	6.0
Intake/Draft Tube Cranes –	4.0*
Rehab Two Bridge Cranes –	2.6
Misc. Electrical Mech. -	4.0**
New 13.8KV Breakers -	0.8*
Unit 1 & 2 Upper Shafts -	1.6
Speed Increaser Unit 1 -	5.5
Unit 1 Supplemental funds	3.3
Unit 3 Supplemental funds	1.6
Total -	\$84.7M

***ARRA Funded **Partial ARRA Funded**

•Cost include S&A and Contingency



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Webbers Falls Modifications

Major modifications executed and pending to date:

New Upper Shafts-	\$1.7 M
Replace Low Speed Gears and Pinions-	\$5.1M*
Paint Blades and Wicket Gates-	\$321K*
Stay Vane Repair, 3 Units (est)-	\$850K*
Additional Painting-	\$1.0M*
Machine Embedded Components-	\$500K
Unit 3 Wicket Gate Filing -	\$300K
Misc Non Controversial items Unit 3 -	\$350K
Escalation Thru June 2014-	\$2.9M
Estimated Additional Escalation	\$2.1M

Contractor currently is 807 days past the completion date.
Estimated Liquidated Damages to contract completion is \$7.9M.



Webbers Falls Turbine Rehab Sub Agreement Funding

	Unit 3	Unit 2	Unit 1
Sub Agreement totals including upper shafts and speed increaser	\$19,500,000	\$18,700,000	\$24,200,000
Additional Supplemental Funds	1,600,000	2,900,000	\$3,300,000
Total available funds	\$21,100,000	\$21,600,000	\$27,500,000
Contracts, executed modifications, and S&A	\$19,167,000	\$16,609,000	\$23,736,000
Estimated remaining escalation	\$109,000	\$1,550,000	\$1,820,000
Estimated outstanding modifications	\$650,000	\$400,000	\$450,000
Estimated required S&A	\$0	\$1,450,000	\$340,000
Total requirement	\$19,926,000	\$20,009,000	\$26,146,000
Contingency	\$1,174,000	\$1,591,000	\$1,354,000



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Additional Project Sub Agreements

S138 – Rewind Generators

Units 1,2 & 3 = \$6.0M

Original contract - \$4.9M (\$1.666M/unit)

Unit 1 generator final cost including HDC and Tulsa management – \$2.255M

Assuming Unit 1 is indicative of future costs equates to a total funded requirement of \$6.7M.

Additional funds of \$600K have been requested.



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Additional Project Sub Agreements - Cont

**S137- Intake Gate, Bulkhead and Misc. Electrical - \$4.0M
Ongoing - \$3.5M contract , additional \$518K funded through ARRA**

**Replace Upper Shaft Unit 1 modification
Cost = \$800,000
Status – Negotiating change with the contractor**

**Replace the Low Speed Gear and Pinions Unit 1 modification.
Cost - \$5,500,000
Status – Complete \$5.1M, gear and pinion installed**

**Replace Upper Shaft Unit 2 modification
Cost = \$800,000
Status – Negotiating change with the contractor**



Ozark Scope, Cost and Schedule

- **Project Scope: Rehabilitation of the Ozark Powerhouse to include replacement of five turbines, rehabilitation of all cranes, rehab of water Treatment, and misc aux systems**
- **Project Cost including management expenses: \$130.0M (\$40.9M Customer Funded)**
- **Turbine Contract Notice to Proceed : July 2005**
- **Awarded Turbine Contract Amount: \$74.5M**
- **Current Turbine Contract Amount: \$97.9M**
- **Anticipated Completion Date: October 2017**

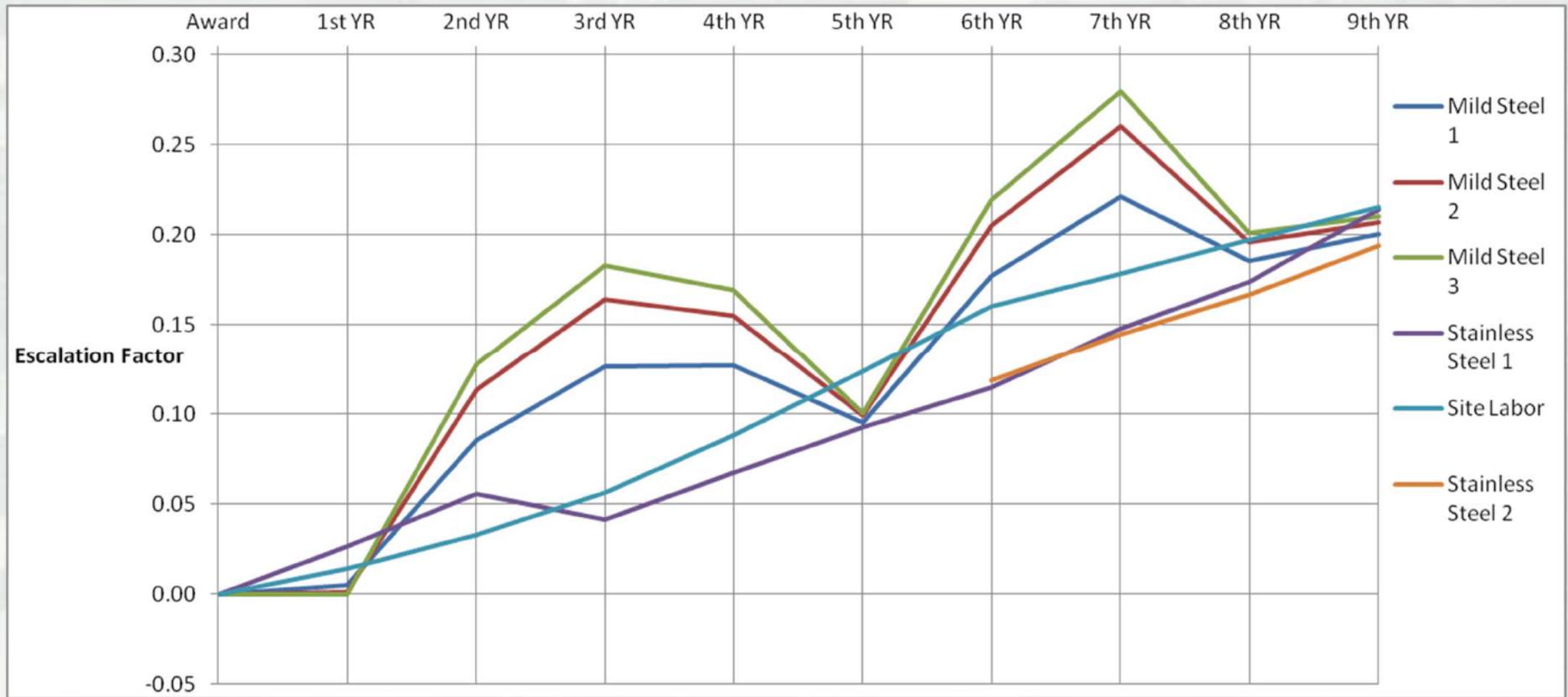


Ozark Funding Status

Ozark Rehab Project Estimate	\$130.0M
Cranes, Gates, Generator Coolers, Plant Prep	\$3.9M
Turbine Contract (minus \$4.4M low speed gear for WF)	\$97.9M
Pending Turbine contract modifications	\$3.1M
Unit 5 Low Speed Gear Finishing	\$1.2M
Engineering, Project Support, Contract Mgmt (est)	\$17.6M
Remaining Escalation Payments, based on 9 th year rates	\$4.3M
Contingency@10% of remaining turbine contract	\$2.0M
Funding Received to Date	\$125.7M
Regular Appropriations	\$54.7M
Recovery Act Funding	\$30.1M
FY06-FY07 Customer Funding	\$20.1M
FY12 Customer Funding	\$12.8M
FY14 Customer Funding	\$8.0M



Ozark/Webbers Falls Economic Price Adjustments (escalation)



Escalation Through June 2014



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Ozark Current Project Status

- **Unit 2 completed the 100 day test with final inspection and correction of punch list underway.**
- **Unit 3 wet testing in process with anticipated start of the 72 hour test by 3 July.**
- **Unit 4 stay vane repairs complete with restart of the unit only pending correction of CP system deficiencies.**
- **Unit 1 disassembly complete.**
- **Unit 1 completion and subsequent release of unit 5 will be impacted by the boring bar being sent to Webbers Falls Unit 2 first.**



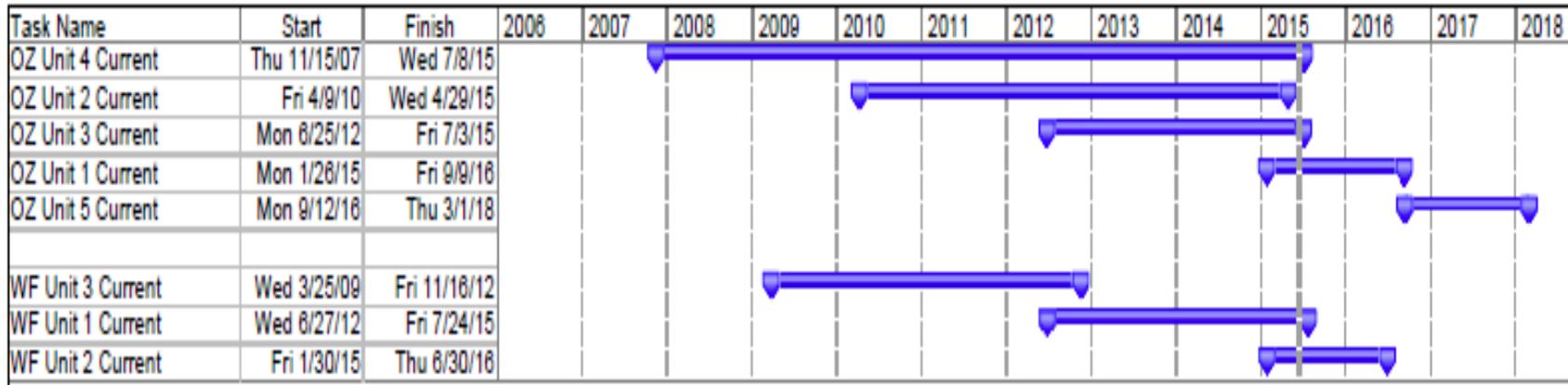
Ozark Turbine Replacement Contract

Major Modifications to date-

Replace Cooling Water Systems-	\$800,000
Replace Unwatering Systems-	\$1.0 Million
New Upper Shafts, 4 units-	\$4.7 Million
Correct Misalignments, Unit 4-	\$2.0 Million
Paint Blades and Wicket Gates	\$800,000
Stay Vane Repair, 3 Units (est)-	\$1.9 Million
Additional Interior Painting	\$1.4 Million
Escalation Thru June 2014	\$6.0 Million



Webbers Falls/Ozark Schedule



- Note that OZ U4, OZ U2 and WF U3 finish dates are through the end of the 100 day test run. All other unit finish dates are through the end of the 72 hour test.
- Note that OZ U1 and OZ U5 are pushed to the right by approximately 4 months due to the boring bar being at WF U2.



Successes

- **Webbers Falls continues to run without issues.**
- **Webbers Falls Unit 1 reassembly is complete.**
- **Ozark Unit 4 100 day test to start 17 June 2015.**
- **Ozark unit 2 completed the 100 day commercial operation test.**
- **Ozark unit 3 final commissioning has begun.**



Challenges/Lessons Learned

- Rotor poles
- Oil purity control
- Boring bar conflicts
- Peripheral equipment failures



Questions?



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