

LOCK-N-STITCH Inc.
Casting Repair Specialists
1015 S. Soderquist Rd.
Turlock CA 95380

800-736-8261
209 632-2345
Fax 209-632-1740
www.locknstitch.com

Steam cylinder repair and on-site machining final report

Customer Whitepass and Yukon Railroad Phone (907) 612-0184
Contact Ed Hanousek Address Skagway #1 Shops Rd
City, State, Zip Skagway Alaska 99840 Date October 13, 2013

Part Railroad Locomotive #73 Steam drive Cylinder
Serial number 266114 Inspected by Ed/Scott

- | | |
|--|--|
| 1. Base metal
<input checked="" type="checkbox"/> cast iron | 2. Cause of damage
<input checked="" type="checkbox"/> impact |
| 3. Machinability
<input checked="" type="checkbox"/> no previous repairs | 4. Length of crack/s
13 inches |
| 5. Casting shape where cracked
<input checked="" type="checkbox"/> flat
<input checked="" type="checkbox"/> inside/outside corner
<input checked="" type="checkbox"/> radius | 6. Material thickness
1 5/8 to 3 inches |
| 8. Operating temperature
400F | 7. Operating pressure
200 psi |
| 10. Working environment
<input checked="" type="checkbox"/> Warm | 9. Customer's needs
<input checked="" type="checkbox"/> permanent repair |
| 12. Remachining requirements
<input checked="" type="checkbox"/> bolt holes
<input checked="" type="checkbox"/> machined surfaces
<input checked="" type="checkbox"/> Cylinder bore | 11. Accessibility
<input checked="" type="checkbox"/> room for the tools?
<input checked="" type="checkbox"/> room for the operator/s? |
| 13. Inspection method(s) Magnetic particle | |

14. Damage found: A thirteen inch crack from inside the cylinder to the outside face and through a 1"-8 bolt hole was cause by the impact of the piston into the head



#1 Crack was metal stitched with C3 Castmaster pins to repair the crack and seal the cylinder.



#2 Locks are installed along the repair to give added strength.



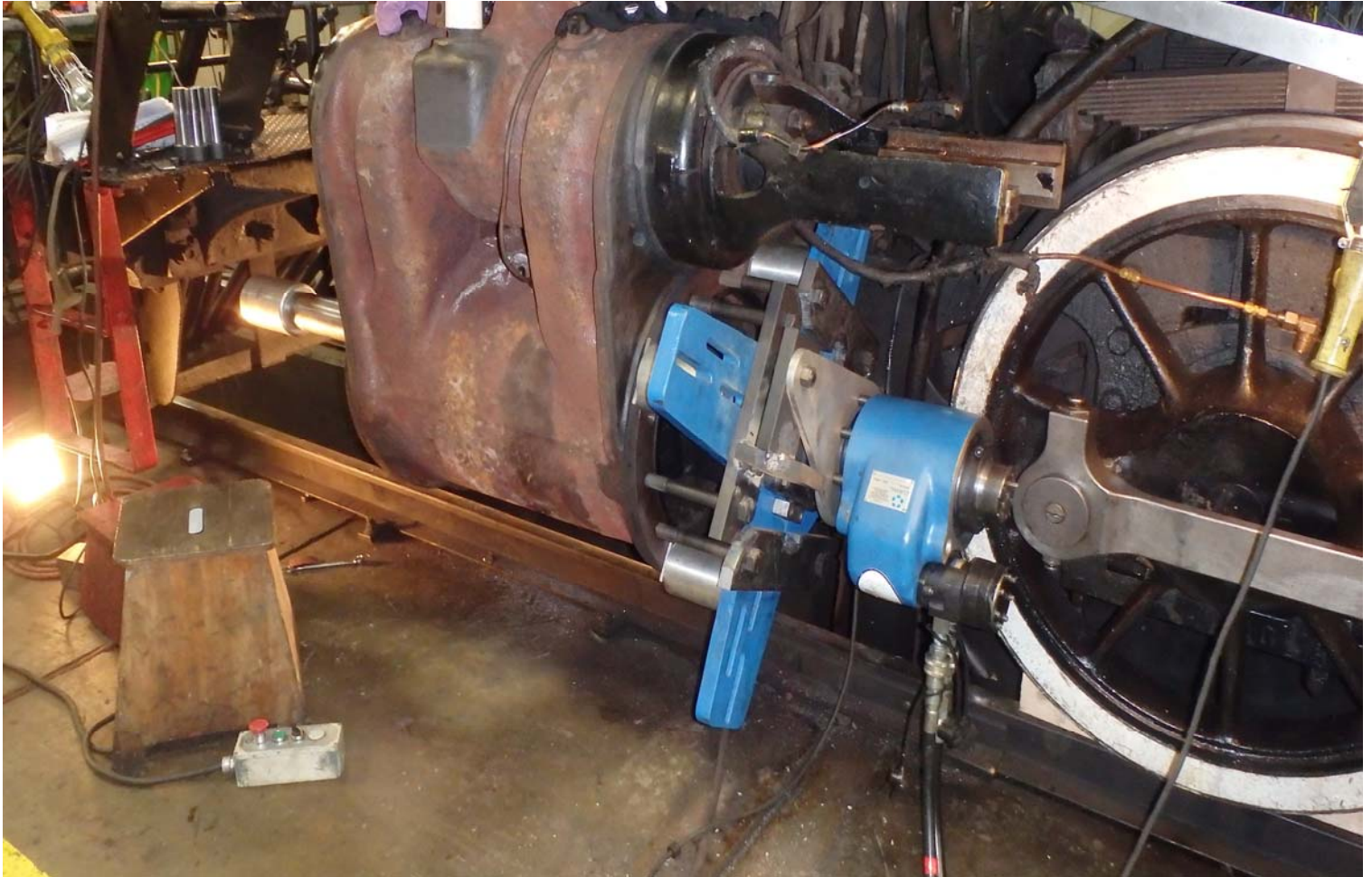
#3 The 1"-8 bolt hole was repaired using a FFT91008 Thread Insert and metal stitching along crack.



#4 The part was hand finished to match the steam drive cylinder.



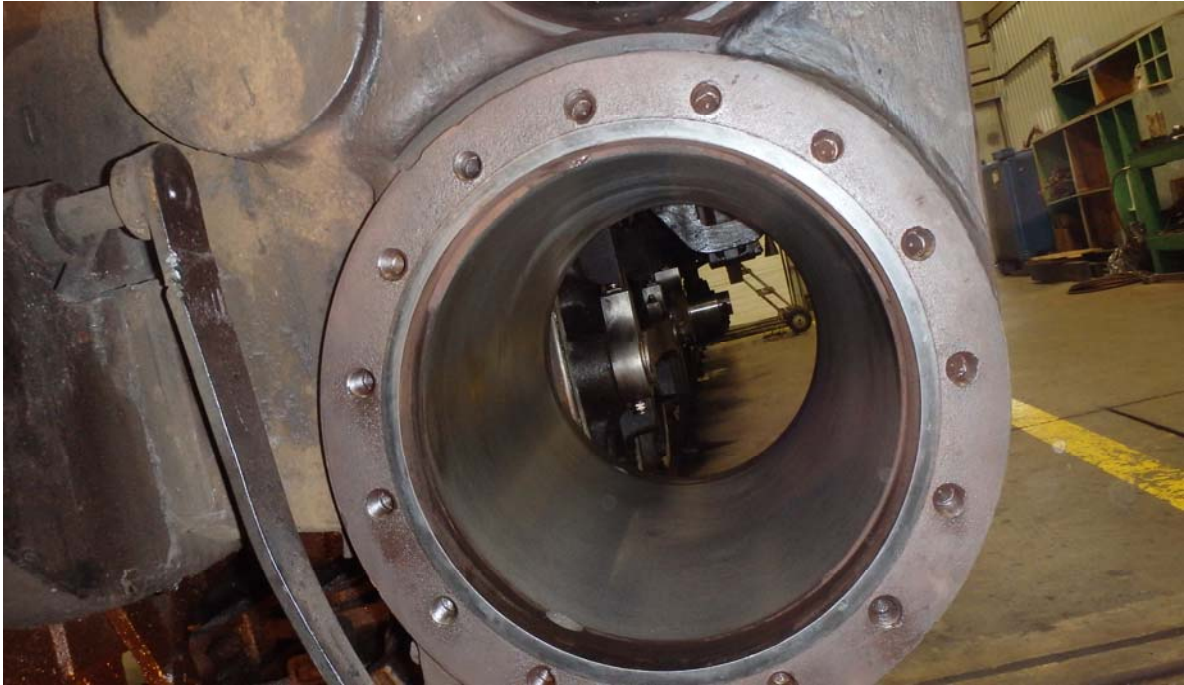
#5 A portable boring machine was set up to machine out the bores of the steam drive cylinders to be round and straight.



#6 Steam drive cylinder is being machined.



#7 The cylinder is machine to customer specs. Ready for assembly



Conclusion: Repair was complete with no complications and should last the life of the cylinder.

Warranty available:

This limited warranty covers our materials and workmanship for the repair of your part. Disassembly and downtime are not covered by this warranty. The limited warranty is for a period of one year from the date of completion of the repair. If there should be any failure in our repair during that period of time due to faulty materials and or workmanship, we will again repair the part at our cost including all labor, materials and travel expense, or we could choose to refund the money you paid for the repair in part or full. We reserve the right to make the final decision whether to repair or refund. This is the limit of our liability. Be aware that we are not responsible for failures due to faulty installation or improper operation and maintenance of the part. If the problem that caused the original damage has not been remedied this warranty will become null and void.