Repair Final Report

Customer  Andrie Inc.__________________ Phone (231) 740-8838______________
Contact  Richard Paris______________ Alt phone (231) 728-2226______________
Address  561 East Wester Ave. ______________ Fax____________________________
City, State, Zip  Muskegon, MI. 49443________ Date_7/27/2013____________________

Part  Tugboat Rotary Port Side Steering Pod Housing
Work Completed by Alaa and Scott

1. Base metal
   X cast iron
   ductile iron
   cast steel
   cast aluminum
   other ____________________

2. Machinability
   no previous repairs
   X arc-welded
   brazed
   heat-related cracks
   other ____________________

3. Casting shape where cracked
   X flat
   X inside/outside corner
   radius
   other ____________________

4. Cause of damage
   X impact  Possible
   heat
   freezing
   X normal operation
   other ____________________

5. Operating pressure
   800PSI________________

Final Report  LOCK-N-STITCH Inc.
6. Operating temperature
   Less than 150 degrees

7. Remachining requirements
   X bolt holes
   X bearing bores
   machined surfaces
   X other To be completed by
   Meldrum Mechanical

8. Customer’s needs
   X permanent repair

12. Accessibility
   X room for the tools.
   X room for the operator.
Tugboat Rotary Port Side Steering Pod Housing repair

The bore on the steering pod was worn and a new Repair Sleeve was necessary to repair the bore.
1. Manufacturing of new Repair Sleeve performed by GPL, Inc.
2. Liquid Nitrogen was used to shrink repair sleeve into steering pod. GPL, Inc. performed this task.
3. Because the Repair sleeve had overlapped the bolt holes in the part, FF820250 inserts were required to keep the integrity of bolt holes. The bolt holes were drilled and tapped to receive the new inserts. All inserts installed were performed by LNS Personnel.
4. Holes were then tapped to receive new inserts.
5. Installing the new insert flush with machine surface.
6. The new inserts installed along with retaining pins.
7. Stitching required inside the radius area where a low spot occurred when machining new sleeve. First Row of holes was drilled to receive L8 stitching pins.
8. Stitching completed and ready for final machining by GPL, Inc.
10. Steering pod was pressure tested to check for any leaks. No leaks were found.

11. Leak was found in a prior repair. Extra stitching pins were installed and
supports were added for reinforcement.

12. The repair was covered with Titanium putty for extra protection.
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.

Extended warranty: