

POE LOCK GATE ANCHORAGE LINK REPLACEMENT

Mike Bunker

Mechanical Engineer

Detroit District, Soo Area Office

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US Army Corps of Engineers
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Poe Lock

- Located on the St. Mary's River in Sault Ste. Marie, MI.
- The St. Mary's River system connects Lake Superior to Lake Huron.
- 1200' long by 110' wide chamber.
- 32' draft over gate sills.
- 21' lift.

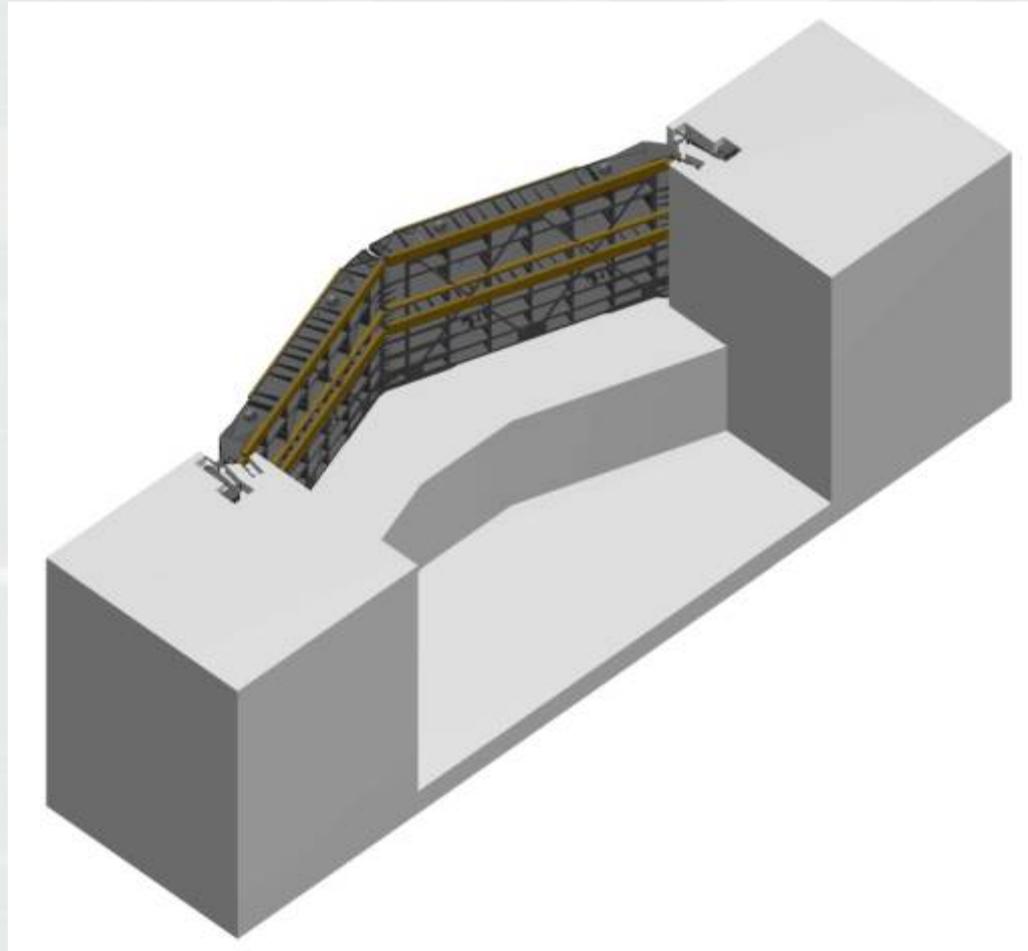


Poe Lock



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Poe Lock Gate System



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Poe Lock Anchorage Assembly



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Problems Found

- Anchorage links were inspected in 2010 in accordance with Fragmentation Order 03: “Miter Gate Anchorage Inspection & Testing.”
- Crack indications were discovered in a majority of the anchorage links.
- The cracks occurred in areas where nut retainer straps were welded.



Nut Retainer Strap



Crack Indications

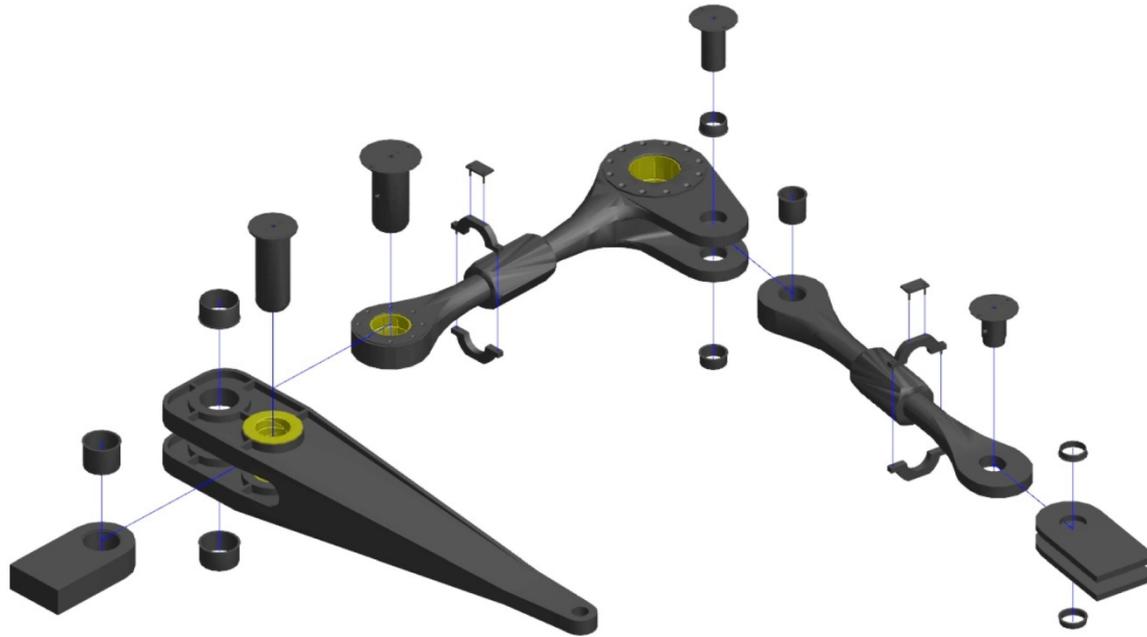


Solutions

- To eliminate cracking caused by welding, all welding was eliminated in the design:
 - ▶ New nut retaining collars were designed.
 - ▶ Welded design of gudgeon barrel was redesigned as one piece.
 - ▶ Holes in all anchorage parts now have replaceable hardened bushings.

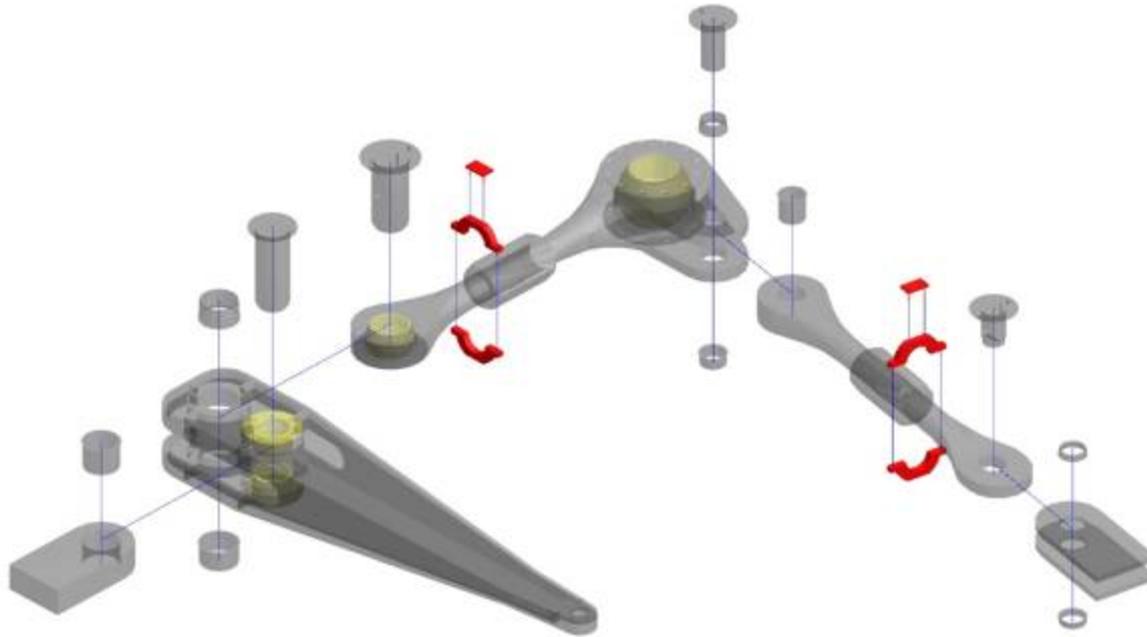


Anchorage Assembly



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Nut Retaining Collars

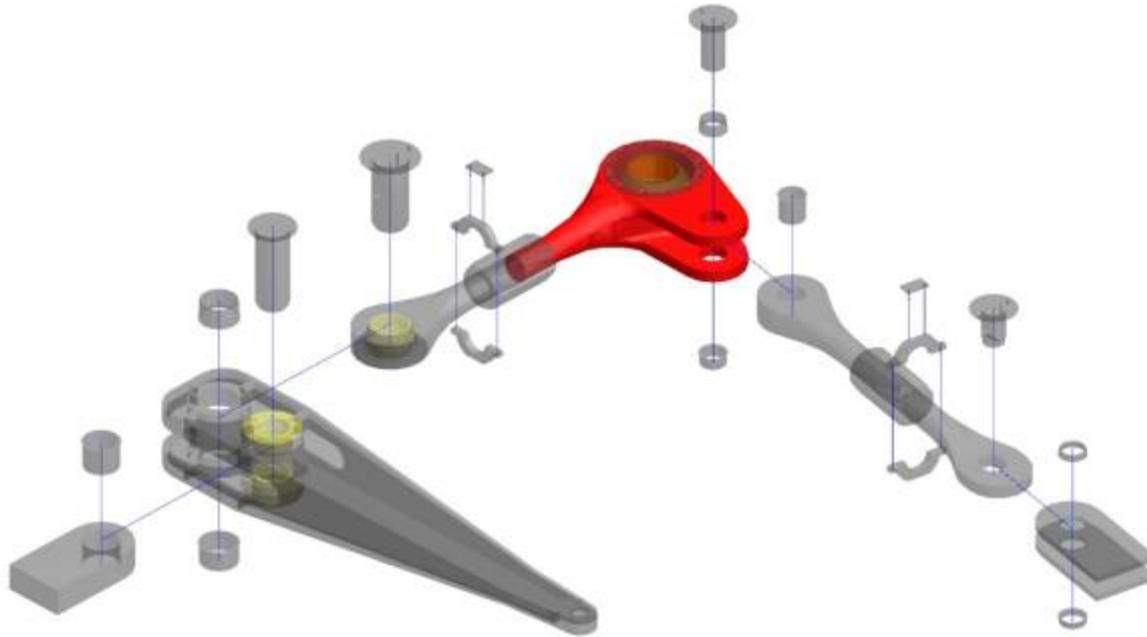


Nut Retaining Collars



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Gudgeon Barrel



Old Gudgeon Barrel



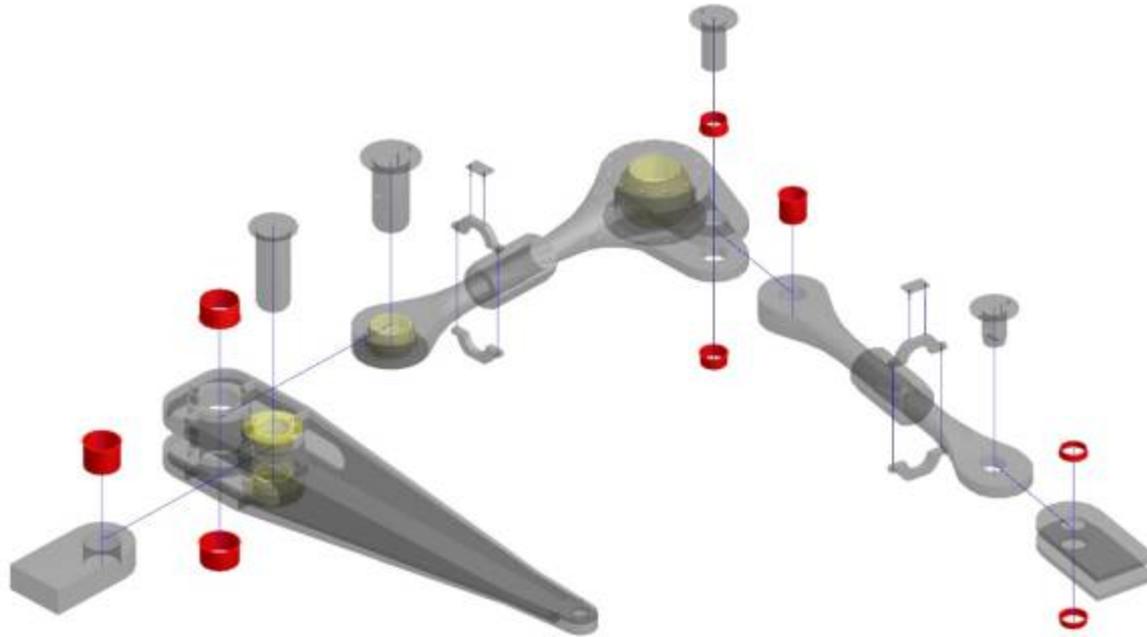
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New Gudgeon Barrel



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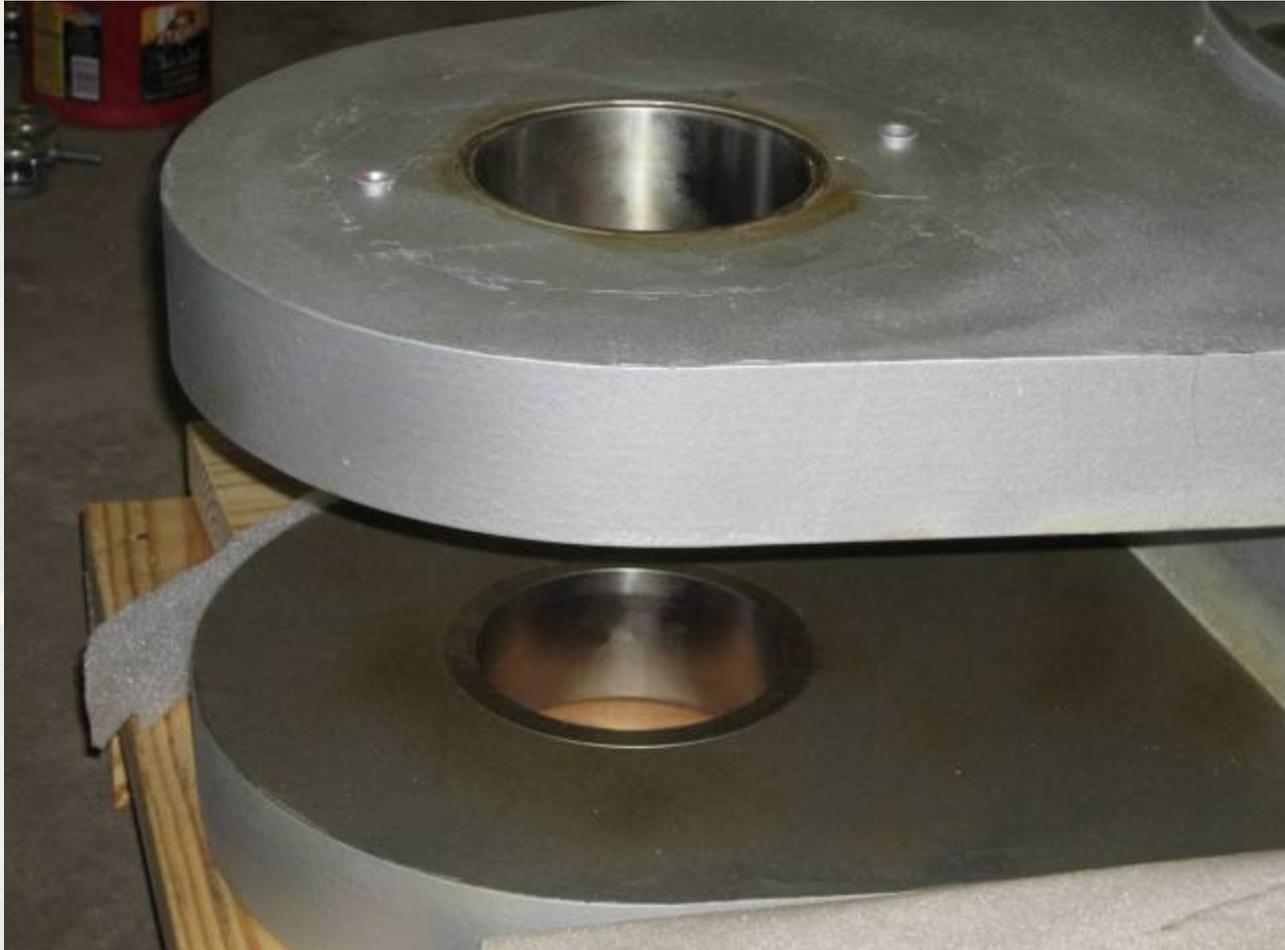
Hardened Bushings



Old Repair Method



Hardened Bushings



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Questions?

