





jacket disconnected from #7 cracked cylinder head, fitted to spare liner and head, jointed with new rubber sealing rings, water jacket tested to 50 Lbs. per sq. inch, installed in place of #2 cracked cylinder head. Cylinder cheek holes reamed, new bolts fitted. Piston rings removed and rings cleaned, examined, rings fitted to new liner and replaced on piston. All cylinder head valves and fittings removed, installed in new cylinder head. Original cylinder extension and supercharge casing examined and replaced. Original #2 cylinder head removed from liner, cleaned, examined, cracked as follows:- One 1" and one 3" long crack at each side of relief valve port. One 13" long crack between exhaust and air starting port and extending up into exhaust port. One 6" long crack between air starting and air inlet port - total length of cracks 23". Cracks repaired by Metalock process. Cylinder head water cooling spaces cleaned and coated with apexior. Cylinder liner cleaned and eroded at bottom, in way of jacket cooling water inlet, built up in way of lower sealing ring, ring groove machined in way of repair, cylinder liner ground to head and jointed to head at 180° from original position. Cylinder liner and head returned to vessel as spares.

#3 Cylinder: Cylinder extension and supercharge casing removed, cleaned and examined. Cylinder liner, head and jacket assembly disconnected and removed to shop. Cylinder water jacket removed, examined, found eroded and patched in way of cooling water inlet, returned to vessel for Owners disposition. Cylinder liner removed from head, cleaned and examined, found eroded to a maximum depth of 7/8" at lower end in way of cooling water inlet and part of lower sealing ring groove eroded away. Eroded section of ring groove built up by electric welding and machined. Cylinder head cleaned, examined; cracked as follows:- One 12" long crack between air starting and exhaust port and extending up into exhaust port. One 8" long crack between air starting and inlet ports. One 5" long crack between fuel valve and exhaust port. One 1" long crack at each side of the relief valve port. Total length of cracks 27". Cracks in cylinder head repaired by Metalock process. Water spaces cleaned and coated with apexior, liner ground to cylinder head and jointed to head at 180° from original position. Cylinder jacket disconnected from removed #2 cylinder liner and head assembly, cleaned, scaled, examined and coated and fitted to #3 cylinder liner and head, tested to 50 Lbs. per sq. inch and proved tight. Cylinder liner, head and jacket replaced and connected up. Piston and piston rings cleaned, examined and found in order. Cylinder extension and supercharge casing replaced.

#4 Cylinder: Cylinder extension and supercharge casing removed, cleaned and examined. Cylinder liner, head and jacket assembly disconnected and removed to shop, cylinder water jacket removed, scaled, cleaned, examined and coated internally with apexior. Cylinder liner removed from head, cleaned, examined and found eroded to a maximum depth 1 1/2" at bottom of liner in way of cooling water inlet and part of lower sealing ring groove eroded away. Eroded section of ring groove built up by electric welding and machined. Cylinder head cleaned, examined and found cracked in four locations as follows:- One crack 11" long between air starting and exhaust ports and extending up into exhaust port. One 7" long crack between fuel valve and exhaust ports and extending up exhaust port. One 1" long crack on either side of relief valve port and one crack 2" long between air starting and air inlet ports - total length of cracks 22". Cylinder head scaled, cleaned and coated in cooling water.



## (SHEET #3). S/S "SAN VERONICO"

spaces with apexior. Cracks in cylinder head repaired by Metalock process.

Cylinder liner ground to head and jointed at 180° from original position. Cylinder water jacket replaced, jointed with new rubber sealing rings, assembly tested on water cooling side to 50 Lbs. per square inch, returned to vessel, installed and connected up. Piston and piston rings cleaned and examined. Cylinder extension and supercharge casing replaced and rejointed.

#5 Cylinder: Exhaust valve removed, jacket and cylinder head cooling water spaces tested, cylinder head examined, found in order, exhaust valve replaced.

#6 Cylinder: Cylinder extension and supercharge casing removed, cleaned and examined. Cylinder liner, head and jacket disconnected and removed to shop. Cylinder water jacket removed, scaled, cleaned, examined and coated internally with apexior. Cylinder liner removed from head, liner cleaned, examined, found eroded at bottom in way of jacket cooling water inlet to a maximum depth of 3/4" and part of lower sealing ring groove eroded away. Eroded section of lower ring groove built up and machined. Cylinder head cleaned, examined, found cracked as follows:- One crack 6" long between fuel valve and exhaust ports and extending up both ports. One 8" long crack between air starting and exhaust ports and extending up exhaust port. One 8" long crack between air starting and air inlet port and two 2" long cracks on either side of relief valve port. Total length of cracks 26".

Cylinder head water cooling spaces scaled, cleaned and coated with apexior.

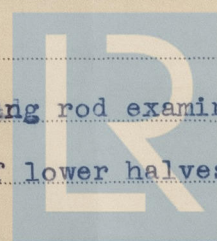
Cracks in cylinder head repaired by Metalock process. Cylinder liner ground to head and jointed at 180° from original position. Cylinder water jacket replaced with new rubber sealing rings. #6 assembly tested on cooling water side to 50 Lbs. per square inch, returned to vessel, installed, connected up. Piston and piston rings cleaned and examined. Cylinder extension and supercharge casing replaced and rejointed.

#7 Cylinder:- Cylinder extension and supercharge casing removed, cleaned and examined. Cylinder liner, head and jacket disconnected, removed to shop. Spare cylinder liner, head and jacket installed in place of original #7 assembly. Cheek bolt holes reamed and new fitted bolts fitted. Piston rings removed, examined, fitted to new cylinder liner and replaced on piston. Piston cleaned and examined. Original cylinder extension and supercharge casing replaced and jointed. All cylinder head valves and fittings removed from original #7 cylinder head and installed in new head. Cylinder water jacket removed from cracked #7 head scaled, cleaned, examined, coated internally with apexior and fitted on spare cylinder liner and head now installed in #2 cylinder.

Cylinder head examined and found cracked as follows:- One 8" long crack between exhaust and air starting ports, extending 6" up exhaust port and one crack 3" long between exhaust and fuel valve port, extending 3" up exhaust port. The cylinder liner was found eroded in way of jacket water inlet and part of lower sealing ring groove eroded. No repairs were carried out and cylinder liner and head assembly was returned to vessel and stowed for Owners disposition.

#7 crank pin and bearings examined and adjusted, connecting rod examined and replaced. Crosshead pins and bearings examined; metal of lower halves found broken

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spare lower halves fitted and adjusted. Damaged halves retained as spare.

#8 Cylinder: Exhaust valve removed, jacket and cylinder head cooling water spaces tested, cylinder head examined, found in order, exhaust valve replaced.

#3 - 4 cylinders: Port side tie bolt, broken while removing nut at 3rd thread above washer on cylinder heads; tie bolt renewed and spare nut fitted.

#7 cylinder rocker arm coupling key renewed.

Main engine tested under working conditions at full power and found satisfactory.

Nos. 3, 4 &amp; 6 exhaust valve removed and cylinder heads examined after completion of test and repairs found satisfactory.

Stand-by lubricating oil pump opened up, examined, piston and bucket rings renewed - closed up in good order.

Sketches showing position of cracks found on cylinder heads are enclosed herewith.

*W. D. Wardle John Sims*

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