

Rpt. 4.

No. 50931

# REPORT ON STEAM RECIPROCATING ENGINE MACHINERY.

Date of writing Report 19 When handed in at Local Office 20.10.1930 Port of Glasgow.  
 No. in Survey held at Paisley  
 Reg. Book. on the Twin Sc. S.S. "HIRAVATI"  
 Date, First Survey 28-4-30 Last Survey 17-10-1930  
 (Number of Visits 40)  
 Built at Paisley By whom built Bow & M. Lachlan & Co. Ltd Yard No. 493  
 Engines made at Paisley By whom made Bow & M. Lachlan & Co. Engine No. 4019-20 when made 1930  
 Boilers made at Paisley By whom made Bow & M. Lachlan & Co. Boiler No. 1209 when made 1930  
 Registered Horse Power Owners Bombay S.N. Co. Ltd Port belonging to Bombay  
 Nom. Horse Power as per Rule 240 Is Refrigerating Machinery fitted for cargo purposes no Is Electric Light fitted yes  
 Trade for which Vessel is intended

Engines, &c.—Description of Engines Twin Triple Expansion Surface Condensing Revs. per minute 246  
 Dia. of Cylinders 12"-20"-33" Length of Stroke 21" No. of Cylinders 6 No. of Cranks 6  
 Crank shaft, dia. of journals as per Rule 6.37" Crank pin dia. 6 5/8" Crank webs Mid. length breadth 12 1/4" Thickness parallel to axis 4 3/8"  
 as fitted 6 3/8" Mid. length thickness 4 3/8" shrunk Thickness around eye-hole 2 1/2"  
 Intermediate Shafts, diameter as per Rule 6.07" Thrust shaft, diameter at collars as per Rule 6.37"  
 as fitted 6 3/8" as fitted 6 5/8"  
 Tube Shafts, diameter as per Rule 6.91" Is the screw shaft fitted with a continuous liner no  
 as fitted 7 1/2"  
 Bronze Liners, thickness in way of bushes as per Rule 1/2" Thickness between bushes as per Rule 1/2" Is the after end of the liner made watertight in the  
 as fitted 1/2" as fitted 1/2" propeller boss yes If the liner is in more than one length are the junctions made by fusion through the whole thickness of the liner yes  
 If the liner does not fit tightly at the part between the bearings in the stern tube, is the space charged with a plastic material insoluble in water and non-corrosive yes  
 If two liners are fitted, is the shaft lapped or protected between the liners yes Is an approved Oil Gland or other appliance fitted at the after  
 end of the tube shaft yes (Compound type) Length of Bearing in Stern Bush next to and supporting propeller 36"  
 Propeller, dia. 7'-0" Pitch 7'-0" No. of Blades 4 Material Bronze whether Moveable Solid Total Developed Surface 18 sq. feet  
 Main Engines, No. 1 & 2, 3 & 4, 5 & 6, 7 & 8, 9 & 10, 11 & 12, 13 & 14, 15 & 16, 17 & 18, 19 & 20, 21 & 22, 23 & 24, 25 & 26, 27 & 28, 29 & 30, 31 & 32, 33 & 34, 35 & 36, 37 & 38, 39 & 40, 41 & 42, 43 & 44, 45 & 46, 47 & 48, 49 & 50, 51 & 52, 53 & 54, 55 & 56, 57 & 58, 59 & 60, 61 & 62, 63 & 64, 65 & 66, 67 & 68, 69 & 70, 71 & 72, 73 & 74, 75 & 76, 77 & 78, 79 & 80, 81 & 82, 83 & 84, 85 & 86, 87 & 88, 89 & 90, 91 & 92, 93 & 94, 95 & 96, 97 & 98, 99 & 100, 101 & 102, 103 & 104, 105 & 106, 107 & 108, 109 & 110, 111 & 112, 113 & 114, 115 & 116, 117 & 118, 119 & 120, 121 & 122, 123 & 124, 125 & 126, 127 & 128, 129 & 130, 131 & 132, 133 & 134, 135 & 136, 137 & 138, 139 & 140, 141 & 142, 143 & 144, 145 & 146, 147 & 148, 149 & 150, 151 & 152, 153 & 154, 155 & 156, 157 & 158, 159 & 160, 161 & 162, 163 & 164, 165 & 166, 167 & 168, 169 & 170, 171 & 172, 173 & 174, 175 & 176, 177 & 178, 179 & 180, 181 & 182, 183 & 184, 185 & 186, 187 & 188, 189 & 190, 191 & 192, 193 & 194, 195 & 196, 197 & 198, 199 & 200, 201 & 202, 203 & 204, 205 & 206, 207 & 208, 209 & 210, 211 & 212, 213 & 214, 215 & 216, 217 & 218, 219 & 220, 221 & 222, 223 & 224, 225 & 226, 227 & 228, 229 & 230, 231 & 232, 233 & 234, 235 & 236, 237 & 238, 239 & 240, 241 & 242, 243 & 244, 245 & 246, 247 & 248, 249 & 250, 251 & 252, 253 & 254, 255 & 256, 257 & 258, 259 & 260, 261 & 262, 263 & 264, 265 & 266, 267 & 268, 269 & 270, 271 & 272, 273 & 274, 275 & 276, 277 & 278, 279 & 280, 281 & 282, 283 & 284, 285 & 286, 287 & 288, 289 & 290, 291 & 292, 293 & 294, 295 & 296, 297 & 298, 299 & 300, 301 & 302, 303 & 304, 305 & 306, 307 & 308, 309 & 310, 311 & 312, 313 & 314, 315 & 316, 317 & 318, 319 & 320, 321 & 322, 323 & 324, 325 & 326, 327 & 328, 329 & 330, 331 & 332, 333 & 334, 335 & 336, 337 & 338, 339 & 340, 341 & 342, 343 & 344, 345 & 346, 347 & 348, 349 & 350, 351 & 352, 353 & 354, 355 & 356, 357 & 358, 359 & 360, 361 & 362, 363 & 364, 365 & 366, 367 & 368, 369 & 370, 371 & 372, 373 & 374, 375 & 376, 377 & 378, 379 & 380, 381 & 382, 383 & 384, 385 & 386, 387 & 388, 389 & 390, 391 & 392, 393 & 394, 395 & 396, 397 & 398, 399 & 400, 401 & 402, 403 & 404, 405 & 406, 407 & 408, 409 & 410, 411 & 412, 413 & 414, 415 & 416, 417 & 418, 419 & 420, 421 & 422, 423 & 424, 425 & 426, 427 & 428, 429 & 430, 431 & 432, 433 & 434, 435 & 436, 437 & 438, 439 & 440, 441 & 442, 443 & 444, 445 & 446, 447 & 448, 449 & 450, 451 & 452, 453 & 454, 455 & 456, 457 & 458, 459 & 460, 461 & 462, 463 & 464, 465 & 466, 467 & 468, 469 & 470, 471 & 472, 473 & 474, 475 & 476, 477 & 478, 479 & 480, 481 & 482, 483 & 484, 485 & 486, 487 & 488, 489 & 490, 491 & 492, 493 & 494, 495 & 496, 497 & 498, 499 & 500, 501 & 502, 503 & 504, 505 & 506, 507 & 508, 509 & 510, 511 & 512, 513 & 514, 515 & 516, 517 & 518, 519 & 520, 521 & 522, 523 & 524, 525 & 526, 527 & 528, 529 & 530, 531 & 532, 533 & 534, 535 & 536, 537 & 538, 539 & 540, 541 & 542, 543 & 544, 545 & 546, 547 & 548, 549 & 550, 551 & 552, 553 & 554, 555 & 556, 557 & 558, 559 & 560, 561 & 562, 563 & 564, 565 & 566, 567 & 568, 569 & 570, 571 & 572, 573 & 574, 575 & 576, 577 & 578, 579 & 580, 581 & 582, 583 & 584, 585 & 586, 587 & 588, 589 & 590, 591 & 592, 593 & 594, 595 & 596, 597 & 598, 599 & 600, 601 & 602, 603 & 604, 605 & 606, 607 & 608, 609 & 610, 611 & 612, 613 & 614, 615 & 616, 617 & 618, 619 & 620, 621 & 622, 623 & 624, 625 & 626, 627 & 628, 629 & 630, 631 & 632, 633 & 634, 635 & 636, 637 & 638, 639 & 640, 641 & 642, 643 & 644, 645 & 646, 647 & 648, 649 & 650, 651 & 652, 653 & 654, 655 & 656, 657 & 658, 659 & 660, 661 & 662, 663 & 664, 665 & 666, 667 & 668, 669 & 670, 671 & 672, 673 & 674, 675 & 676, 677 & 678, 679 & 680, 681 & 682, 683 & 684, 685 & 686, 687 & 688, 689 & 690, 691 & 692, 693 & 694, 695 & 696, 697 & 698, 699 & 700, 701 & 702, 703 & 704, 705 & 706, 707 & 708, 709 & 710, 711 & 712, 713 & 714, 715 & 716, 717 & 718, 719 & 720, 721 & 722, 723 & 724, 725 & 726, 727 & 728, 729 & 730, 731 & 732, 733 & 734, 735 & 736, 737 & 738, 739 & 740, 741 & 742, 743 & 744, 745 & 746, 747 & 748, 749 & 750, 751 & 752, 753 & 754, 755 & 756, 757 & 758, 759 & 760, 761 & 762, 763 & 764, 765 & 766, 767 & 768, 769 & 770, 771 & 772, 773 & 774, 775 & 776, 777 & 778, 779 & 780, 781 & 782, 783 & 784, 785 & 786, 787 & 788, 789 & 790, 791 & 792, 793 & 794, 795 & 796, 797 & 798, 799 & 800, 801 & 802, 803 & 804, 805 & 806, 807 & 808, 809 & 810, 811 & 812, 813 & 814, 815 & 816, 817 & 818, 819 & 820, 821 & 822, 823 & 824, 825 & 826, 827 & 828, 829 & 830, 831 & 832, 833 & 834, 835 & 836, 837 & 838, 839 & 840, 841 & 842, 843 & 844, 845 & 846, 847 & 848, 849 & 850, 851 & 852, 853 & 854, 855 & 856, 857 & 858, 859 & 860, 861 & 862, 863 & 864, 865 & 866, 867 & 868, 869 & 870, 871 & 872, 873 & 874, 875 & 876, 877 & 878, 879 & 880, 881 & 882, 883 & 884, 885 & 886, 887 & 888, 889 & 890, 891 & 892, 893 & 894, 895 & 896, 897 & 898, 899 & 900, 901 & 902, 903 & 904, 905 & 906, 907 & 908, 909 & 910, 911 & 912, 913 & 914, 915 & 916, 917 & 918, 919 & 920, 921 & 922, 923 & 924, 925 & 926, 927 & 928, 929 & 930, 931 & 932, 933 & 934, 935 & 936, 937 & 938, 939 & 940, 941 & 942, 943 & 944, 945 & 946, 947 & 948, 949 & 950, 951 & 952, 953 & 954, 955 & 956, 957 & 958, 959 & 960, 961 & 962, 963 & 964, 965 & 966, 967 & 968, 969 & 970, 971 & 972, 973 & 974, 975 & 976, 977 & 978, 979 & 980, 981 & 982, 983 & 984, 985 & 986, 987 & 988, 989 & 990, 991 & 992, 993 & 994, 995 & 996, 997 & 998, 999 & 1000, 1001 & 1002, 1003 & 1004, 1005 & 1006, 1007 & 1008, 1009 & 1010, 1011 & 1012, 1013 & 1014, 1015 & 1016, 1017 & 1018, 1019 & 1020, 1021 & 1022, 1023 & 1024, 1025 & 1026, 1027 & 1028, 1029 & 1030, 1031 & 1032, 1033 & 1034, 1035 & 1036, 1037 & 1038, 1039 & 1040, 1041 & 1042, 1043 & 1044, 1045 & 1046, 1047 & 1048, 1049 & 1050, 1051 & 1052, 1053 & 1054, 1055 & 1056, 1057 & 1058, 1059 & 1060, 1061 & 1062, 1063 & 1064, 1065 & 1066, 1067 & 1068, 1069 & 1070, 1071 & 1072, 1073 & 1074, 1075 & 1076, 1077 & 1078, 1079 & 1080, 1081 & 1082, 1083 & 1084, 1085 & 1086, 1087 & 1088, 1089 & 1090, 1091 & 1092, 1093 & 1094, 1095 & 1096, 1097 & 1098, 1099 & 1100, 1101 & 1102, 1103 & 1104, 1105 & 1106, 1107 & 1108, 1109 & 1110, 1111 & 1112, 1113 & 1114, 1115 & 1116, 1117 & 1118, 1119 & 1120, 1121 & 1122, 1123 & 1124, 1125 & 1126, 1127 & 1128, 1129 & 1130, 1131 & 1132, 1133 & 1134, 1135 & 1136, 1137 & 1138, 1139 & 1140, 1141 & 1142, 1143 & 1144, 1145 & 1146, 1147 & 1148, 1149 & 1150, 1151 & 1152, 1153 & 1154, 1155 & 1156, 1157 & 1158, 1159 & 1160, 1161 & 1162, 1163 & 1164, 1165 & 1166, 1167 & 1168, 1169 & 1170, 1171 & 1172, 1173 & 1174, 1175 & 1176, 1177 & 1178, 1179 & 1180, 1181 & 1182, 1183 & 1184, 1185 & 1186, 1187 & 1188, 1189 & 1190, 1191 & 1192, 1193 & 1194, 1195 & 1196, 1197 & 1198, 1199 & 1200, 1201 & 1202, 1203 & 1204, 1205 & 1206, 1207 & 1208, 1209 & 1210, 1211 & 1212, 1213 & 1214, 1215 & 1216, 1217 & 1218, 1219 & 1220, 1221 & 1222, 1223 & 1224, 1225 & 1226, 1227 & 1228, 1229 & 1230, 1231 & 1232, 1233 & 1234, 1235 & 1236, 1237 & 1238, 1239 & 1240, 1241 & 1242, 1243 & 1244, 1245 & 1246, 1247 & 1248, 1249 & 1250, 1251 & 1252, 1253 & 1254, 1255 & 1256, 1257 & 1258, 1259 & 1260, 1261 & 1262, 1263 & 1264, 1265 & 1266, 1267 & 1268, 1269 & 1270, 1271 & 1272, 1273 & 1274, 1275 & 1276, 1277 & 1278, 1279 & 1280, 1281 & 1282, 1283 & 1284, 1285 & 1286, 1287 & 1288, 1289 & 1290, 1291 & 1292, 1293 & 1294, 1295 & 1296, 1297 & 1298, 1299 & 1300, 1301 & 1302, 1303 & 1304, 1305 & 1306, 1307 & 1308, 1309 & 1310, 1311 & 1312, 1313 & 1314, 1315 & 1316, 1317 & 1318, 1319 & 1320, 1321 & 1322, 1323 & 1324, 1325 & 1326, 1327 & 1328, 1329 & 1330, 1331 & 1332, 1333 & 1334, 1335 & 1336, 1337 & 1338, 1339 & 1340, 1341 & 1342, 1343 & 1344, 1345 & 1346, 1347 & 1348, 1349 & 1350, 1351 & 1352, 1353 & 1354, 1355 & 1356, 1357 & 1358, 1359 & 1360, 1361 & 1362, 1363 & 1364, 1365 & 1366, 1367 & 1368, 1369 & 1370, 1371 & 1372, 1373 & 1374, 1375 & 1376, 1377 & 1378, 1379 & 1380, 1381 & 1382, 1383 & 1384, 1385 & 1386, 1387 & 1388, 1389 & 1390, 1391 & 1392, 1393 & 1394, 1395 & 1396, 1397 & 1398, 1399 & 1400, 1401 & 1402, 1403 & 1404, 1405 & 1406, 1407 & 1408, 1409 & 1410, 1411 & 1412, 1413 & 1414, 1415 & 1416, 1417 & 1418, 1419 & 1420, 1421 & 1422, 1423 & 1424, 1425 & 1426, 1427 & 1428, 1429 & 1430, 1431 & 1432, 1433 & 1434, 1435 & 1436, 1437 & 1438, 1439 & 1440, 1441 & 1442, 1443 & 1444, 1445 & 1446, 1447 & 1448, 1449 & 1450, 1451 & 1452, 1453 & 1454, 1455 & 1456, 1457 & 1458, 1459 & 1460, 1461 & 1462, 1463 & 1464, 1465 & 1466, 1467 & 1468, 1469 & 1470, 1471 & 1472, 1473 & 1474, 1475 & 1476, 1477 & 1478, 1479 & 1480, 1481 & 1482, 1483 & 1484, 1485 & 1486, 1487 & 1488, 1489 & 1490, 1491 & 1492, 1493 & 1494, 1495 & 1496, 1497 & 1498, 1499 & 1500, 1501 & 1502, 1503 & 1504, 1505 & 1506, 1507 & 1508, 1509 & 1510, 1511 & 1512, 1513 & 1514, 1515 & 1516, 1517 & 1518, 1519 & 1520, 1521 & 1522, 1523 & 1524, 1525 & 1526, 1527 & 1528, 1529 & 1530, 1531 & 1532, 1533 & 1534, 1535 & 1536, 1537 & 1538, 1539 & 1540, 1541 & 1542, 1543 & 1544, 1545 & 1546, 1547 & 1548, 1549 & 1550, 1551 & 1552, 1553 & 1554, 1555 & 1556, 1557 & 1558, 1559 & 1560, 1561 & 1562, 1563 & 1564, 1565 & 1566, 1567 & 1568, 1569 & 1570, 1571 & 1572, 1573 & 1574, 1575 & 1576, 1577 & 1578, 1579 & 1580, 1581 & 1582, 1583 & 1584, 1585 & 1586, 1587 & 1588, 1589 & 1590, 1591 & 1592, 1593 & 1594, 1595 & 1596, 1597 & 1598, 1599 & 1600, 1601 & 1602, 1603 & 1604, 1605 & 1606, 1607 & 1608, 1609 & 1610, 1611 & 1612, 1613 & 1614, 1615 & 1616, 1617 & 1618, 1619 & 1620, 1621 & 1622, 1623 & 1624, 1625 & 1626, 1627 & 1628, 1629 & 1630, 1631 & 1632, 1633 & 1634, 1635 & 1636, 1637 & 1638, 1639 & 1640, 1641 & 1642, 1643 & 1644, 1645 & 1646, 1647 & 1648, 1649 & 1650, 1651 & 1652, 1653 & 1654, 1655 & 1656, 1657 & 1658, 1659 & 1660, 1661 & 1662, 1663 & 1664, 1665 & 1666, 1667 & 1668, 1669 & 1670, 1671 & 1672, 1673 & 1674, 1675 & 1676, 1677 & 1678, 1679 & 1680, 1681 & 1682, 1683 & 1684, 1685 & 1686, 1687 & 1688, 1689 & 1690, 1691 & 1692, 1693 & 1694, 1695 & 1696, 1697 & 1698, 1699 & 1700, 1701 & 1702, 1703 & 1704, 1705 & 1706, 1707 & 1708, 1709 & 1710, 1711 & 1712, 1713 & 1714, 1715 & 1716, 1717 & 1718, 1719 & 1720, 1721 & 1722, 1723 & 1724, 1725 & 1726, 1727 & 1728, 1729 & 1730, 1731 & 1732, 1733 & 1734, 1735 & 1736, 1737 & 1738, 1739 & 1740, 1741 & 1742, 1743 & 1744, 1745 & 1746, 1747 & 1748, 1749 & 1750, 1751 & 1752, 1753 & 1754, 1755 & 1756, 1757 & 1758, 1759 & 1760, 1761 & 1762, 1763 & 1764, 1765 & 1766, 1767 & 1768, 1769 & 1770, 1771 & 1772, 1773 & 1774, 1775 & 1776, 1777 & 1778, 1779 & 1780, 1781 & 1782



1930 Apr 11. 14. 25 May 1. 7. 13. 16. 20. 23. 26. 29 June 4. 11. 16. 23. 30 July 8. 15. 17. 18  
 During progress of work in shops -- 22 Aug 15. 19. 21. 25. 26 Sep 3. 6. 10. 16. 24. 27. 30 Oct 1. 7. 9. 14. 15. 17  
 Dates of Survey while building During erection on board vessel ---  
 Total No. of visits 40

Dates of Examination of principal parts—Cylinders 20-5-30 23-6-30 26-5-30 30-6-30 16-6-30 8-7-30 17-7-30 Slides 28-7-30 Covers 23-6-30 30-6-30 8-7-30  
 Pistons 13-5-30 16-5-30 8-7-30 Piston Rods 13-5-30 16-5-30 Connecting rods 7-5-30  
 Crank shaft 26-8-30 23-6-30 Thrust shaft 26-8-30 Intermediate shafts 26-8-30  
 Tube shaft ✓ Screw shaft 8-7-30 26-8-30 28-7-30 Propeller 26-8-30  
 Stern tube 8-7-30 Engine and boiler seatings 15-7-30 Engines holding down bolts 1-10-30  
 Completion of fitting sea connections 26-8-30  
 Completion of pumping arrangements 14-10-30 Boilers fixed 3-9-30 Engines tried under steam 15-10-30  
 Main boiler safety valves adjusted 14-10-30 Thickness of adjusting washers Port 3/8" Starb. 11/32"  
 Crank shaft material Steel Identification Mark G.E.M. 23-6-30 Thrust shaft material Steel Identification Mark 3593/4 G.E.M. 26-8-30  
 Intermediate shafts, material Steel Identification Marks G.E.M. 3572, 3577 Lloyd's Test No. 26-8-30 Tube shaft, material ✓ Identification Mark ✓  
 Screw shaft, material Steel Identification Mark 8720 G.E.M. 26-8-30 Steam Pipes, material Steel Test pressure 600 lb. Date of Test 26-9-30.  
 Is an installation fitted for burning oil fuel yes Is the flash point of the oil to be used over 150°F. yes  
 Have the requirements of the Rules for the use of oil as fuel been complied with yes  
 Is the vessel (not being an oil tanker) fitted for carrying oil as cargo no If so, have the requirements of the Rules been complied with ✓  
 Is this machinery duplicate of a previous case NO. If so, state name of vessel ✓

**General Remarks** (State quality of workmanship, opinions as to class, &c.) These engines and boilers have been built under Special Survey in accordance with the Rules and approved plans. The materials and workmanship are good. They have been properly fitted on board tried under full working condition and found satisfactory, and is eligible in my opinion for the record in the Register Book of + L.M.C. 10-30 T.S.O.G. Fitted for oil fuel 10-30 F.P. above 150° Fah.

It is submitted that this vessel is eligible for THE RECORD. + L.M.C. 10-30 O.G. F.D.

Fitted for oil fuel (10-30) F.P. above 150° F.

30/10/30.

The amount of Entry Fee ... £ 4 0-0 :  
 Special ... £ 60 0-0 :  
 Donkey Boiler Fee ... £ : :  
 Travelling Expenses (if any) £ : :  
 When applied for, 28 OCT 1930  
 When received, 1-11-30

Committee's Minute GLASGOW 28 OCT 1930

Assigned + L.M.C. 10-30

CERTIFICATE WRITTEN

Fitted for oil fuel 10-30 F.P. above 150° F



© 2020

Lloyd's Register Foundation

G. E. Murdoch  
 Engineer Surveyor to Lloyd's Register of Shipping.