

# Main Engine cylinder head repair procedure

Office: **Rio de Janeiro**

Date: **23 June 2005**

This certificate is issued to **Auto Mecânica Arapongas Ltda** to certify that the undersigned surveyor did attend at their premises in **Cavalcante - Rio de Janeiro** between the dates **11st and 17th March 2005**, for the purpose of witnessing welding repairs procedure qualification of a main engine cylinder head in accordance with " **Lloyds Register Rules for the Manufacture, Testing and Certification of Materials- July 2004** ", " **Materials and Qualifications Procedures for Ships Book A, 2002** " and **Engine Manufacturer's guidance notes : " MAN B&W Repair and Reconditioning of Cylinder Cover Base Material 74 18 19 5 C"**.

Welding test assembly has been carried out in a sample on a Main Engine Cylinder Head **MAN B&W L35 MC**.

The welding consumable has been selected in accordance with the manufacturer instruction " **MAN B&W Repair and Reconditioning of Cylinder Cover Base Material 74 18 19 5 C** " as recorded into **WPS RIO400478**.

Welding assembly body has been performed in accordance with **Lloyds Register Rules for the Manufacture, Testing and Certification of Materials- July 2004** ", and " **Materials and Qualifications Procedures for Ships Book A, 2002** ".

NDE and destructive mechanical testing has been carried with satisfactory results as recorded into the **PQR RIO 400478**.

Based on the results referred above the repair method has been considered satisfactory for the application in **MAN B&W** cylinder heads with similar mechanical and chemical properties for repairing of cracks providing that the following instructions are to strictly complied with :

- The repair procedure is not applicable for cracks of 20mm in depth or above.
- Notwithstanding the above, prior to any welding repair an inspection is to be carried to the LR surveyor satisfaction.
- Welding parameters and procedures are to strictly in accordance with the **WPS RIO 400478**.
- Temperature control method is to be carried out to the surveyor's satisfaction.
- On completion of the repairs a final inspection is to be carried out to the surveyor's satisfaction.



L. F. Noronha  
Surveyor to Lloyd's Register do Brasil Ltda

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