

PELANGI

Application Note 31406

Refurbishing Bressay

Pedestal History : The original 2.7 tonne clockwork machine was installed by the Northern Lighthouse Board around 1940 on the Island of Bressay in the Shetland Islands opposite Lerwick. The mirror array consisted of 2 lead backed parabolic mirrors with a focus distance of 750mm revolved at 2 rpm to achieve a character of GP2 every 20 sec. The mirrors manufactured by C.A. Parsons Ltd were mounted in an array floated on liquid mercury. The array was driven by a clock work mechanism manufactured by Stevens and Struthers Ltd of Glasgow. The original paraffin vapour burner was converted to an electric 1000 watt MBI lamp in 1968 but the array still revolved on mercury driven by clockwork weights. The total mechanism was removed in 1989 by NLB when the station was automated and gifted to Shetland Islands Museum.



Clockwork, bath and array support at Pelangi works before start of refurbishment and conversion .

Project Aim: To restore the mechanism to working state by removing the mercury and replacing it with a bearing system: to drive both clock work and weights on suspended chains by concealed electric motor: to show public the apparatus in a working state.

Technical Solution:

1. The 836 kgs of mercury plus the inner bath were replaced with a 6 roller plate running on flame hardened ground ring submerged in oil.



Inner bath being checked for Mercury vapour contamination prior to treatment.



Pre-assembly check of bearings prior to painting .

2. Instead of driving the main ring by the usual method of disconnection of the clock work, the mechanism was driven from the air govern shaft.
3. In order to give the impression of being driven by the suspended weight, the chain was shortened to display it with its running pulley.

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- The 55mm PV burner mantle was converted to electric with a special frosted envelope mounted inside the Mantle to provide the impression of a lit burner. Cable being concealed in the original paraffin piping.



Installation in Lerwick's New Muesum.

To be able for the general public to view the complete working apparatus it was mounted on a 4 metre pedestal in a void between floors permitting viewing from below and above. Something that would never be possible in the original lighthouse building.



Clockwork and Lamp support in position in the Lerwick museum.



Raising the Outer mercury Bath on to the clockwork.



Optic installed in Museum

CLIENT:

**SHETLAND
AMENITY TRUST**

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